Maria Chiara Angelini

Selected Publications for the evaluation

0 – PhD Thesis "Renormalization group and critical properties of Long Range models"

1 – G Gradenigo, M.C.A., L Leuzzi, F Ricci-Tersenghi, *Solving the fully-connected spherical-spin model with the cavity method: equivalence with the replica results*, J. Stat. Mech. 113302 (2020), journal IF 2.8, citations 2/2/2.

2 – M.C.A., C. Lucibello, G. Parisi, F. Ricci-Tersenghi, T. Rizzo, *Loop expansion around the Bethe solution for the random magnetic field Ising ferromagnets at zero temperature*, Proceedings of the National Academy of Sciences of the United States of America 117, 2268-2274 (2020), journal IF 11.205, citations 1/1/2.

3 – M.C.A., G. Parisi and F. Ricci-Tersenghi, *Comment on 'Real-space renormalization-group methods for hierarchical spin glasses'*, J. Phys. A: Math. Theor. 53, 418001 (2020), journal IF 2.132, citations 1/1/1.

4 – M. C. A., *Parallel Tempering for the planted clique problem*, J. Stat. Mech. (2018) 073404, journal IF 2.371, citations 1/0/2.

5 – M.C.A., G. Parisi, F. Ricci-Tersenghi, *One-loop topological expansion for spin glasses in the large connectivity limit*, EPL (Europhysics Letters) 121 (2), 27001 (2018), journal IF 1.886, citations 0/1/1.

6 – A. Altieri, M.C.A., C. Lucibello, G. Parisi, F. Ricci-Tersenghi, T. Rizzo, *Loop expansion around the Bethe approximation through the M-layer construction*, J. Stat. Mech. (2017) 113303, journal IF 2.404, citations 6/8/11.

7 – M.C.A., Giulio Biroli, *Real Space Migdal-Kadanoff Renormalisation of Glassy Systems: Recent Results and a Critical Assessment*, Journal of Statistical Physics, 1-23 (2017), journal IF 1.496, citations 6/6/10.

8 – M.C.A., Giulio Biroli, *Real space renormalization group theory of disordered models of glasses*, Proceedings of the National Academy of Sciences of the United States of America, 114 (13), 3328 (2017), journal IF 9.504, citations 14/14/19.

9 – M.C.A., F. Caltagirone, F. Krzakala, L. Zdeborova, *Spectral Detection on Sparse Hypergraphs*, Proc. 53th Annual Allerton Conference on Communication, Control, and Computing (2015), citations 17/14/40.

10 – M.C.A. , Giulio Biroli, *Spin Glass in a Field: a New Zero-Temperature Fixed Point in Finite Dimensions*, Phys. Rev. Lett. 114, 095701 (2015), journal IF 7.645, citations 21/22/24.

11 – M.C.A. , Giulio Biroli, *The Super-Potts glass: a disordered model for glass-forming liquids*, Phys. Rev. B 90, 220201(R) (2014), journal IF 3.736, citations 4/5/6.

12 – M.C.A., G. Parisi and F. Ricci-Tersenghi, *Relations between Short Range and Long Range Ising models*, Phys. Rev. E 89, 062120 (2014), journal IF 2.288, citations 52/53/83.

Citations are extracted from the databases Scopus/WoS/Scholar (in the present order).

Roma October 26, 2021

ELENCO DELLE PUBBLICAZIONI DEL CANDIDATO

Nome: Giulia
Cognome: Basti

1. G. B., C. Cacciapuoti, D. Finco, A. Teta, *Three-body Hamiltonian with regularized zero-range interactions in dimension three*, preprint: arXiv:2107.07188

2. G. Basti, S. Centiempo, B. Schlein, *A new second order upper bound for the ground state energy of dilute Bose gases*, Forum of Mathematics, Sigma (accettato per la pubblicazione).

3. G. Basti, *Universal low-energy behavior in a quantum Lorentz gas with Gross-Pitaevskii potentials*, Contribution to the Oberwolfach Rep. "Lorentz Gas Dynamics: particle systems and scaling limits". Rep.No. 10/2019, 629631. doi: 10.14760/OWR-2019-10

4. G. Basti, R. Figari, A. Teta, *Regularized quadratic forms for a three boson system with zero-range interactions*, Rend. Mat. Appl. (7) 39, (2018), 205216.

5. G. Basti, S. Cenatiempo, A. Teta, *Universal Low-Energy Behavior in a Quantum Lorentz Gas with Gross-Pitaevskii Potentials*, Math. Phys. Anal. Geom. 21, 11, (2018). 10.1007/s11040-018- 9268-2

6. G. Basti, C. Cacciapuoti, D. Finco, A. Teta, *The three-body problem in dimension one: From short-range to contact interactions*, J. Math. Phys. 59, 072104 (2018). doi: 10.1063/1.5030170

7. G. Basti, A. Teta, *Efimov Effect for a Three-Particle System with Two Identical Fermions*, Ann. Henri Poincarè 18 (2017), 39754003. doi: 10.1007/s00023-017-0608-8

8. G. Basti, A. Teta, *On the quantum mechanical three-body problem with zero-range interactions*, EMS Ser. Congr. Rep., EMS Publishing House, Zurich, 2017, 71–93. doi: 10.4171/175

9. G. Basti, *Low Energy Behavior in Few-Particle Quantum Systems: Efimov Effect and Zero-Range Interactions* Tesi di dottorato, Sapienza, Università di Roma (2018)

L'Aquila, 27/10/2021

Elenco Pubblicazioni Chiara Boccato

a. *The excitation spectrum of the Bose gas in the Gross–Pitaevskii regime.*
Reviews in Mathematical Physics **32**, 2060006, 11 pages (2020).
doi:10.1142/S0129055X20600065

b. *The excitation spectrum of the Bose gas in the Gross–Pitaevskii regime.*
Contribution to the Oberwolfach report "Many–Body Quantum Systems", Report No. 41/2019,
Oberwolfach Reports **16**, no. 3, 2541–2603 (2019)
doi:10.4171/OWR/2019/41

c. (with C. Brennecke, S. Cenatiempo, B. Schlein) *Optimal rate for Bose-Einstein condensation in the Gross-Pitaevskii regime.*
Communications in Mathematical Physics **376**, 1311–1395 (2020).
doi:10.1007/s00220-019-03555-9

d. (with C. Brennecke, S. Cenatiempo, B. Schlein) *Bogoliubov Theory in the Gross–Pitaevskii Limit.*
Acta Mathematica **222**, no. 2, 219–335 (2019).
doi:10.4310/ACTA.2019.v222.n2.a1

e. *Dynamical and spectral properties of Bose gases with singular interactions.*
Dissertation, Universität Zürich, 229 pages (2017).
`https://www.recherche-portal.ch/primo-explore/fulldisplay?docid=ebi01_prod011160724&context=L&vid=ZAD&search_scope=default_scope&tab=default_tab&lang=de_DE`

f. (with C. Brennecke, S. Cenatiempo, B. Schlein) *The excitation spectrum of Bose gases interacting through singular potentials.*
Journal of the European Mathematical Society **22**, no. 7, 2331–2403 (2020).
doi:10.4171/JEMS/966

g. (with C. Brennecke, S. Cenatiempo, B. Schlein) *Complete Bose–Einstein condensation in the Gross–Pitaevskii regime.*
Communications in Mathematical Physics **359**, 975–1026 (2018).
doi:10.1007/s00220-017-3016-5

h. (with S. Cenatiempo, B. Schlein) *Quantum Many–Body Fluctuations Around Nonlinear Schrödinger Dynamics.*
Annales Henri Poincaré **18**, 113–191 (2017).
doi:10.1007/s00023-016-0513-6

List of Publications

I have selected twelve representative publications in support of my application, in addition to my PhD thesis (item 6). They are organized by decreasing relevance relative to my current and future projects. For convenience, I have used the same numbering to order the pdf copies attached to my application.

1. D. Benedetti, S. Carrozza, R. Gurau, M. Kolanowski, "The $1/N$ expansion of the symmetric traceless and the antisymmetric tensor models in rank three", Commun. Math. Phys. **371**, 55-97 (2019)

2. D. Benedetti, S. Carrozza, R. Gurau, A. Sfondrini, "Tensorial Gross-Neveu models", JHEP (2018) 2018:3

3. S. Carrozza, A. Tanasa, "$O(N)$ Random Tensor Models", Lett. Math. Phys. **106** (2016) no.11, 1531-1559

4. S. Carrozza, D. Oriti and V. Rivasseau, "Renormalization of a SU(2) Tensorial Group Field Theory in Three Dimensions", Commun. Math. Phys. **330**, 581 (2014)

5. S. Carrozza, D. Oriti and V. Rivasseau, "Renormalization of Tensorial Group Field Theories: Abelian U(1) Models in Four Dimensions", Commun. Math. Phys. **327**, 603 (2014)

6. S. Carrozza, "Tensorial Methods and Renormalization in Group Field Theories", Springer Theses (2014)

7. D. Benedetti, S. Carrozza, R. Toriumi and G. Valette, "Multiple scaling limits of $\mathrm{U}(N)^2 \times \mathrm{O}(D)$ multi-matrix models", Ann. Inst. Henri Poincaré Comb. Phys. Interact., to appear.

8. S. Carrozza, F. Ferrari, A. Tanasa, G. Valette, "On the large D expansion of Hermitian multi-matrix models", Journal of Mathematical Physics 61, 073501 (2020)

9. S. Carrozza, V. Pozsgay, "SYK-like tensor quantum mechanics with $\mathrm{Sp}(N)$ symmetry", Nucl. Phys. B 941 (2019) 28-52

10. S. Carrozza, "Large N limit of irreducible tensor models: $O(N)$ rank-3 tensors with mixed permutation symmetry", JHEP (2018) 2018:39

11. S. Carrozza, "Discrete Renormalization Group for SU(2) Tensorial Group Field Theory", Ann. Inst. Henri Poincaré Comb. Phys. Interact. **2**, 49-112 (2015)

12. A. Baratin, S. Carrozza, D. Oriti, J. Ryan and M. Smerlak, "Melonic phase transition in group field theory", Lett. Math. Phys. **104**, 1003 (2014)

13. S. Carrozza, A. Tanasa, "Pfaffians and nonintersecting paths in graphs with cycles: Grassmann algebra methods", Adv. Appl. Math. **93** (2018) 108-120

Nicolò Defenu – Elenco Titoli

Email: ndefenu@phys.ethz.ch **Date:** September 13, 2021

1. Pubblicazioni

- **1) P. A. Murthy[†,*], N. Defenu[†,*], L. Bayha, M. Holten, P. M. Preiss, T. Enss, and S. Jochim**

  Quantum scale anomaly and spatial coherence in a 2D Fermi superfluid,
  Science **365**, 268-272 (2019).
  arXiv:1805.04734
  † corresponding authors.
  Author Contribution: N. Defenu proposed the comparison between real-space and momentum-space profiles at different stages of the breathing motion to assess the presence of quantum anomaly corrections, contributed to the analysis of the experimental data and substantially contributed to the manuscript. N. Defenu and P. A. Murthy contributed equally to the work.

- **2) N. Defenu**

  Metastability and discrete spectrum of long-range systems
  Proc. Nat. Acad. Sci. **118**, e210178511 (2021)
  arXiv:2012.15808
  Author Contribution: single author.

- **3) A. P. Millán, G. Gori, F. Battiston, T. Enss, N. Defenu**

  Complex networks with tuneable dimensions as a universality playground
  Phys. Rev. Research **3**, 023015 (2021)
  arXiv:2006.10421
  Author Contribution: N. Defenu conceived the study and supervised the entire investigation.

- **4) N. Defenu**

  Quantum adiabatic cycles and their breakdown: an analytic solution
  Comm. Phys. **4**, 150 (2021)
  arXiv:2011.14846
  Author Contribution: single author.

- **5) N. Defenu, T. Enss, M. Kastner and G. Morigi**

  Dynamical Critical Scaling of Long-Range Interacting Quantum Magnets,
  Phys. Rev. Lett. **121**, 240403 (2018).
  arXiv:1805.00008
  Author Contribution: N. Defenu initiated the study by mapping the slow drive universal behaviour of the fully connected quantum Ising model to the driven quantum harmonic oscillator case. Then, he pursued both the numerical and analytical calculations, analysed the results in the light of previous investigations and substantially contributed to the draft.

- **6) N. Defenu, P. Mati, I.G. Marian, I. Nandori, and A. Trombettoni**

  Truncation effects in the functional renormalization group study of spontaneous symmetry breaking,
  JHEP **1505** (2015) 141.
  arXiv:1410.7024
  Author Contribution: N. Defenu carried on the mathematical proof that the lower order functional RG equations for $O(N)$ field theories are consistent with the Mermin-Wagner theorem.

- **7) G. Bighin[*], N. Defenu[*], T. Enss, I. Nandori, L. Salasnich, A. Trombettoni**

BKT-paired phase in coupled XY models,
Phys. Rev. Lett. **123**, 100601 (2019).
arXiv:1907.06253
Author Contribution: N. Defenu devised the mean-field+RG approach suited to study topological phase transitions in coupled bilayer models, pursued the numerical calculations for the phase boundaries and analysed the results in comparison with exact numerical simulations. N. Defenu and G. Bighin contributed equally to the work.

- **8) P. M. Preiss, J. H. Becher, R. Klemt, V. Klinkhamer, A. Bergschneider, N. Defenu, and S. Jochim**

  High-Contrast Interference of Ultracold Fermions,
  Phys. Rev. Lett. **122**, 143602 (2019).
  arXiv:1811.12939
  Author Contribution: N. Defenu supported the experimental investigations with theoretical insight, deriving the exact mathematical expressions for the correlation functions of the few particle system.

- **9) W. Rzadkowski, N. Defenu, S. Chiacchiera, A. Trombettoni, G. Bighin.**

  Detecting hidden and composite orders in layered models via machine learning,
  New J. Phys. **22**, 093026 (2020)
  arXiv:1907.05417
  Author Contribution: N. Defenu supported the analysis with knowledge on critical phenomena in coupled systems.

- **10) N. Defenu, A. Trombettoni and S. Ruffo**

  Criticality and Phase Diagram of Quantum Long-Range O(N) models,
  Phys. Rev. **B 96**, 104432 (2017).
  arXiv:1704.00528
  Author Contribution: N. Defenu conceived the study, derived the RG equations for the study of quantum long-range $O(N)$ models, performed the numerical calculations and conceptualised the manuscript, deriving the connections with previous investigations.

- **11) N. Defenu, A. Trombettoni, and A. Codello**

  Fixed Points Structure & Effective Fractional Dimension for O (N) Models with Long-Range Interactions,
  Phys. Rev. E **92**, 052113 (2015).
  arXiv:1409.8322
  Author Contribution: N. Defenu pursued the derivation of the non-perturbative flow equations in the long-range case, derived the numerical results and wrote the manuscript.

- **12) N. Defenu, T. Enss and J. C. Halimeh**

  Criticality and Phase Dynamical criticality and domain-wall coupling in long-range Hamiltonians,
  Phys. Rev. **B 100**, 014434 (2019).
  arXiv:1902.08621
  Author Contribution: N. Defenu together with Jad C. Halimeh realised the connection between the absence of anomalous dynamical phase and absence of domain wall couplings in the Kitaev chain representation of the long-range Ising model. He performed the numerical calculations to prove the conjecture and substantially contributed to the draft.

Notes

- The symbol $*$ indicates equal contributions.
- Selecting the title or the arXiv reference shall automatically open the corresponding website.

Simone Del Vecchio

Elenco delle pubblicazioni

Pubblicazioni

1. Simone Del Vecchio, Luca Giorgetti,
Infinite index extensions of local nets and defects,
Rev. Math. Phys. Volume 30, Issue 02 (2018) 1850002.
https://doi.org/10.1142/S0129055X18500022
2. Simone Del Vecchio, Stefano Iovieno, Yoh Tanimoto,
Solitons and Nonsmooth Diffeomorphisms in Conformal Field Theory
Commun. Math. Phys. 375, 391-427 (2020).
https://doi.org/10.1007/s00220-019-03419-2
3. Simone Del Vecchio, Francesco Fidaleo, Luca Giorgetti, Stefano Rossi,
Ergodic Properties of the Anzai Skew Product on the Noncommutative Torus,
Ergodic Theory and Dynamical Systems, 1-22. (2020)
https://doi.org/10.1017/etds.2019.116
4. Simone Del Vecchio, Juerg Froehlich, Alessandro Pizzo, Stefano Rossi,
Lie-Schwinger block-diagonalization and gapped quantum chains: analyticity of the ground-state energy,
Journal of Functional Analysis, Volume 279, Issue 8 (2020) 108703, ISSN 0022-1236,
https://doi.org/10.1016/j.jfa.2020.108703
5. Simone Del Vecchio, Juerg Froehlich, Alessandro Pizzo, Stefano Rossi,
Lie-Schwinger block-diagonalization and gapped quantum chains with unbounded interactions,
Commun. Math. Phys. 381, pages 1115-1152 (2021)
https://doi.org/10.1007/s00220-020-03878-y
6. Sebastiano Carpi, Simone Del Vecchio, Stefano Iovieno, Yoh Tanimoto,
Positive energy representations of Sobolev diffeomorphism groups of the circle,
Anal.Math.Phys. 11, 12 (2021).
https://doi.org/10.1007/s13324-020-00429-5
7. Marcel Bischoff, Simone Del Vecchio, Luca Giorgetti,
Compact Hypergroups from Discrete Subfactors,
Journal of Functional Analysis, Volume 281, Issue 1, 1 July 2021, 109004
https://doi.org/10.1016/j.jfa.2021.109004
8. Simone Del Vecchio, Francesco Fidaleo, Stefano Rossi,
Skew-product dynamical systems for crossed product C^*-algebras and their ergodic properties
Journal of Mathematical Analysis and Applications, Volume 503, Issue 1, 1 November 2021, 125302
https://doi.org/10.1016/j.jmaa.2021.125302
9. Henning Bostelmann, Daniela Cadamuro, Simone Del Vecchio
Relative Entropy of coherent states on general CCR algebras
Accepted for publication in Commun. Math. Phys.
10. Simone Del Vecchio
Extensions in Quantum Field Theory: Q-systems and Defects for Infinite Index Inclusions
Tesi di dottorato.

Roma, 26/10/2021

Elenco Pubblicazioni Di Ruzza

1. P. Buttà, E. Caglioti, S. Di Ruzza, C. Marchioro, “On the propagation of a perturbation in an anharmonic system”, Journal of Statistical Physics, Vol. **127** No. 2, pp. 313-325, 2007.
2. A. Celletti, S. Di Ruzza, C. Lhotka, L. Stefanelli, “Nearly-Integrable Dissipative Systems and Celestial Mechanics”, The European Phys. Jour. - Special Topics, Vol. **186**, n. 1, 33-66, 2010.
3. A. Celletti, S. Di Ruzza, “Resonances in the solar system”, First Meeting on Cultural Astronomy, edited by E. Badolati, LOFFREDO EDITORE Napoli, 2010.
4. A. Celletti, S. Di Ruzza, “Periodic and quasi-periodic orbits of the dissipative standard map”, DCDS-B, vol. **16**, n. 1, 151-171, 2011.
5. S. Di Ruzza, C. Lhotka, “High order normal form construction near the elliptic orbit of the Sitnikov problem”, Celestial Mechanics and Dynamical Astronomy: Vol. **111**, Issue 4, 449-464, 2011.
6. G. Schettino, S. Cicalò, S. Di Ruzza and G. Tommei “The relativity experiment of MORE: global full-cycle simulation and results”, Proceedings of 2nd International Workshop in Metrology for Aerospace, 2015.
7. S. Cicalò, G. Schettino, S. Di Ruzza, E.M. Alessi, G. Tommei and A. Milani “The BepiColombo MORE gravimetry and rotation experiments with the ORBIT14 software”, Monthly Notices of Royal Astronomical Society, Vol. **457** Issue2, pp. 1507-1521, 2016.
8. G. Schettino, S. Di Ruzza, F. De Marchi, S. Cicalò, G. Tommei and A. Milani, “The radio science experiment with BepiColombo mission to Mercury”, Memorie della Società Astronomica Italiana, Vol. **87**, 24-29, 2016.
9. F. Cardin, S. Di Ruzza, L. Donà, “Il problema degli n-corpi in relatività generale”, Padova University Press, 2019, Traduzione dal francese all’italiano dell’ultimo lavoro di Tullio Levi Civita pubblicato postumo nel 1950, “Le problème des n corps en relativité générale”. Introduzione, traduzione e note a cura di Franco Cardin, Sara Di Ruzza e Leonardo Donà
10. S. Di Ruzza, J. Daquin, G. Pinzari, “Symbolic dynamics in a binary asteroid system”, Communications in Nonlinear Science and Numerical Simulation, Vol. **91**, 2020.
11. Tesi di Dottorato.

Elenco numerato delle pubblicazioni e tesi di dottorato

1. A. Duca. Simultaneous global exact controllability in projection of infinite 1D bilinear Schrödinger equations. Dynamics of Partial Differential Equations, 17(3):275–306, 2020.

2. A. Duca. Controllability of bilinear quantum systems in explicit times via explicit control fields. Internat. J. Control, 94(3):724–734, 2021.

3. A. Duca. Bilinear quantum systems on compact graphs: well-posedness and global exact controllability. Automatica J. IFAC, 123:109324, 2021.

4. A. Duca. Global exact controllability of bilinear quantum systems on compact graphs and energetic controllability. SIAM J. Control Optim., 58(6):3092–3129, 2020.

5. K. Ammari, A. Duca. Controllability of localized quantum states on infinite graphs through bilinear control fields. Internat. J. Control, 94(7):1824–1837, 2021.

6. K. Ammari, A. Duca. Controllability of periodic bilinear quantum systems on infinite graphs. Journal of Mathematical Physics, 61(10):101507, 2020.

7. A. Duca, R. Joly, D. Turaev. Permuting quantum eigenmodes by a quasi-adiabatic motion of the potential wall. Journal of Mathematical Physics, 61(10):101511, 2020.

8. A. Duca, R. Joly, Schrödinger equation in moving domains. Annales Henri Poincaré, 22(6):2029–2063, 2021.

9. M. Abdelli, A. Ben Aissa, A. Duca, Well-posedness and exponential decay for the Euler-Bernoulli beam conveying fluid equation with non-constant velocity and dynamical boundary conditions. Z. Angew. Math. Phys, 72(2):49, 2021.

Tesi. A. Duca, Analysis of the controllability of bilinear closed quantum systems, Thèse de doctorat en Mathématiques et applications - Politecnico di Torino, 2018.

LIST OF PUBLICATIONS

PEYMAN ESLAMI

1 Eslami, Peyman; Melbourne, Ian; Vaienti, Sandro. Sharp statistical properties for a family of multi-dimensional non-Markovian non-conformal intermittent maps. *Adv. Math.* **388** (2021), 107853.

2 Eslami, Peyman. Inducing schemes for multi-dimensional piecewise expanding maps. *Discrete Contin. Dyn. Syst.* Online first: 10.3934/dcds.

3 Eslami, Peyman; Liverani, Carlangelo. Mixing rates for symplectic almost Anosov maps. *Nonlinearity* **34** (2021), 3709–3731.

4 Eslami, Peyman. Stretched-exponential mixing for $\mathscr{C}^{1+\alpha}$ skew products with discontinuities. *Ergodic Theory Dynam. Systems* **37** (2017), no. 1, 146–175.

5 Butterley, Oliver; Eslami, Peyman. Exponential mixing for skew products with discontinuities. *Trans. Amer. Math. Soc.* **369** (2017), no. 2, 783–803.

6 Boyarsky, Abraham; Eslami, Peyman; Góra, Pawel; Li, Zhenyang; Meddaugh, Jonathan; Raines, Brian E. Chaos for successive maxima map implies chaos for the original map. *Nonlinear Dynam.* **79** (2015), no. 3, 2165–2175.

7 Eslami, Peyman; Góra, Pawel. Stronger Lasota-Yorke inequality for one-dimensional piecewise expanding transformations. *Proc. Amer. Math. Soc.* **141** (2013), no. 12, 4249–4260.

8 Li, Zhenyang; Góra, Pawel; Boyarsky, Abraham; Proppe, Harald; Eslami, Peyman. Family of piecewise expanding maps having singular measure as a limit of ACIMs. *Ergodic Theory Dynam. Systems* **33** (2013), no. 1, 158–167.

9 Góra, Pawel; Boyarsky, Abraham; Eslami, Peyman. Metastable systems as random maps. *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* **22** (2012), no. 11, 1250279, 11 pp.

10 Eslami, Peyman; Misiurewicz, Michal. Singular limits of absolutely continuous invariant measures for families of transitive maps. *J. Difference Equ. Appl.* **18** (2012), no. 4, 739–750.

11 Eslami, Peyman; Góra, Pawel. On eventually expanding maps of the interval. *Amer. Math. Monthly* **118** (2011), no. 7, 629–635.

12 Acosta, Gerardo; Eslami, Peyman; Oversteegen, Lex G. On open maps between dendrites. *Houston J. Math.* **33** (2007), no. 3, 753–770.

PhD Thesis: Eslami, Peyman. On existence and stability of absolutely continuous invariant measures in some chaotic dynamical systems, Concordia University, 2011.

Published articles and preprints are available in PDF format at https://peymaneslami.com/.

DAVIDE FERMI

Publications List

1. D. Fermi, L. Pizzocchero,
Local zeta regularization and the scalar Casimir effect. A general approach based on integral kernels,
World Scientific Publishing, Singapore (2017) [276 pages].
ISBN: 978-981-3224-99-5 (hardcover); 978-981-3225-01-5 (ebook)
URL: https://www.worldscientific.com/worldscibooks/10.1142/10570

2. D. Fermi, M. Gengo, L. Pizzocchero,
Integrable scalar cosmologies with matter and curvature,
Nucl. Phys. B **957** (2020), 115095 [102 pages].
DOI: 10.1016/j.nuclphysb.2020.115095
URL: https://www.sciencedirect.com/science/article/pii/S0550321320301814
https://arxiv.org/abs/2001.03228 [gr-qc]

3. M. Correggi, D. Fermi,
Magnetic perturbations of anyonic and Aharonov-Bohm Schrödinger operators,
J. Math. Phys. **62**(3) (2021), 032101 [25 pages]. See also arXiv:2006.09056 [math-ph].
DOI: 10.1063/5.0018933
URL: https://aip.scitation.org/doi/10.1063/5.0018933
https://arxiv.org/abs/2006.09056

4. D. Fermi, L. Pizzocchero,
A time machine for free fall into the past,
Class. Quant. Grav. **35**(16) (2018), 165003 [42 pages].
DOI: 10.1088/1361-6382/aace6e
URL: https://iopscience.iop.org/article/10.1088/1361-6382/aace6e
https://arxiv.org/abs/1803.08214v3 [gr-qc]

5. C. Cacciapuoti, D. Fermi, A. Posilicano,
The semiclassical limit on a star-graph with Kirchhoff conditions,
Analysis and Math. Phys. **11** (2021), 45 [43 pages].
DOI: 10.1007/s13324-020-00455-3
URL: https://link.springer.com/article/10.1007%2Fs13324-020-00455-3
arXiv:2005.03790 [math-ph]

6. C. Cacciapuoti, D. Fermi, A. Posilicano,
The semi-classical limit with a delta potential,
Annali di Matematica Pura ed Applicata (1923 -) **200** (2021), 453–489 [37 pages].
DOI: 10.1007/s10231-020-01002-4
URL: https://link.springer.com/article/10.1007%2Fs10231-020-01002-4
https://arxiv.org/abs/1907.05801v1 [math-ph]

7. C. Cacciapuoti, D. Fermi, A. Posilicano,
Scattering from local deformations of a semitransparent plane,
J. Math. Anal. Appl. **473**(1) (2019), 215-257 [43 pages].
DOI: 10.1016/j.jmaa.2018.12.045
URL: https://www.sciencedirect.com/science/article/pii/S0022247X18310849
https://arxiv.org/abs/1807.07916 [math-ph]
Corrigendum,
J. Math. Anal. Appl. **482**(1) (2020), 123554 [2 pages].
DOI: 10.1016/j.jmaa.2019.123554
URL: https://www.sciencedirect.com/science/article/pii/S0022247X19308224

8. D. Fermi,
The Casimir energy anomaly for a point interaction,
Mod. Phys. Lett. A **35**(03) (2020), 2040008 [5 pages].
DOI: 10.1142/S0217732320400088
URL: https://www.worldscientific.com/doi/pdf/10.1142/S0217732320400088
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9. D. Fermi,
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12. C. Cacciapuoti, D. Fermi, A. Posilicano,
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13. D. Fermi,
A functional analytic framework for local zeta regularization and the scalar Casimir effect,
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Advisor: Prof. Livio Pizzocchero.

Milano, October 21, 2021

Davide Fermi

ELENCO DELLE PUBBLICAZIONI DEL CANDIDATO

Cognome: Giacomelli
Nome: Emanuela Laura

- Articoli in rivista:

1. M. Correggi, E.L. Giacomelli, *Almost flat angles in surface superconductivity,* **Nonlinearity 34,** 7633-7661 (2021). doi: 10.1088/1361-6544/ac24e0.

2. M. Correggi, E.L. Giacomelli, *Effects of corners in surface superconductivity,* **Calc. Var. Partial Differential Equations 60**, 236 (2021). doi: 10.1007/s00526-021-02101-7.

3. M. Falconi, C. Hainzl, E.L. Giacomelli, M. Porta, *The Dilute Fermi Gas via Bogoliubov Theory,* ***Ann. Henri Poincaré*** **22,** 2283–2353 (2021). doi.org/10.1007/s00023-021-01031-6.

4. M. Correggi, E.L. Giacomelli, *Surface Superconductivity in Presence of Corners,* **Rev. Math. Phys. 29** (2017), 175000. doi: 10.1142/S0129055X17500052.

- Tesi di dottorato:

1. E.L. Giacomelli, Surface Superconductiviy in Presence of Corners

- Preprint:

1. W. Assaad, E.L. Giacomelli, *3D-Schrödinger operators under magnetic steps,* preprint arXiv:2108.04580

München, 28 ottobre 2021

LISTA PUBBLICAZIONI DI GIULIANI FILIPPO

(1) R. Feola, F. Giuliani, Quasi-periodic traveling waves on an infinitely deep perfect fluid under gravity, accettato per la pubblicazione in Memoirs of the American Mathematical Society (2021), (167 pagine).

(2) F. Giuliani, Transfers of energy through fast diffusion channels in some resonant PDEs on the circle, Discrete and Continuous Dynamical Systems-Series A, 41 (11), 5057–5085 (2021). DOI 10.3934/dcds.2021068 , (29 pagine).

(3) F. Giuliani, M. Guardia, P. Martin and S. Pasquali, Chaotic-like transfers of energy in Hamiltonian PDEs, Communications in Mathematical Physics, 384, 1227-1290, https://doi.org/10.1007/s00220-021-03956-9 (2021), (64 pagine).

(4) F. Giuliani, M. Guardia, P. Martin and S. Pasquali, Chaotic resonant dynamics and exchanges of energy in Hamiltonian PDEs, Atti della Accademia Nazionale dei Lincei, Classe di Scienze Fisiche, Matematiche e Naturali, Rendiconti Lincei Matematica e Applicazioni, 32, 149-166 (2021). DOI 10.4171/RLM/931, (16 pagine).

(5) R. Feola and F. Giuliani, Time quasi-periodic traveling gravity water waves in infinite depth, Atti della Accademia Nazionale dei Lincei, Classe di Scienze Fisiche, Matematiche e Naturali, Rendiconti Lincei Matematica e Applicazioni, 31, 901–916 (2020). DOI 10.4171/RLM/919 , (16 pagine).

(6) R. Feola, F. Giuliani and M. Procesi, Reducible KAM tori for Degasperis-Procesi equation, Communications in Mathematical Physics, 377, 1681–1759 (2020). (79 pagine).

(7) R. Feola, F. Giuliani and M. Procesi, Reducibility for a class of weakly dispersive linear operators arising from the Degasperis Procesi equation, Dynamics of Partial Differential Equations 16(1): 25-94 (2019). (69 pagine).

(8) R. Feola, F. Giuliani, R. Montalto and M. Procesi, Reducibility of first order operators on tori via Moser theorem, Journal of Functional Analysis 276(3) : 932-970 (2019). (39 pagine)

(9) R. Feola, F. Giuliani and S. Pasquali, On the integrability of the Degasperis-Procesi equa- tion: control of Sobolev norms and Birkhoff resonances, Journal of Differential Equations 266 (6), 3390-3437 (2018). (48 pagine)

(10) F. Giuliani, Quasi-periodic solutions for quasi-linear generalized KdV equations, Journal of Differential Equations, 262, 5052-5132 (2017). (81 pagine)

11) F. Giuliani, KAM for quasi-linear PDEs, tesi di dottorato disponibile al link http://hdl.handle.net/20.500.11767/57306 (2017), (263 pagine).

27/10/2021

ELENCO PUBBLICAZIONI

CANDIDATO: Giulietti Paolo

Il sottoscritto

COGNOME GIULIETTI NOME PAOLO

consapevole che chiunque rilascia dichiarazioni mendaci, forma atti falsi o ne fa uso è punito ai sensi del codice penale e delle leggi speciali in materia,

PRESENTA LE SEGUENTI PUBBLICAZIONI

1) P. Giulietti. “On Transfer Operators for Anosov Flows”. PhD thesis. Universitá degli studi di Roma "La Sapienza", 2011
2) C. Liverani P. Giulietti and M. Pollicott. “Anosov Flows and Dynamical Zeta Functions”. In: Annals of Mathematics (2013), pp. 687–773.
3) P. Giulietti. “Zeta functions and Continuous time Dynamics.” In: ed. by A. A. Pinto and D. Zilberman. Vol. 73. Springer Proceedings in Mathematics and Statistics. Springer-Verlag, 2014, pp. 285–303.
4) P Giulietti, A.O. Lopes, D. Marcon and B. Kloeckner. “The Calculus of Thermodynamic Formalism" (2018). doi: 10.4171/JEMS/814 in "Journal of the European Mathematical Society"
5) A.O. Lopes P. Giulietti and V. Pit. “Duality between Eigenfunctions and Eigendistributions of Ruelle and Koopman operators via an integral kernel”. In: Stochastics and Dynamics 16-3 (2016)
6) P. Giulietti, C. Liverani. “Parabolic dynamics and Anisotropic Banach spaces” in "Journal of the European Mathematical Society" (2019). doi: 10.4171/JEMS/892
7) C. Bonanno, P. Giulietti, M. Lenci "Infinite mixing for one-dimensional maps with an indifferent fixed point" In: Nonlinearity 31.11 (2018). doi.Org / 10 . 1088 / 1361 – 6544/aadc04
8) M. Lenci C. Bonanno P. Giulietti. “Global-local mixing for the Boole Map”. In: Chaos, Solitons and Fractals (2018). doi: 10.1016/j.chaos.2018.03.020
9) S. Galatolo, P. Giulietti "Linear response, dynamical systems with additive noise and the control of their statistical properties" In: "Nonlinearity" (2019). doi: 10.1088/1361-6544/ab0c2e
10) P. Giulietti, P. Koltai, S. Vaienti Targets and Holes. Online - Proceedings of the American Mathematical Society}, year={2020}, doi={10.1090/proc/15384}
11) P. Giulietti, A. Hammerlindl and D. Ravotti. quantitative global-local mixing for accessible skew products . Annales Henri Poincaré (2021). doi: 10.1007/s00023-021-01102-8
12) P. Giulietti, S.Marmi, and M. Tanzi. “Random-like properties of chaotic forcing”. In: arxiv.org:2104.06434 (2021)

PISA 29/09/2021

Elenco delle pubblicazioni scientifiche presentate a scopi concorsuali

Rafael Leon Greenblatt

Le pubblicazioni presentate per scopi di valutazione nel presente concorso sono le seguenti:

1. Non-integrable Ising Models in Cylindrical Geometry: Grassmann Representation and Infinite Volume Limit (con G. Antinucci e A. Giuliani); Annales Henri Poincaré (ISSN 1424-0661) pubblicato elettronicamente a https://doi.org/10.1007/s00023-021-01107-3, 2021.

2. Continuum limit of random matrix products in statistical mechanics of disordered systems (con F. Comets e G. Giacomin); Comm. Math. Phys. (ISSN: 1432-0916) vol. 369, pp. 171-219, 2019.

3. Singular Behavior of the Leading Lyapunov Exponent of a Product of Random 2×2 Matrices (con G. Genovese e G. Giacomin), Comm. Math. Phys. (ISSN: 1432-0916) vol. 351 pp. 923-958, 2017.

4. The scaling limit of the energy correlations in non integrable Ising models (con A. Giuliani e V. Mastropietro); J. Math. Phys. (ISSN: 0022-2488), vol. 53, p. 095214, 2012.

5. Proof of Rounding of First Order Transitions in Low-Dimensional Quantum Systems with Quenched Disorder (con M. Aizenman e J.L. Lebowitz), J. Math. Phys. (ISSN: 0022-2488), vol. 53, p. 023301, 2012.

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7. Rounding of First Order Transitions in Low-Dimensional Quantum Systems with Quenched Disorder (con M. Aizenman e J.L. Lebowitz), Phys. Rev. Lett. (ISSN: 0031-9007), vol. 103 p. 197201, 2009.

8. Product measure steady states of generalized zero range processes (con J.L. Lebowitz), J. Phys. A (ISSN: 1751-8113), vol. 39 pp. 1565–1574, 2006.

inoltre della tesi di dottorato intitolato "Effects of Quenched Randomness on Classical and Quantum Phase Transitions", accettata da Rutgers University in 2010.

Copie di tali pubblicazioni sono allegate alla presente domanda in forma PDF dentro un cartello ZIP, numerati come sopra.

ELENCO DELLE PUBBLICAZIONI

Il sottoscritto Marco Alberto Javarone, presenta le seguenti 12 pubblicazioni scientifiche:

1. Dynamics of one-dimensional spin models under the line-graph operator, Marco A. Javarone, Josh A. O'Connor, Proceedings of the Royal Society A 477 (2250), 20210282, DOI: https://doi.org/10.1098/rspa.2021.0282, 2021

2. An epidemiological model with voluntary quarantine strategies governed by evolutionary game dynamics, M.A. Amaral, M.M. de Oliveira, M.A. Javarone, Chaos, Solitons and Fractals 143 (110616), 2021

3. Heterogeneity in evolutionary games: an analysis of the risk perception, M.A. Amaral and Marco A. Javarone, Proceedings of the Royal Society A, 476(2237), 2020

4. Strategy equilibrium in dilemma games with off-diagonal payoff perturbations, M.A. Amaral and Marco A. Javarone, Physical Review E, 101(6), 2020

5. Heterogeneous update mechanisms in evolutionary games: mixing innovative and imitative dynamics. Marco A. Amaral and Marco A. Javarone. Physical Review E 97, 2018

6. The Beneficial Role of Mobility for the Emergence of Innovation. G. Armano and Marco A. Javarone, Scientific Reports, 7 (1781), 2017

7. The Role of Noise in the Spatial Public Goods Game. Marco A. Javarone and Federico Battiston. Journal of Statistical Mechanics: Theory and Experiment P073404, 2016

8. Statistical Physics of the Spatial Prisoner's Dilemma with Memory-aware Agents. Marco A. Javarone. European Physical Journal B (89:2) 2, 2016

9. Conformity-driven agents support ordered phases in the spatial public goods game. Marco A. Javarone, Alberto Antonioni, Francesco Caravelli, EuroPhysics Letters (EPL - Europhysics Letters), 114(3), 38001, 2016

10. Conformism-driven phases of opinion formation on heterogeneous networks: The q-voter model case. Marco A. Javarone and T. Squartini, Journal of Statistical Mechanics: Theory and Experiment, P10002, 2015

11. Social Influences in Opinion Dynamics: the Role of Conformity. Marco A. Javarone. Physica A: Statistical Mechanics and Its Applications – volume 414, 2014

12. Network Strategies in the Election Campaigns. Marco A. Javarone. Journal of Statistical Mechanics: Theory and Experiment – volume 2014 – P08013, 2014

Presenta inoltre la Tesi di Dottorato dal titolo:

Statistical Physics of Evolutionary Game Theory and its Applications, Marco Alberto Javarone, Università di Cagliari, Aprile 2017

Roma, 27/10/2021 Marco Alberto Javarone

Elenco delle pubblicazioni e della tesi di dottorato.

Publicazioni

[1] *"Algebraic entropy for face-centered quad equations"*, G. Gubbiotti, A.P. Kels, J. Phys. A: Math. Theor., 54, 455201, October 2021
[2] *"Lax matrices for lattice equations which satisfy consistency-around-a-face-centered-cube"*, A.P. Kels, 2021 Nonlinearity 34 7064 September 2021
[3] *"Entanglement of Two Disjoint Intervals in Conformal Field Theory and the 2D Coulomb Gas on a Lattice"*, T. Grava, A.P. Kels, E. Tonni, Phys. Rev. Lett. 127, 141605 (2021) September 2021
[4] *"Interaction-round-a-face and consistency-around-a-face-centered-cube"*, A.P. Kels, J. Math. Phys. 62(3):033509 March 2021
[5] *"Lens generalisation of τ-functions for the elliptic discrete Painlevé equation"*, A.P. Kels, M. Yamazaki, Int. Math. Res. Not. 1, 110-151 January 2021
[6] *"Integrable quad equations derived from the quantum Yang-Baxter equation"*, A.P. Kels, Lett. Math. Phys. 110, 1477-1557, January 2020
[7] *"Extended Z-invariance for integrable vector and face models and multicomponent integrable quad equations"*, A.P. Kels, J. Stat. Phys. 176, 1375–1408, July 2019
[8] *"Elliptic hypergeometric sum/integral transformations and supersymmetric lens index"*, A.P. Kels, M. Yamazaki, SIGMA 14, 013, February 2018
[9] *"Lens elliptic gamma function solution of the Yang-Baxter equation at roots of unity"*, A.P. Kels, M. Yamazaki, J. Stat. Mech., 023108, February 2018
[10] *"Quasi-classical expansion of the star-triangle relation and integrable systems on quad-graphs"*, V.V. Bazhanov, A.P. Kels, S.M. Sergeev, J. Phys. A: Math. Theor., 49 464001, October 2016
[11] *"New solutions of the star-triangle relation with discrete and continuous spin variables"*, A.P. Kels, J. Phys. A: Math. Theor., 48 435201, October 2015
[12] *"Comment on star-star relations in statistical mechanics and elliptic gamma-function identities"*, V.V. Bazhanov, A.P. Kels, S.M. Sergeev, J. Phys. A: Math. Theor., 46, 152001, February 2013

Tesi di dottorato

"Analytic and numerical investigation of lattice models", A.P. Kels, The Australian National University 2013, doi: 10.25911/5d51513e143a4 (thesis.pdf)

Elenco delle pubblicazioni presentate dal candidato

Alessandro Manacorda

Bando per ricercatore RTDb di cui alla G.U. n.77 del 28/09/2021

- Articoli pubblicati in riviste *peer-reviewed*

1. Alessandro Manacorda, Grégory Schehr and Francesco Zamponi. Numerical solution of the dynamical mean field theory of infinite-dimensional equilibrium liquids. J. Chem. Phys. 152, 164506 (2020).
2. Alessandro Manacorda and Andrea Puglisi. Lattice model to derive the fluctuating hydrodynamics of active particles with inertia. Phys. Rev. Lett. 119, 208003 (2017).
3. Carlos A. Plata, Alessandro Manacorda, Antonio Lasanta, Andrea Puglisi, and An- tonio Prados. Lattice models for granular-like velocity fields: finite-size effects. J. Stat. Mech. (2016) 093203.
4. Alessandro Manacorda, Carlos A. Plata, Antonio Lasanta, Andrea Puglisi, and Antonio Prados. Lattice models for granular-like velocity fields: Hydrodynamic description. J. Stat. Phys. 164, 810 (2016).
5. Antonio Lasanta, Alessandro Manacorda, Antonio Prados, and Andrea Puglisi. Fluctuating hydrodynamics and mesoscopic effects of spatial correlations in dissipative systems with conserved momentum. New J. Phys. 17, 083039 (2015).
6. Alessandro Manacorda, Andrea Puglisi, and Alessandro Sarracino. Coulomb friction driving Brownian motors. Commun. Theor. Phys. 62, 505 (2014).

- Tesi di dottorato

7. Alessandro Manacorda. Lattice Models for Fluctuating Hydrodynamics in Granular and Active Matter.

List of publications and Ph.D. Thesis

1) **A new approach to transport coefficients in the quantum spin Hall effect** (with Gianluca Panati and Stefan Teufel). *Annales Henri Poincaré* **22**, 1069–1111 (2021). https://doi.org/10.1007/s00023-020-00974-6.

2) **Spin conductance and spin conductivity in topological insulators: analysis of Kubo-like terms** (with Gianluca Panati and Clément Tauber). *Annales Henri Poincaré* **20**, 2071–2099 (2019). https://doi.org/10.1007/s00023-019-00784-5.

3) **The Haldane model and its localization dichotomy** (with Domenico Monaco, Massimo Moscolari and Gianluca Panati). *Rendiconti di Matematica e delle sue Applicazioni* **39**, 307–327 (2018). http://www1.mat.uniroma1.it/ricerca/rendiconti/ARCHIVIO/2018(2)/307-327.pdf.

4) **A mathematical analysis of spin and charge transport in topological insulators**. *Ph.D. thesis*, "La Sapienza" University of Rome (2018).

In addition, there are two submitted preprints as claimed in my Curriculum vitae.

Place and date: Trieste, October 27, 2021

Elenco delle pubblicazioni e della tesi di dottorato

Stefano Pasquali

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Email: stefano.pasquali@math.lu.se

1. F. Giuliani, M. Guardia, P. Martin and S. Pasquali, *Chaotic resonant dynamics and exchanges of energy in Hamiltonian PDEs*, Rend. Lincei Mat. Appl. 32 (2021), 149-166, DOI 10.4171/RLM/931 (equivalent preprint on arXiv:2011.12793)

2. F. Giuliani, M. Guardia, P. Martin and S. Pasquali, *Chaotic-like transfers of energy in Hamiltonian PDEs*, Commun. Math. Phys., https://doi.org/10.1007/s00220-021-03956-9 (equivalent preprint on arXiv:2006.09309)

3. M. Gallone and S. Pasquali, *Metastability phenomena in two-dimensional rectangular lattices with nearest-neighbour interaction*, Nonlinearity, vol. 34, 4983 https://doi.org/10.1088/1361-6544/ac0483 (equivalent preprint on arXiv:1911.12648)

4. S. Pasquali, *Dynamics of the nonlinear Klein-Gordon equation in the non-relativistic limit*, Annali di Mat. Pura ed Applicata (1923 -) 198(3), 903-972, https://doi.org/10.1007/s10231-018-0805-1 (preprint on arXiv:1703.01609 and arXiv:1712.03768)

5. R. Feola, F. Giuliani and S. Pasquali, *On the integrability of Degasperis-Procesi equation: control of the Sobolev norms and Birkhoff resonances*, J. Diff. Eq. 266 (6), 3390-3437, https://doi.org/10.1016/j.jde.2018.09.003 (equivalent preprint on arXiv:1802.00035)

6. G. Benettin, S. Pasquali and A. Ponno, *The Fermi-Pasta-Ulam problem and its underlying integrable dynamics: an approach through Lyapunov Exponents*, J. Stat. Phys. 171 (4), 521-542, https://doi.org/10.1007/s10955-018-2017-x (equivalent preprint on arXiv:1801.05199)

7. S. Pasquali, *A Nekhoroshev type theorem for the nonlinear Klein-Gordon equation with potential*, Discr. Cont. Dyn. Sys. B 23 (9), 3573-3594, doi: 10.3934/dcdsb.2017215 (equivalent preprint on arXiv:1705.03105)

8. S. Pasquali, *Almost global existence for the nonlinear Klein-Gordon equation in the nonrelativistic limit*, J. Math. Phys. 59, 011502, https://doi.org/10.1063/1.4994969 (equivalent preprint on arXiv:1703.01618)

9. Tesi di dottorato: *Long time dynamics of the Klein-Gordon equation in the non-relativistic limit*, 2017; Relatore: Prof. Dario Bambusi

Publications

10. R. Reuvers. Generalized Pauli constraints in large systems: the Pauli principle dominates. *Journal of Mathematical Physics* 62(3): 032204, 2021.

9. C.J.F. van de Ven, G.C. Groenenboom, R. Reuvers and N.P. Landsman. Quantum spin systems versus Schrödinger operators: A case study in spontaneous symmetry breaking. *SciPost Physics* 8(2): 022, 2020.

8. S. Fournais, M. Napiórkowski, R. Reuvers and J.P. Solovej. Ground state energy of a dilute two-dimensional Bose gas from the Bogoliubov free energy functional. *Journal of Mathematical Physics* 60: 071903, 2019.

7. R. Reuvers. Lower bound on entanglement in subspaces defined by Young diagrams. *Journal of Mathematical Physics* 60(1): 012201, 2019.

6. R. Reuvers. An algorithm to explore entanglement in small systems. *Proceedings of the Royal Society* A 474(2214): 20180023, 2018.

5. M. Napiórkowski, R. Reuvers and J.P. Solovej. Calculation of the critical temperature of a dilute Bose gas in the Bogoliubov approximation. *Europhysics Letters* 121(1): 10007, 2018.

4. M. Napiórkowski, R. Reuvers and J.P. Solovej. The Bogoliubov free energy functional II. The dilute limit. *Communications in Mathematical Physics* 36(1): 347–403, 2018.

3. M. Napiórkowski, R. Reuvers and J.P. Solovej. The Bogoliubov free energy functional I. Existence of minimizers and phase diagram. *Archive for Rational Mechanics and Analysis* 229(3): 1037–1090, 2018.

2. E.A. Carlen, E.H. Lieb and R. Reuvers. Entropy and entanglement bounds for reduced density matrices of fermionic states. *Communications in Mathematical Physics* 344(3): 655–671, 2016.

1. N.P. Landsman and R. Reuvers. A Flea on Schrödinger's Cat. *Foundations of Physics* 43(3): 373–407, 2013.

Doctoral thesis

R. Reuvers. Analysis of the Bogoliubov free energy functional: a variational description of a weakly-interacting Bose gas. PhD thesis. Department of Mathematical Sciences, Faculty of Science, University of Copenhagen, 2016.

ELENCO DELLE PUBBLICAZIONI E TESI DI DOTTORATO PRESENTATE

0. Matteo Rosati. Decoding Protocols for Classical Communication on Quantum Channels. PhD Thesis in Physics, Scuola Normale Superiore di Pisa, Supervisor: Prof. Vittorio Giovannetti (defended 13/10/2017).
1. Matteo Rosati. Performance of coherent frequency-shifted keying for classical communication on quantum channels. Proceedings 2021 IEEE ISIT, 640 (2021).
2. Andrea Cacioppo; Janis Noetzel; Matteo Rosati. Compound Channel Capacities under Energy Constraints and Application. Proceedings 2021 IEEE ISIT, 902 (2021).
3. Matias Bilkis; Matteo Rosati; Raul Morral Yepes; John Calsamiglia Costa. Real-time calibration of coherent-state receivers: Learning by trial and error. Physical Review Research 2, pp. 033295. 2020.
4. Maria García Díaz; Benjamin Desef; Matteo Rosati; Dario Egloff; John Calsamiglia Costa; Andrea Smirne; Michalis Skotiniotis; Susana Huelga. Accessible coherence in open quantum system dynamics. Quantum. 4, pp.249. 2020.
5. Marco Fanizza; Matteo Rosati; Michalis Skotiniotis; John Calsamiglia Costa; Vittorio Giovannetti. Beyond the swap test: optimal estimation of quantum state overlap. Physical Review Letters. 124, pp.060503. 2020.
6. Maria Garcia Diaz; Kun Fang; Xin Wang; Matteo Rosati; Michalis Skotiniotis; John Calsamiglia Costa; Andreas Winter. Using and reusing coherence to realize quantum processes. Quantum. Verein zur Förderung des Open Access Publizierens in den Quantenwissenschaften. 2, pp.100. 2018.
7. Matteo Rosati; Andrea Mari; Vittorio Giovannetti. Narrow Bounds for the Quantum Capacity of Thermal Attenuators. Nature Communications. Nature. 9, pp.4339. 2018.
8. Matteo Rosati; Andrea Mari; Vittorio Giovannetti. Capacity of coherent-state adaptive decoders with interferometry and single-mode detectors. Physical Review A. APS. 96, pp.012317. 2017.
9. Matteo Rosati; Giacomo De Palma; Andrea Mari; Vittorio Giovannetti. Optimal quantum state discrimination via nested binary measurements. Physical Review A. APS. 95, pp.042307. 2017.
10. Matteo Rosati; Andrea Mari; Vittorio Giovannetti. Multi-Phase Hadamard receivers for classical communication on lossy bosonic channels. Physical Review A. APS. 94, pp.062325. 2016.
11. Matteo Rosati; Vittorio Giovannetti. Achieving the Holevo bound via a bisection decoding protocol. Journal of Mathematical Physics. AIP. 57, pp.062204. 2016.
12. Matteo Rosati; Andrea Mari; Vittorio Giovannetti. Coherent-state discrimination via non-heralded probabilistic amplification. Physical Review A. APS. 93, pp.062315. 2016.

Roma, 28/10/2021.

LISTA DI PUBBLICAZIONI PRESENTATE

(1) F. Bagarello and F.G. Russo, Realization of Lie algebras of high dimension via pseudo-bosonic operators, J. Lie Theory 30 (2020), 925-938.
(2) F. Bagarello, Y. Bavuma and F.G. Russo, Topological decompositions of the Pauli group and their influence on dynamical systems, Math. Phys. Anal. Geom. 24 (2021) , Article No: 16.
(3) F. Bagarello and F.G. Russo, On the presence of families of pseudo-bosons in nilpotent Lie algebras of arbitrary corank. J. Geom. Physics 137 (2019), 124-131.
(4) F.Bagarello and F.G. Russo, A description of pseudo-bosons in terms of nilpotent Lie algebras, J. Geom. Physics 125 (2018), 1–11.
(5) D. Dikranjan, A. Giordano Bruno and F.G.Russo, Finiteness of topological entropy for locally compact abelian groups, Glasgow Math. J. (2020), doi: 10.1017/S0017089520000038.
(6) M.S. Mongiovi', F.G. Russo and M. Sciacca, A mathematical description of glitches in neutron stars, MNRAS 469 (2017), 2141-2150.
(7) S. Nardulli and F.G. Russo, On the Hamilton's isoperimetric ratio in complete Riemannian manifolds of finite volume, J. Funct. Anal., DOI: 10.1016/j.jfa.2020.108843.
(8) P. Niroomand, M. Parvizi and F.G. Russo, Some criteria for detecting capable Lie algebras, J. Algebra 384 (2013), 36-64.
(9) P. Niroomand and F.G. Russo, A note on the Schur multiplier of nilpotent Lie algebras, Comm. Algebra 39 (2011), 1293–1297.
(10) W. Herfort, K.H. Hofmann and F.G. Russo, When is the sum of two closed subgroups closed in a locally compact abelian group ?, Topology Appl. 270 (2020), 106958.
(11) W. Herfort, K.H. Hofmann and F.G. Russo, Locally Compact Groups with Permutable Subgroups, Adv. Math. (2021), DOI:10.1016/j.aim.2021.107894.
(12) K.H. Hofmann and F.G. Russo, The probability that x and y commute in a compact group, Math. Proc. Cambridge Phil. Soc. 153 (2012), 557-571.

ELENCO TITOLI E PUBBLICAZIONI AI FINI DELLA VALUTAZIONE

List of other titles relevant for the Evaluation

#	Year	Title / Description / Attached file
1	Since 2021	Abilitazione scientifica Nazionale - Professore II fascia - Mat/07 Attached file: “Titolo3_ASN.pdf”
2	2020	Participation to Doctoral Committee - University of Zurich Attached file: “Titolo4_CommissionePhD.pdf”
3	Since 2021	Editor For the European Physical Journal Plus Attached file: “Titolo5_Editor_EPJP_Schiavina.pdf”
4	2016-2018	Peer reviewed Postdoctoral grant “Early Mobility Postdoc grant” of the Swiss National Science Foundation Attached file: “Titolo6_Berkeley_SNF_Fellowship_2016.pdf”
5	2018-2020	Peer reviewed Postdoctoral grant “Advanced Mobility Postdoc grant” of the Swiss National Science Foundation Attached file: “Titolo7_Berkeley_SNF_Fellowship_2018.pdf”
6	2019-2020	Peer Reviewed Scientific project “Molecular Foundry user proposal” of the Lawrence Berkeley Laboratory. Attached file: “Titolo8_Foundry_User_2020.pdf”
7	2019-2021	Participation to Research network: “Swiss-MAP, Swiss Mathematical Physics network”.
8	2016	Journal of Mathematical physics “Editor’s pick” for publication: Contreras I., Ercolessi E., Schiavina M. Journal of Mathematical Physics 57(6), 062209 (2016) *On the geometry of mixed states and the Fisher information tensor.* Attached file: “Titolo9_JMPPICK.pdf”
9	2017-2021	Supervision of Master theses Attached file: “Titolo10_MasterTheses.pdf”
10	2016-2021	Teaching experience (UZH and ETH) Attached file: “Titolo11_Teaching_Dossier.pdf”
11	2018	Invitation to Max Planck Institute for Mathematics, Bonn, as Guest Researcher Attached file: “Titolo12_Bonn.pdf”

List of Publications selected for Evaluation by Committee
(Authors in Alphabetical Order, journal impact factor referred to year of publication or closest data available **Source: Scijournal**)

1. Canepa G., Schiavina M.,
   Accepted for Publication in Advances in Theoretical and Mathematical Physics (2021) - Journal IF(2020) 2.712
   Fully extended BV-BFV description of General Relativity in three dimensions.

2. Canepa G., Cattaneo A. S., Schiavina M.,
   Communications in Mathematical Physics, 385, 1571-1614 (2021). DOI: 10.1007/s00220-021-04127-6 - Journal IF(2020) 4.347
   General Relativity and the AKSZ construction.

3. Rejzner, K., Schiavina M.,
   Communications in Mathematical Physics, 385, 1083-1132 (2021). DOI: 10.1007/s00220-021-04061-7 - Journal IF(2020) 4.347

Asymptotic symmetries in the BV-BFV formalism.

4. Canepa G., Cattaneo A. S., Schiavina M.,
   To appear in Advances in Theoretical and Mathematical Physics 25 (2) (2021) - Journal IF(2020) 2.712
   Boundary structure of General Relativity in tetrad variables.

5. Contreras I., Schiavina M.,
   Manuscripta Mathematica (2021) DOI: 10.1007/s00229-021-01311-9 - Journal IF(2020) 1.261
   Kahler fibrations in quantum information theory.

6. Hadfield C., Kandel S., Schiavina M.,
   Annales Henri Poincaré, 21 (12), 3835-3867 (2020) - Journal IF(2020) 2.886
   Ruelle zeta function from field theory.

7. Cattaneo A. S., Schiavina M.,
   Advances in Theoretical and Mathematical Physics, 23 (8) (2019), - Journal IF(2019) 2.432
   BV-BFV approach to General Relativity: Palatini–Cartan–Holst action.

8. Mnev P., Wernli K., Schiavina M.,
   Annales Henri Poincaré, 21 (3), 993-1044 (2020) - Journal IF(2020) 2.886
   Towards Holography in the BV-BFV setting.

9. Cattaneo A. S., Schiavina M.,
   Annales Henri Poincaré, 20 (2), 445-480 (2019) - Journal IF(2019) 1.594
   The reduced phase space of Palatini–Cartan–Holst theory.

10. Cattaneo A. S., Schiavina M., Selliah I.,
    Letters in Mathematical Physics, 108 (8), 1873–1884 (2018) - Journal IF(2018) 1.206
    BV equivalence between triadic gravity and BF theory in three dimensions.

11. Cattaneo A.S., Schiavina M.,
    Letters in Mathematical Physics, 107(2), 375-408, (2017) - Journal IF(2017) 1.308
    On time.

12. Cattaneo A. S., Schiavina M.,
    Journal of Mathematical Physics 57(2), 023515 (2016) - Journal IF(2016) 1.054
    BV-BFV approach to General Relativity: Einsten Hilbert action.

13. *TESI DI DOTTORATO - BV-BFV Approach to General Relativity, University of Zurich, 2016*

PAPERS

peer-reviewed

[1] G. M. Graf and J. Shapiro, *The bulk-edge correspondence for disordered chiral chains,* Commun. Math. Phys. **363**, 829–846 (2018)

[2] C. Tauber and J. Shapiro, *Strongly disordered Floquet topological systems*, Ann. Henri Poincaré **20**, 1837–1875 (2019)

[3] J. Shapiro, *The bulk-edge correspondence in three simple cases*, Rev. Math. Phys. **32**(3) (2020)

[4] E. Fonseca, J. Shapiro, A. Sheta, A. Wang and K. Yamakawa, *Two-dimensional time-reversal-invariant topological insulators via Fredholm theory*, Math. Phys. Anal. Geom. **23**, 29 (2020)

[5] J. Shapiro, *The topology of mobility-gapped insulators*, Lett. Math. Phys. **110**, 2703–2723 (2020)

[6] C. L. Fefferman, J. Shapiro and M. I. Weinstein, *Lower bound on quantum tunneling for strong magnetic fields*, arXiv:2006.08025 (2020), to appear in SIAM Journal on Mathematical Analysis

submitted

[7] J. Shapiro and M. I. Weinstein, *Tight-binding reduction and topological equivalence for strong magnetic fields*, arXiv:2010.12097 (2020)

[8] J. Shapiro and M. I. Weinstein, *Is the continuum SSH model topological?*, arXiv:2107.09146 (2021)

[9] J. Shapiro, *Incomplete Localization for Disordered Chiral Strips*, arXiv:2108.10978 (2021)

[10] A. Bols, J. Schenker and J. Shapiro *Fredholm Homotopies for Strongly-Disordered 2D Insulators*, arXiv:2110.07068 (2021)

[11] M. Aizenman, M. Harel, R. Peled and J. Shapiro, *Depinning in the integer-valued Gaussian field and the BKT phase of the 2D Villain model* arXiv:2110.09498 (2021)

in preparation

[12] M. Aizenman and J. Shapiro *The 2D Poisson-Sigma Model* (2021)

List of publications

1. M.Tanzi, "Heterogeneously Coupled Maps. From high to low dimensional systems through ergodic theory" (2017) PhD Thesis.

2. M. Tanzi, T. Pereira, and S. van Strien "*Robustness of ergodic properties of non-autonomous piecewise expanding maps.*" Ergodic Theory and Dynamical Systems , Volume 39 , Issue 4 , April 2019 , pp. 1121 - 1152. Cambridge University Press.

3. T. Pereira, S. van Strien, and M. Tanzi. "*Heterogeneously Coupled Maps: hub dynamics and emergence across connectivity layers.*" Journal of the European Mathematical Society Volume 22, Issue 7, 2020, pp. 2183–2252. EMS Press.

4. D. Eroglu, M. Tanzi, S. van Strien, T. Pereira "*Revealing Dynamics, Communities, and Criticality from Data*". Phys. Rev. X 10, 021047 – Published 1 June 2020). Published by the American Physical Society.

5. M. Tanzi and L.-S. Young. "*Nonuniformly hyperbolic systems arising from coupling of chaotic and gradient-like systems.*" Discrete and Continuous Dynamical Systems October 2020, 40(10): 6015-6041. Published by the American Institute of Mathematical Sciences.

6. F. Sélley and M. Tanzi. "*Linear Response for a Family of Self-Consistent Transfer Operators.*" Communications in Mathematical Physics 382, pages 1601–1624, 15 February 2021. Published by Springer Nature Switzerland AG.

7. C. Bose, A. Quas, and M. Tanzi. "*Random Composition of LSV Maps Sampled Over Large Parameter Ranges.*" Nonlinearity, Volume 34, Number 6, Published 4 June 2021, IOP Publishing Ltd & London Mathematical Society.

8. P. Giulietti, S. Marmi, and M. Tanzi. "*Random-like properties of chaotic forcing*" arxiv.org/abs/2104.06434.

9. M. Tanzi and L.-S. Young. "*Rigorous Results for some Examples of Excitation-Inhibition Networks*" arXiv:2105.03339.

10. F. Sélley and M. Tanzi. "*Synchronization for Networks of Globally Coupled Maps in the Thermodynamic Limit*" arXiv:2110.05618

Lista di pubblicazioni scelte

1. A Navas, M Triestino
On the invariant distributions of C2 circle diffeomorphisms of irrational rotation number,
Math. Z. 274, no. 1 (2013), 315–321
IF: 0,881
Citations: 8

2. M. Triestino
Généricité au sens probabiliste dans les difféomorphismes du cercle,
Ensaios Matemáticos 27, Soc. Brasil. Mat. (2014). Français. (libro)
IF: n/a
Citations: 1

3. M Khristoforov, V Kleptsyn, M Triestino
Stationary random metrics on hierarchical graphs via (min,+)-type recursive distributional equations,
Commun. Math. Phys. 345, no. 1 (2016), 1–76
ISSN: 0010-3616, doi: 10.1007/s00220-016-2650-7
IF: 2,102
Citations: 0

4. C. Bonatti, Y. Lodha, M. Triestino
Hyperbolicity as an obstruction to smoothability for one-dimensional actions.
GEOMETRY & TOPOLOGY, vol. 23, p. 1841-1876,
ISSN: 1364-0380, doi: 10.2140/gt.2019.23.1841
IF: 1,48
Citations: 8

5. Alvarez S, Filimonov D, Kleptsyn V, Malicet D, Menino Coton C, Navas A, Triestino M
Groups with infinitely many ends acting analytically on the circle.
JOURNAL OF TOPOLOGY, vol. 12 (2019), p. 1315-1367,
ISSN: 1753-8416, doi:10.1112/topo.12118
IF: 1,64
Citations: 6

6. Malicet D, Mann K, Rivas C, Triestino M
Ping-pong configurations and circular orders on free groups.
GROUPS, GEOMETRY, AND DYNAMICS, vol. 13 (2019), p. 1195-1218
ISSN: 1661-7207, doi: 10.4171/GGD/519
IF: 0,742
Citations: 1

7. Triestino M (a cura di) Di Brown A.
Entropy, Lyapunov exponents, and rigidity of group actions.
ENSAIOS MATEMÁTICOS, vol. 33 (2019), p. 1-197,
ISBN: 978-85-8337-159-5, ISSN: 2175-0432 (curatela)
IF: n/a
Citations: 0

8. Rivas C, Triestino M
One-dimensional actions of Higman’s group.
DISCRETE ANALYSIS, vol. 20 (2019)
ISSN: 2397-3129, doi: 10.19086/da.11151
IF: 1,18
Citations: 0

9. Lodha Y, Matte Bon N, Triestino M
Property FW, differentiable structures and smoothability of singular actions.
JOURNAL OF TOPOLOGY, vol. 13 (2020), p. 1119-1138
ISSN: 1753-8416, doi: 10.1112/topo.12151
IF: 1,64
Citations: 4

10. Matte Bon N, Triestino M
Groups of piecewise linear homeomorphisms of flows
Compositio Mathematica, vol. 156 (2020), 1595-1622
IF: 1,20
Citations: 1

11. Bonatti, C., Kim, S.-H., Koberda, T., Triestino, M.
Small C1 actions of semidirect products on compact manifolds
Algebraic and Geometric Topology, 2020, 20(6), pp. 3183–3203
IF: 0,876
Citations: 0

12. Triestino M
On James Hyde's example of non-orderable subgroup of Homeo(D,∂D)
L’ENSEIGNEMENT MATHEMATIQUE (2), vol. 66 (2020), no. 3-4, 409-418
IF: n/a
Citations: 0

ALESSIO TROIANI – ELENCO DELLE PUBBLICAZIONI

1. F. den Hollander, F. R. Nardi, A.Troiani; Metastability for Kawasaki dynamics with two types of particles: stable/metastable configurations and communication heights, *Journal of Statistical Physics*, 145, 1423–1457, 2011, https://doi.org/10.1007/s10955-011-0370-0
2. F. den Hollander, F. R. Nardi, A.Troiani; Metastability for Kawasaki dynamics at low temperature with two types of particles, *Electronic Journal of Probability*, 17(2), 1–26, 2012, doi:10.1214/EJP.v17-1693
3. F. den Hollander, F. R. Nardi, A.Troiani; Metastability for Kawasaki dynamics with two types of particles: critical droplets, *Journal of Statistical Physics*, 149, 1013–1057, 2012, https://doi.org/10.1007/s10955-012-0637-0
4. A. Troiani; Metastability for Kawasaki dynamics with two types of particles, PhD Thesis, 2012, ISBN 9789461914644, handle: http://hdl.handle.net/1887/20065
5. O. Costin, J. L. Lebowitz, E. R. Speer, A. Troiani; The blockage problem, *Bulletin of the Institute of Mathematics Academia Sinica (New Series)*, 8(1), 49–72, 2013, ISSN: 2304-7895 [online]
6. B. Scoppola, A. Troiani; Gaussian Mean Fields Lattice gas, *Journal of Statistical Physics*, 170, 1161-1176, 2018, https://doi.org/10.1007/s10955-018-1984-2
7. V. Apollonio, R. D'Autilia, B. Scoppola, E. Scoppola, A. Troiani; Criticality of measures on 2-d Ising configurations: from square to hexagonal graphs, *Journal of Statistical Physics*, 177, 1009-1021, 2019, https://doi.org/10.1007/s10955-012-0637-0
8. R. D'Autilia, L. Andrianaivo Nantenaina, A. Troiani; Parallel simulation of two–dimensional Ising models using Probabilistic Cellular Automata, *Journal of Statistical Physics*, 184, 9, 2021, https://doi.org/10.1007/s10955-021-02792-4
9. G. Pinzari, B. Scoppola, A. Troiani; Lonely Planets and Lightweight Asteroids: A Statistical Mechanics Model for the Planetary Problem. *Annales Henri Poincaré*, 2021, https://doi.org/10.1007/s00023-021-01099-0

Palestrina, 27 ottobre 2021 ALESSIO TROIANI

Publications presented for evaluation

October 20, 2021

1. F. Ares, M. Rajabpour and J. Viti, *Exact full counting statistics for the staggered magnetization and the domain walls in the XY spin chain*, Phys. Rev. E 103, 042107 (2021).

2. F. Ares and J. Viti, *Emptiness formation probability and Painlevé V equation in the XY spin chain*, J. Stat. Mech. 1 013105 (2020).

3. G. Gori and J. Viti, *Four-point boundary connectivities in critical two-dimensional percolation from conformal invariance*, JHEP 12 131 (2018).

4. I. Lyberg, V. Korepin, G. A. P. Ribeiro and J. Viti, *Phase separation in the six-vertex model with a variety of boundary conditions*, Journal of Mathematical Physics 59, 053301 (2018) [Invited contribution to Journal of Mathematical Physics special issue "To the memory of Ludwig Faddeev".]

5. M. Collura, A. De Luca and J. Viti, *Analytic solution of the domain wall initial state*, Phys. Rev. B 97, 081111 (2018).

6. G. Gori and J. Viti, *Exact logarithmic four-point functions in the critical Ising model*, Phys. Rev. Lett. 119, 191601 (2017).

7. J. Dubail, J-M. Stéphan, J. Viti and P. Calabrese, *Conformal Field Theory for Inhomogeneous One-dimensional Quantum Systems: the Example of Non-Interacting Fermi Gases*, Sci. Post 002 (2017).

8. N. Allegra, J. Dubail, J.M. Stephan and J. Viti, *Inhomogeneous field theory inside the arctic circle* , J. Stat. Mech. (2016) 053108.

9. D. Bernard, B. Doyon and J. Viti, *Non-Equilibrium Conformal Field Theory with Impurities*, J. Phys. A 48 (2015) 05FT01 [Highlights 2015].

10. A. De Luca, J. Viti, D. Bernard and B. Doyon, *Non-equilibrium thermal transport in the quantum Ising chain*, Phys. Rev. B 88 134301 (2013).

11. G. Delfino and J. Viti, *On three-point connectivity in two-dimensional percolation*, J.Phys. A: Math. Theor.44: 032001, (2011).

12. G. Delfino, J. Viti and J. Cardy, *Universal amplitude ratios of two-dimensional percolation from field theory*, J. Phys. A: Math. Theor.43: 152001, (2010) [Highlights 2010].

13. J. Viti, *Universal properties of two dimensional percolation*, Ph.D thesis, SISSA, Trieste (2012).

List of publications

Doctoral theses

1. Scaling limits in stochastic heat equation and stochastic chain model, March 2017

Journal Papers

2. Quasi-static limit for a hyperbolic conservation law (with Stefano Marchesani, Stefano Olla), *Nonlinear Differential Equations and Applications*, **28**, 53, 1–12, https://doi.org/10.1007/s00030-021-00716-5, 2021

3. Hyperbolic scaling limit of non-equilibrium fluctuations for a weakly anharmonic chain, *Electronic Journal of Probability*, **25**, 84, 1–40, https://doi.org/10.1214/20-EJP488, 2020

4. Equilibrium fluctuations for an anharmonic chain with boundary conditions in the Euler scaling limit (with Stefano Olla), *Nonlinearity*, **33**(4), 1466–1498, https://doi.org/10.1088/1361-6544/ab60da, 2020

5. A central limit theorem for stochastic heat equations in random environment, *Journal of Theoretical Probability* **31**(3), 1356–1379, https://doi.org/10.1007/s10959-017-0748-2, 2018

6. An invariance principle for stochastic heat equations with periodic coefficients, *Stochastic Analysis and Applications* **36**(2), 295–303, https://doi.org/10.1080/07362994.2017.1399800, 2018

7. Central limit theorem for finite and infinite dimensional diffusions in ergodic environments, *RIMS Kôkyûroku Bessatsu* **B59**, 57–68, 2016

Submitted preprints

8. Quasi-static limit for the asymmetric simple exclusion (with Anna De Masi, Stefano Marchesani, Stefano Olla), http://arxiv.org/abs/2103.08019, submitted to *Probability Theory and Related Fields*, in revision, 2021

9. Hydrodynamic limit for asymmetric simple exclusion with accelerated boundaries, http://arxiv.org/abs/2108.09345, submitted preprint, 2021

Others (symposium notes, etc.)

10. An invariance principle for stochastic heat equations with periodic coefficients, *RIMS Kôkyûroku 1952: Symposium on Probability Theory*, 143–148, 2015

11. Asymptotic behaviors in stochastic heat equations with periodic coefficients, *RIMS Kôkyûroku 1971: Mathematical Analysis of Viscous Incompressible Fluid*, 144–149, 2015

Date: 22/10/2021

ELENCO DELLE PUBBLICAZIONI E DELLA TESI DI DOTTORATO PRESENTATE

Marco Zamparo

Pubblicazioni:

1. **M. Zamparo** and A. Pelizzola
   Kinetics of the Wako-Saitô-Muñoz-Eaton model of protein folding
   Phys. Rev. Lett. **97** 068106 (2006)
   ISSN: 0031-9007

2. P. Bruscolini, A. Pelizzola, and **M. Zamparo**
   Rate determining factors in protein model structures
   Phys. Rev. Lett. **99** 038103 (2007)
   ISSN: 0031-9007

3. A. Imparato, A. Pelizzola, and **M. Zamparo**
   Ising-like model for protein mechanical unfolding
   Phys. Rev. Lett. **98** 148102 (2007)
   ISSN: 0031-9007

4. **M. Zamparo**
   An exactly solvable model for a β-hairpin with random interactions
   J. Stat. Mech. P 10013 (2008)
   ISSN: 1742-5468

5. **M. Zamparo**, A. Trovato, and A. Maritan
   Simplified exactly solvable model for β-amyloid aggregation
   Phys. Rev. Lett. **105** 108102 (2010)
   ISSN: 0031-9007

6. **M. Zamparo**
   Apparent multifractality of self-similar Lévy processes
   Nonlinearity **30** 2592-2611 (2017)
   ISSN: 0951-7715

7. **M. Zamparo**, L. Dall'Asta, and A. Gamba
   On the mean residence time in stochastic lattice-gas models
   J. Stat. Phys. **30** 120-134 (2019)
   ISSN: 0022-4715

8. D. Botto, A. Pelizzola, M. Pretti, and **M. Zamparo**
   Dynamical transition in the TASEP with Langmuir kinetics: mean-field theory
   J. Phys. A: Math. Theor. **52** 045001 (2019)
   ISSN: 1751-8113

9. **M. Zamparo**
   Large deviations in renewal models of statistical mechanics
   J. Phys. A: Math. Theor. **52** 495004 (2019)
   ISSN: 1751-8121

10. D. Botto, A. Pelizzola, M. Pretti, and **M. Zamparo**
    Unbalanced Langmuir kinetics affects TASEP dynamical transitions: mean-field theory
    J. Phys. A: Math. Theor. **53** 345001 (2020)
    ISSN: 1751-8113

11. **M. Zamparo**, D. Valdembri, G. Serini, I.V. Kolokolov, V.V. Lebedev, L. Dall'Asta, and A. Gamba
    Optimality in self-organized molecular sorting
    Phys. Rev. Lett. **126** 088101 (2021)
    ISSN: 0031-9007

12. **M. Zamparo**
    Large deviations in discrete-time renewal theory
    Stoch. Process. Their Appl. **139** 80-109 (2021)
    ISSN: 0304-4149

Tesi di dottorato:

1. **M. Zamparo**
   Wako-Saitô-Muñoz-Eaton model: protein folding kinetics and stretching
   Politecnico di Torino, Dipartimento di Fisica, 5 febbraio 2009

Lista Pubblicazioni allegate

1. F.Alouges, A.DeSimone, L.Giraldi and M.Zoppello.
   Self-propulsion of slender micro-swimmers by curvature control: N-link swimmers
   International Journal of Non-Linear Mechanics, 56 p:132-141, 2013.

2. L. Giraldi, P. Martinon, Marta Zoppello.
   Optimal Design for the three-link Purcell swimmer.
   Physical Review E 91, 023012 , 2015

3. F.Alouges, A.DeSimone, L.Giraldi, M.Zoppello.
   Can magnetic multilayers propel artificial micro-swimmers mimicking sperm cells?
   Soft Robotics 2(3): 117-128, 2015

4. F. Bagagiolo, R. Maggistro, M. Zoppello
   Swimming by switching
   Meccanica 52(14) 3499-3511 (2017)

5. D. Bauso, F. Bagagiolo, R. Maggistro, M. Zoppello
   Game theoretic decentralized feedback controls in Markov jump Processes
   J Optim Theory Appl (2017) 173(2) 704-726 (2017)

6. M. Zoppello, A. DeSimone, F. Alouges, L. Giraldi
   Modeling and steering magneto-elastic micro-swimmers inspired by the motility of sperm cells
   Atti dell'Accademia Peloritana dei Pericolanti-Classe di Scienze Fisiche, Matematica e Naturali 96, A12 (2018)

7. R. Maggistro, M. Zoppello
   Optimal motion of a scallop: some case studies
   IEEE Control Systems Letters 3(4),8725532, 841-846 (2019)

8. M. Zoppello, F. Cardin
   Swim-like motion of bodies immersed in an ideal fluid
   ESAIM: COCV 25(16) (2019)

9. N. Sansonetto, M. Zoppello
   On the trajectory generation of the Hydrodynamic Chapligyn sleigh
   IEEE Control Systems Letters 4(4), 9098917,922-927 (2020)

10. F. Fassò, S. Passarella, M. Zoppello
    Control of locomotion systems and dynamics in relative periodic orbits
    Journal of Geometric Mechanics,12(3), 395-420, (2020)

11. S. Turzi, M. Zoppello, D. Ambrosi
    Equilibrium of two rods in contact under pressure
    The Quarterly Journal of Mechanics and Applied Mathematics, hbaa016 (2021)
12. D. Ambrosi, L. Deorsola, S.S. Turzi, M. Zoppello
    Elementary mechanics of the mitral valve
    Accepted for pubblication in *SIAM Journal on Applied Mathematics* (SIAP)

Tesi di dottorato: “Controllability and optimization of deformable bodies in fluids: from biology to robotics” Supervisore: Franco Cardin

Maria Chiara Angelini

Dipartimento di Fisica, ed. Marconi, Sapienza Università di Roma, Piazzale Aldo Moro 5, 00185 Roma

Education

2020:	Habilitation for Associate Professor in Mathematical Physics (ASN S.C. 01/A4) (IT)
7th Feb 2013:	Ph.D in Physics, Sapienza U. of Rome (IT) *Title:* Renormalization group and critical properties of Long Range models, *Supervisor:* F. Ricci-Tersenghi
Sep 2009:	Ranked first among ~ 70 candidates, admission test for Ph.D program, Sapienza U. of Rome
Sep 2009:	MSc in Physics [*110/110 cum laude*], Sapienza U. of Rome (IT) *Title:* Entropic effects in the SG transition at null temperature *Supervisor:* F. Ricci-Tersenghi Graduate studies with an average mark of 29.81/30.
Sep 2007:	BSc in Physics [*110/110 cum laude*], Sapienza U. of Rome (IT) *Title:* Optimized Monte Carlo methods *Supervisor:* V. Marinari Undergraduate studies with an average mark of 29.69/30.

Fields of Research Interest

Statistical mechanics, disordered systems, renormalization group, inference and optimization problems.

Current Position

Sep 2018 – Today: RTDa (Temporary Assistant Professor) Physics Department, Sapienza U. of Rome (IT)

Previous Positions

Oct 2014 – Sep 2018:	Postdoctoral researcher, Physics Department, Sapienza U. of Rome (IT)
Nov 2012 – Oct 2014:	Postdoctoral researcher, ERC project NPRGGlass, Institut de Physique Théorique, CEA/Saclay (France).
Oct 2011 – Nov 2011:	Visitor, Tokyo Institute of Technology, Tokyo (Japan).

Training and supervision

Currently I am the advisor of 2 master students. I have been the advisor of 5 bachelor students, the co-advisor of 1 master student (Francesco Arceri now Ph.D. student at University of Oregon). I followed Ada Altieri (now lecturer at Université de Paris) during part of her Ph.D (before my maternity leave). Since 2020, I am external tutor for the Lab2go project with high-school students inside the PCTO (former school-work programme).

Teaching activities

2019 – 2021:	co-Lecturer for *Scientific Programming*, Sapienza U. of Rome (IT)
2018 – Today:	Lecturer for *Monte Carlo methods*, in Honours Programmes, Sapienza U. of Rome (IT)
2018:	Lecturer for *Scientific Programming*, Sapienza U. of Rome (IT) Students Opinion about the teacher (OPIS): 3.48/4 (OPIS average over Physics Department: 3.08/4)
2015 – 2018:	Teaching assistant for *Scientific Programming*, Sapienza U. of Rome (IT)
2013:	Masterclass *Dyson hierarchical model* (6 hours) at IPhT, CEA Saclay (FR)
2010:	Teaching assistant for *Mechanics*, Sapienza U. of Rome (IT)

Organization of scientific meetings

2021: Main organizer for a 4 weeks Nordita program *Hard Problems: Beyond Equilibrium Methods*, funded with €43K – postponed to 2022 due to COVID-19 crisis

Reviewing activities

2021: Member of the Ph.D. defence committee for Ilaria Paga, Sapienza U. of Rome (IT) and Universidad Complutense de Madrid (SP)

ANVUR reviewer for VQR 2015-2019 (Italian national agency for the evaluation of university and research)

Referee for Physical Review Letters, Physical Review B, Physical Review E, Journal of Statistical Physics, Journal of Statistical Mechanics, SciPost, Europhysics Letters, Physica A, IEEE Transactions on Signal and Information Processing, Digital Signal Processing

Career breaks

Feb 2015 – Jul 2015: Maternity leave
Nov 2016 – Apr 2017: Maternity leave
Dec 2019 – May 2020: Maternity leave

Current grants

(see project titles below)

Project title	Funding source	Amount	Period	Role
1.	Nordita	43K€	2022	PI
2.	Sapienza	4K€	2019–2022	PI
3.	INFN	5K€	2021	Team member
4.	Sapienza	13K€	2020–2022	Team-member
5.	LazioInnova	149830€	2021–2023	Team member

Finished projects

Project title	Funding source	Amount	Period	Role
6.	Sapienza	2780€	2016	PI
7.	MIUR, Italy	835100€	2012 – 2015	Team Member
8.	ERC-StG	1010800€	2011–2017	Team Member

List of project titles

1. Nordita-program entitled: "Hard Problems: Beyond Equilibrium Methods"
2. Gruppo di rinormalizzazione attorno alla soluzione di Bethe per Random Field Ising Model e Spin Glass in campo.
3. Equilibrium and Non-Equilibrium Statistical Mechanics of disordered systems, paradigms and Applications
4. Out of equilibrium relaxation dynamics in complex landscapes: from the Sherrington-Kirkpatrick model to the spherical mixed p-spin model and the planted constraint satisfaction problems
5. Nano-imaging endoscopico innovativo mediante tecniche di machine learning - NanoProbe
6. Disordered models: links and differences with glassy physics
7. Statistical mechanics of disordered and complex systems
8. Non Perturbative Renormalization Group Theory of Glassy Systems

Complete list of publications

- M.C.A., P Fachin, S de Feo, *Mismatching as a tool to enhance algorithmic performances of Monte Carlo methods for the planted clique model*, arXiv preprint arXiv:2106.0572 (2021), submitted to J. Stat. Mech.
- M.C.A., C. Lucibello, G. Parisi, G. Perrupato, F. Ricci-Tersenghi, T. Rizzo, *The loop expansion around the Bethe solution at zero temperature predicts an upper critical dimension equal to 8 for spin glass models in a field*, arXiv preprint arXiv:2103.17080 (2021), submitted to PRL.
- G Gradenigo, M.C.A., L Leuzzi, F Ricci-Tersenghi, *Solving the fully-connected spherical-spin model with the cavity method: equivalence with the replica results*, J. Stat. Mech. 113302 (2020).
- M.C.A., G. Parisi and F. Ricci-Tersenghi, *Comment on 'Real-space renormalization-group methods for hierarchical spin glasses'*, J. Phys. A: Math. Theor. **53** 418001 (2020).
- M.C.A., C. Lucibello, G. Parisi, F. Ricci-Tersenghi, T. Rizzo, *New loop expansion for the Random Magnetic Field Ising Ferromagnets at zero temperature*, PNAS **117**, 2268-2274 (2020).
- M.C.A., F. Ricci-Tersenghi, *Monte Carlo algorithms are very effective in finding the largest independent set in sparse random graphs*, Phys. Rev. E. 100, 013302 (2019).
- M. C. A., *Parallel Tempering for the planted clique problem*, J. Stat. Mech. (2018) 073404.
- M.C.A., G. Parisi, F. Ricci-Tersenghi, *One-loop topological expansion for spin glasses in the large connectivity limit*, EPL (Europhysics Letters) 121 (2), 27001 (2018).
- A. Altieri, M.C.A., C. Lucibello, G. Parisi, F. Ricci-Tersenghi, T. Rizzo, *Loop expansion around the Bethe approximation through the M-layer construction*, J. Stat. Mech. (2017) 113303.
- M.C.A., Giulio Biroli, *Real Space Migdal-Kadanoff Renormalisation of Glassy Systems: Recent Results and a Critical Assessment*, Journal of Statistical Physics, 1-23 (2017).
- M.C.A., Giulio Biroli, *Real space renormalization group theory of disordered models of glasses*, Proceedings of the National Academy of Sciences, 114 (13), 3328 (2017).
- M.C.A., F. Caltagirone, F. Krzakala, L. Zdeborova, *Spectral Detection on Sparse Hypergraphs*, Proc. 53th Annual Allerton Conference on Communication, Control, and Computing (2015).
- F. Krzakala, L. Zdeborova, M.C.A., F. Caltagirone, Statistical Physics of Inference and Bayesian Estimation, http://indico.ictp.it/event/a14244/material/10/0.pdf
- M.C.A. , Giulio Biroli, *Spin Glass in a Field: a New Zero-Temperature Fixed Point in Finite Dimensions*, Phys. Rev. Lett. 114, 095701 (2015).
- M.C.A. , Giulio Biroli, *The Super-Potts glass: a disordered model for glass-forming liquids*, Phys. Rev. B 90, 220201(R) (2014).
- M.C.A., G. Parisi and F. Ricci-Tersenghi, *Relations between Short Range and Long Range Ising models*, Phys. Rev. E 89, 062120 (2014).
- M.C.A., Ph.D. Thesis, *Renormalization group and critical properties of Long Range models*, http://hdl.handle.net/10805/2105 (2013).
- M.C.A., G. Parisi and F. Ricci-Tersenghi, *Ensemble Renormalization Group for Disordered Systems*, Phys. Rev. B 87, 134201 (2013).
- M.C.A., F. Ricci-Tersenghi, Y. Kabashima, *Compressed sensing with sparse, structured matrices*, Proc. Fiftieth Annual Allerton Conference on Communication, Control, and Computing, p. 808 (2012).
- M.C.A. and F. Ricci-Tersenghi, *Entropic long range order in a 3D spin glass model*, J. Stat. Mech. P02002 (2011).

I am the first author for 88% of them, the corresponding author for 82% of them

Conference and Seminar Presentations

With three maternity leaves (and three small children) I declined a number of invitations for international conferences. In the following I list the talks that I indeed gave:

- *Mismatched Monte Carlo Algorithms For The Planted Clique Problem*
  - 15 September 2021, invited talk, "Rigorous Evidence for Information-Computation Trade-offs", joint event: Simons intitute, Berkley – EPFL Lausanne
  - 29 September 2021, invited talk, "On Future Synergies for Stochastic and Learning Algorithms", Centre International de Rencontres Mathématiques CIRM Marseille.
- *Loop expansion around the Bethe solution for disordered models.*
  - 23 June 2021, contributed talk, "I Conference of the Italian Society of Statistical Physics - SIFS", Parma – online event.

- *How to solve sparse hard inference problems: (Replicated) Simulated Anneling vs Bayes optimal algorithms*
  - 3 July 2020, invited TNTgroup webinar
- *New loop expansion around the Bethe approximation and its application to disordered models.*
  - 11 September 2019, invited talk, "40 years of Replica Symmetry Breaking (RSB40)", Rome.
- *Real space Renormalization Group for Spin-Glasses: Migdal-Kadanoff vs Topological expansion*
  - 26 July 2016, invited talk, "Renormalisation Group Theory of Disordered Systems", satellite meeting of STATPHYS26, Paris.
- *Real Space Renormalization Group Theory of spin glasses and disordered Models of Glasses*
  - 22 July 2016, contributed talk, StatPhys26, Lyon.
- *Spin Glass in a Field: a surprising New Zero-Temperature Fixed Point in Finite Dimensions*
  - 1 December 2014, invited talk, IPhT, CEA, Saclay.
- *Relations between Short Range and Long Range Ising models*
  - 28 April 2014, invited talk, IPhT, CEA, Saclay.
- *Looking for a disordered model of finite dimensional glasses*
  - 31 January 2014, "Rencontre de Physique Statistique", Paris.
  - 25 September 2013, invited talk to "XCIX Congresso Nazionale Societa' Italiana di Fisica", Trieste.
- *Ensemble Renormalization Group for Disordered Systems*
  - 30 March 2012, invited talk to "Rejuvenating Concepts in Glass Physics", Paris.
  - 23 February 2012, "On the Bridge between Statistical physics and Optimization, Inference and Learning", Les Houches workshop.
  - 7 February 2012, ICTP, Trieste
  - 24 October 2011, Tokyo Institute of Technology, Yokohama
- *Entropic long range order in a 3D spin glass model*
  - 18 February 2011, "Statistical physics of complexity, optimization, and systems biology", Torino-Bardonecchia (Italy)

ASN Parameters

Papers in the last 5 years:	9
Renormalized* Papers in the last 5 years:	11
Total Citations:	167
Renormalized+ Total Citations:	191
Hirsch (H) index:	7

* Following ASN rules (articolo 2, comma 3 D.M. 602/2016) considering 10 months of maternity leave
+ Following ASN rules (articolo 2, comma 3 D.M. 602/2016) considering 15 months of maternity leave
Data from WoS/Scopus database (joined by IRIS database)

Last updated: October 22, 2021

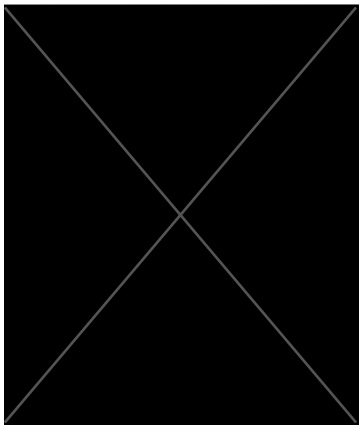
Giulia Basti

CURRICULUM VITAE

PERSONAL DATA

DATE OF BIRTH: [redacted]
PLACE OF BIRTH: [redacted]
CITIZENSHIP: [redacted]
ADDRESS: Gran Sasso Science Institute (GSSI)
Viale F. Crispi, 7 67100 L'Aquila (IT)
EMAIL: [redacted]
PERSONAL WEBPAGE: sites.google.com/view/giulia-basti/homepage
ORCID ID: 0000-0002-3745-6293

LANGUAGES: **Italian:** mother tongue
English: fluent
German: basic



ACADEMIC POSITIONS

12/2020 – Present	**PostDoc** – *Gran Sasso Science Institute, School of advanced studies (IT)* Mathematics Area
12/2017–11/2020	**PostDoc** – *Universität Zürich (CH)* Part of the research group of Prof. Benjamin Schlein

EDUCATION

18/01/2018	**Ph.D. in Mathematics** – *Sapienza, University of Rome (IT)* Thesis: Low Energy Behavior in Few-Particle Quantum Systems: Efimov Effect and Zero-Range Interactions Supervisor: Prof. Alessandro Teta
29/10/2014	**Master degree in Mathematics** – *Sapienza, University of Rome (IT)* Thesis: Hamiltoniane quantistiche con interazioni a zero-range per il problema dei tre corpi (transl.: Quantum Hamiltonian with point interactions for the three-body problem) Supervisor: Prof. Alessandro Teta Final mark: 110/110 cum laude
25/09/2012	**Bachelor degree in Mathematics** – *Sapienza, University of Rome (IT)* Thesis: Il modello di Cucker e Smale per la dinamica degli stormi (transl.: Cucker-Smale model for flocks dynamics) Supervisor: Prof. Paolo Buttà Final mark: 110/110 cum laude

RESEARCH INTERESTS

Universality in few-body quantum systems Efimov effect, with a special focus on its relation with Thomas effect and point interactions

Universality in many-body quantum systems Equilibrium properties of dilute Bose Gases. Study of the ground state energy and low energy spectrum.

PUBLICATIONS AND PREPRINTS

1. **G. B., S. Cenatiempo, A. Olgiati, G. Pasqualetti, B. Schlein**, "Ground state energy for a Bose gas with hard core potential: the Gross-Pitaevskii regime", in preparation.
2. **G. B., C. Cacciapuoti, D. Finco, A. Teta**, "Three-body Hamiltonian with regularized zero-range interactions in dimension three", preprint, `arXiv:2107.07188`.
3. **G. B., S. Centiempo, B. Schlein**,"A new second order upper bound for the ground state energy of dilute Bose gases", *Forum of Mathematics, Sigma* (to appear). Preprint: `arXiv:2101.06222v2`.
4. **G. B.**, "Universal low-energy behavior in a quantum Lorentz gas with Gross-Pitaevskii potentials", *Contribution to the Oberwolfach Rep. "Lorentz Gas Dynamics: particle systems and scaling limits". Rep.No. 10/2019, 629–631.* doi: 10.14760/OWR-2019-10
5. **G. B., R. Figari, A. Teta**, "Regularized quadratic forms for a three boson system with zero-range interactions", *Rend. Mat. Appl. (7) 39* (2018), 205–216.
6. **G. B., S. Cenatiempo, A. Teta**, "Universal Low-Energy Behavior in a Quantum Lorentz Gas with Gross-Pitaevskii Potentials", *Math. Phys. Anal. Geom. 21, 11* (2018). doi:10.1007/s11040-018-9268-2
7. **G. B., C. Cacciapuoti, D. Finco, A. Teta**,"The three-body problem in dimension one: From short-range to contact interactions"*J. Math. Phys. 59, 072104* (2018). doi:10.1063/1.5030170
8. **G. B., A. Teta**,"Efimov Effect for a Three-Particle System with Two Identical Fermions", *Ann. Henri Poincaré 18* (2017), 3975–4003. doi: 10.1007/s00023-017-0608-8
9. **G. B., A. Teta**, "On the quantum mechanical three-body problem with zero-range interactions" In: *Functional Analysis and Operator Theory for Quantum Physics*, EMS Ser. Congr. Rep., EMS Publishing House, Zurich, 2017, 71–93. doi: 10.4171/175

COMMUNICATIONS

INVITED SEMINARS

06/2021 **Munich-Aarhus-Santiago Seminar in Mathematical Physics**, (online)
LMU Munich (DE), Aarhus University (DK), Pontificia Universidad Catlica de Chile, Santiago (CL)

02/2021 **Oberseminar "Analysis and Mathematical Physics"**, (online)
LMU Munich (DE)

01/2021 **SMAQ seminars**, (online)
L'Aquila (IT)

01/2018 **Mathematical Physics Seminar**,
Sapienza University of Rome (IT)

06/2017 **PDE and Mathematical Physics seminar**,
University of Zurich (CH)

05/2017 **Analysis Seminar**,
Politecnico di Torino (IT)

INVITED TALKS

03/2019 **Mini-Workshop: Lorentz Gas Dynamics: particle systems and scaling limits**,
Mathematisches Forschungsinstitut Oberwolfach (MFO), Oberwolfach (DE)

07/2018 **Mathematical Challenges of Zero-Range Physics**,
Istituto Nazionale di Alta Matematica Francesco Saveri (INDAM), Roma (IT)

11/2016 **Mathematical Challenges of Zero-Range Physics**,
Scuola Internazionale Superiore di Studi Avanzati (SISSA), Trieste (IT)

07/2015 **Trails in Quantum Mechanics and Surroundings (TQMS) 2015**,
Università dell'Insubria, Como (IT)

CONTRIBUTED TALKS

08/2021 **International Conference in Mathematical Physics (ICMP)**,
International Conference Centre, Geneva (CH)

06/2021 **Emergent theories for wave turbulence and particle dynamics**,
SwissMAP Research Station, Les Diablerets (CH)

02/2021 **Mathematics of Condensed Matter and Beyond (MCMB)**,
American University of Beirut (LB) (online)

02/2018 **Mathematical Challenges in Quantum Mechanics (MCMQ) 2018**,
Sapienza, University of Rome (IT)

05/2017 **Assemblea Scientifica GNFM 2017**,
Montecatini Terme (IT)

POSTERS

04/2017 **Spectral Days 2017**,
University of Stuttgart (DE)

11/2016 **Mathematical Foundations of Physics**,
Mathematical Institute LMU, Munich (DE)

FELLOWSHIPS

2020 **Selected for a PostDoc fellowship** *GSSI, L'Aquila (IT)*

2014 **Selected for a PhD scholarship** *Sapienza, University of Rome (IT)*

2014 **Borsa di collaborazione** *Sapienza, University of Rome (IT)*,
150 working hrs. at the library of the Mathematics Department, selection based on merit.

2010 **Percorso d'eccellenza** *Department of Math. Sapienza, University of Rome (IT)*,
Additional courses and full compensation of the tuition fees for the academic year 2011/2012,
30 positions available.

COORDINATION AND PARTICIPATION IN RESEARCH PROJECTS

2021/2022 **Member** *Emergent Features in Quantum Bosonic Theories and Semiclassical Analysis*,
funded by Progetto Giovani GNFM 2021. (P.I.: Dr. Marco Falconi)

2018/2019 **Member** *Dinamica e scattering per sistemi a molti corpi* ,
funded by Progetto Giovani GNFM 2018. (P.I.: Dr. Claudio Cacciapuoti)

2017/2020 **Member** *Dynamical and energetic properties of Bose-Einstein condensates*
funded by Swiss National Science Foundation (SNF) grants. (P.I.: Prof. B. Schlein)

2016/2017 **Member** *Limiti di scala e sistemi quantistici a molte particelle con interazioni di contatto*)
funded by Progetto Giovani GNFM 2016. (P.I.: Dr. Claudio Cacciapuoti)

2016 **P. I.** *Effetto Efimov ed Effetto Thomas in Sistemi Quantistici a Molti Corpi*,
funded by Progetto di Avvio alla Ricerca 2016 Sapienza, University of Rome (1 Participant)

VISITING PERIODS

08/2021 *University of Zurich (CH)* (1 week),
by invitation of Prof. Benjamin Schlein

06/2019 *Università dell'Insubria, Como (IT)* (1 week),
by invitation of Prof. Claudio Cacciapuoti

06/2018 *University of Zurich (CH)* (1 week),
by invitation of Prof. Benjamin Schlein

04/2018 *Gran Sasso Science Institute, L'Aquila (IT)* (1 week),
by invitation of Dr. Serena Cenatiempo

03/2017 *Politecnico di Torino (IT)* (1 week),
by invitation of Prof. Riccardo Adami

01/2016 *Scuola Internazionale Superiore degli Studi Avanzati, Trieste (IT)* (1 week),
by invitation of Dr. Alessandro Michelangeli

EVENTS BY INVITATION

09/2019 **Many-Body Quantum Systems** (1 week),
Mathematisches Forschungsinstitut Oberwolfach (MFO), Oberwolfach (DE)

03/2019 **Many-body theory, effective equations & PDEs** (1 week),
Institut Mittag-Leffler, Djursholm (SE)

03/2019 **Lorentz Gas Dynamics: particle systems and scaling limits** (1 week),
Mathematisches Forschungsinstitut Oberwolfach (MFO), Oberwolfach (DE)

TEACHING

2020-Present **PhD courses held at GSSI**
· An Invitation to Quantum Statistical Mechanics

2017-2020 **Teaching Assistant at the Institute for Mathematics, University of Zurich**
· Analysis III (2nd year class)
· Analysis II (1st year class)
· Analysis I (1st year class)
· Linear Algebra II (1st year class)

2016-2018 **Teaching Assistant at University of Rome Unitelma Sapienza**
· Online Remedial Course in Mathematics "OFA" (1st year)

2015-2017 **Teaching Assistant at Sapienza, University of Rome**
· Mathematical Analysis (1st year, Faculty of Engineering)
· Remedial Course in Mathematics "OFA" (1st year, Faculty of Science)

ORGANIZATION OF SCHOOLS AND WORKSHOPS

What's New in Statistical Mechanics (School in preparation),
Gran Sasso Science Institute (GSSI), L'Aquila (IT), March 27-31, 2023

Statistical and Quantum Mechanics: reconsidering their foundations in the light of new cutting edge experiments and theoretical models,
Gran Sasso Science Institute (GSSI), L'Aquila (IT), September 20-24, 2021

From Equilibrium Phenomena Towards Open Quantum Systems (online),
Gran Sasso Science Institute (GSSI), L'Aquila (IT), March 22-26, 2021

REVIEWING ACTIVITY

Referee for *Mathematical Physics, Analysis and Geometry; Springer Proceeding Series*

OUTREACH ACTIVITIES

Indovina chi viene stasera? Aperitivo con le Matematiche (online),
Event addressed to students from the last years of high school on the occasion of the initiative "May12, Celebrating Women in Mathematics", June 3, 2021

MEMBERSHIP OF MATHEMATICAL ASSOCIATIONS

- *International Association of Mathematical Physics* (IAMP)
- *Gruppo Nazionale per la Fisica Matematica* (GNFM)

L'Aquila, 27/10/2021

Curriculum Vitae Chiara Boccato

Personal Information

Name:	Chiara Boccato
Address:	Dipartimento di Matematica, Via Saldini 50, 20133 Milano, Italy
Citizenship:	Italian

Professional Experience

since 05/2021	Researcher position at University of Milan *"Ricercatore a tempo determinato di tipo A"*
11/2017-03/2021	Postdoc at Institute of Science and Technology Austria (IST Austria), Klosterneuburg (Vienna), with Prof. Robert Seiringer

Education and Degrees

30/08/2017	*Dr. sc. nat. (Dottore di Ricerca)*, University of Zurich Thesis title: "Dynamical and spectral properties of Bose gases with singular interactions" Advisor: Prof. Benjamin Schlein
04/2013-09/2017	Graduate studies Topic: Mathematical aspects of many–body quantum mechanics University of Zurich (02/2014-09/2017) Hausdorff Center for Mathematics, University of Bonn (04/2013-01/2014) Advisor: Prof. Benjamin Schlein
27/11/2012	*M.Sc. Degree in Physics (Laurea Magistrale in Fisica)*, University of Milano–Bicocca Specialization: Theoretical Physics Grade: 110/110 cum laude Thesis title: "Hartree dynamics as the limit of the evolution of a quantum many–body system" Advisors: Prof. Riccardo Adami, Prof. Alessandro Tomasiello
10/2009-11/2012	Master studies in Theoretical Physics at the University of Milano–Bicocca

24/04/2009	*B.Sc. Degree in Physics (Laurea in Fisica)*, University of Milano–Bicocca Specialization: Theoretical Physics Grade: 109/110 Thesis title: "Solitons and instantons in scalar field theories" Advisor: Prof. Silvia Penati
10/2005-04/2009	Bachelor studies in Physics at the University of Milano–Bicocca
2005	*Maturità scientifica*, Liceo scientifico statale "A. Volta", Milan Grade: 91/100

Research Interests

My research is centered on the mathematical investigation of interacting quantum many–body systems. I have been studying the derivation of effective equations for the dynamics of Bose–Einstein condensates and the spectral properties of the Bose gas in the Gross–Pitaevskii regime.
∘ **Dynamics.** In [8] (see list below) we computed corrections to the nonlinear Schrödinger equation for the dynamics of a Bose–Einstein condensate.
∘ **Proof of Bose-Einstein condensation.** In [7] and [3] we proved Bose–Einstein condensation in the Gross–Pitaevskii regime with optimal control of the rate of convergence.
∘ **Static properties of the Bose gas.** In [4] and [6] we computed the excitation spectrum of the Bose gas in the Gross–Pitaevskii regime and regimes interpolating between mean–field and Gross–Pitaevskii.

I currently work on the low–temperature properties of the thermodynamic limit of the Bose gas (in collaboration with R. Seiringer), on the free energy of bosonic systems close to the critical temperature (in collaboration with A. Deuchert) and on the two–dimensional Bose gas (with A. Olgiati, S. Cenatiempo and B. Schlein). Moreover, I investigate the dynamics of fermionic systems (with N. Benedikter).

Bibliographic Indicators

Citations	121 (Scopus)
h-index	5 (Scopus)

Publications

1. *The excitation spectrum of the Bose gas in the Gross–Pitaevskii regime.*
Reviews in Mathematical Physics **32**, 2060006, 11 pages (2020).
doi:10.1142/S0129055X20600065

2. *The excitation spectrum of the Bose gas in the Gross–Pitaevskii regime.*
Contribution to the Oberwolfach report "Many–Body Quantum Systems", Report No. 41/2019.
Oberwolfach Reports **16**, no. 3, 2541, 3 pages (2019)
doi:10.4171/OWR/2019/41

3. (with C. Brennecke, S. Cenatiempo, B. Schlein) *Optimal rate for Bose–Einstein condensation in the Gross–Pitaevskii regime.*
Communications in Mathematical Physics **376**, 1311–1395 (2020).
doi:10.1007/s00220-019-03555-9

4. (with C. Brennecke, S. Cenatiempo, B. Schlein) *Bogoliubov theory in the Gross–Pitaevskii limit.*
Acta Mathematica **222**, no. 2, 219–335 (2019).
doi:10.4310/ACTA.2019.v222.n2.a1

5. *Dynamical and spectral properties of Bose gases with singular interactions.*
Dissertation, Universität Zürich (2017)
`https://www.recherche-portal.ch/primo-explore/fulldisplay?docid=ebi01_prod011160724&context=L&vid=ZAD&search_scope=default_scope&tab=default_tab&lang=de_DE`

6. (with C. Brennecke, S. Cenatiempo, B. Schlein) *The excitation spectrum of Bose gases interacting through singular potentials.*
Journal of the European Mathematical Society **22**, no. 7, 2331–2403 (2020).
doi:10.4171/JEMS/966

7. (with C. Brennecke, S. Cenatiempo, B. Schlein) *Complete Bose–Einstein condensation in the Gross–Pitaevskii regime.*
Communications in Mathematical Physics **359**, 975–1026 (2018).
doi:10.1007/s00220-017-3016-5

8. (with S. Cenatiempo, B. Schlein) *Quantum many–body fluctuations around nonlinear Schrödinger dynamics.*
Annales Henri Poincaré **18**, 113–191 (2017).
doi:10.1007/s00023-016-0513-6

Under Review

1. (with N. Benedikter) *Correlation corrections as a perturbation to the quasi-free approximation in many-body quantum systems.*
Invited contribution as a chapter for the Encyclopedia of Complexity and Systems Science, Robert A. Meyers (Ed), Springer.

Invited Talks at International Conferences

03/09/2021	Minisymposium "Trends in nonlinear PDEs and applications" at "Biannual Congress of the Italian Society of Applied and Industrial Mathematics" (SIMAI), Università degli Studi di Parma
09/09/2019	"Many–Body Quantum Systems", Mathematisches Forschungsinstitut Oberwolfach
15/08/2019	"QMath 14: Mathematical Results in Quantum Physics", Aarhus University
19/03/2019	"Many–Body Theory, Effective Equations and PDEs", Mittag-Leffler Institute, The Royal Swedish Academy of Sciences, Stockholm
27/09/2018	"Trails in Quantum Mechanics and Surroundings 2018", Politecnico di Torino
29/11/2016	"Workshop in Mathematical Physics", ETH Zurich

Invited Talks in Seminars

12/11/2019	Mathematical Physics seminar, Università di Roma Tre
06/03/2019	GSSI PDEs group seminar, Gran Sasso Science Institute, L'Aquila
23/11/2017	Physical Sciences Seminar, IST Austria, Klosterneuburg (Vienna)
16/08/2017	Quantum Lunch, University of Copenhagen
23/01/2017	Analysis Seminar, Politecnico di Torino
16/03/2016	Quantum Lunch, University of Copenhagen

Contributed Talks at International Conferences

27/07/2018	"XIX International Congress on Mathematical Physics" (ICMP 2018), Montréal
11/02/2016	"Mathematical Challenges in Quantum Mechanics", Bressanone

Poster Sessions, Outreach Activities

30/11/2018	Introductory talk for undergraduate students at the "Student Open Day", IST Austria
02/06/2016	Poster presentation at SwissMAP meeting, ETH Zurich

04-05/07/2013 Bonn International Graduate Schools (BIGS) Poster Exhibition, University of Bonn

Teaching Experience

At the Department of Mathematics, Università degli Studi di Milano:

Fall 2021 Laboratorio di Metodi e Modelli Matematici per le Applicazioni

Exercise session of Fisica Matematica 2

Teaching assistant at the Department of Mathematics, University of Zurich
- Lecturing weekly exercise classes
- Preparation of weekly homework problems
- Correction of the students' homeworks

for the following courses:

Spring 2017 Stochastik für die Naturwissenschaften (Stochastics for the Natural Sciences), Dr. Christoph Luchsinger

Fall 2016 Lineare Algebra für die Naturwissenschaften (Linear Algebra for the Natural Sciences), Prof. Viktor Schroeder

Spring 2016 Analysis II, Prof. Benjamin Schlein

Fall 2015 Analysis I, Prof. Benjamin Schlein

Spring 2015 Mathematik für die Chemie II (Mathematics for Chemistry II), Prof. Thomas Kappeler

Fall 2014 Analysis III, Prof. Benjamin Schlein

Spring 2014 Analysis II, Prof. Camillo De Lellis

Workshop Participation by Invitation

09/2019 (1 week) Mathematisches Forschungsinstitut Oberwolfach
"Many–Body Quantum Systems"

03/2019 (3 weeks) The Royal Swedish Academy of Sciences, Institut Mittag–Leffler
"Spectral Methods in Mathematical Physics"

09/2016 (1 week) Mathematisches Forschungsinstitut Oberwolfach
"Many–Body Quantum Systems and Effective Theories"

Formative activity: Conferences attended

30/08-03/09/2021	"Biannual Congress of the Italian Society of Applied and Industrial Mathematics" (SIMAI), Università degli Studi di Parma
02-07/08/2021	"International Congress of Mathematical Physics" Geneva
02-07/08/2021	"Young Researchers Symposium of the ICMP 2021" University of Geneva (attended online)
21-25/06/2021	SwissMAP workshop "Emergent theories for wave turbulence and particle dynamics", SwissMAP Research Station in Les Diablerets
22-25/02/2021	"Mathematics of Condensed Matter and Beyond (MCMB)", American University of Beirut (attended online)
17-20/12/2019	"From semi–classical to quantum many–body through normal forms", Università degli Studi di Milano
12-16/08/2019	"QMath 14: Mathematical Results in Quantum Physics" Aarhus University
27-29/09/2018	"Trails in Quantum Mechanics and Surroundings 2018" Politecnico di Torino
23-28/07/2018	"XIX International Congress on Mathematical Physics" (ICMP 2018) Montréal
20-21/07/2018	"Young Researchers Symposium of the ICMP 2018" McGill University, Montréal
19-24/02/2018	"Mathematical Challenges in Quantum Mechanics" "Sapienza" Università di Roma
28-30/11/2016	"Workshop in Mathematical Physics" ETH Zurich
8-13/02/2016	"Mathematical Challenges in Quantum Mechanics" Bressanone
22-26/09/2014	"Scaling limits and effective theories in classical and quantum mechanics" Erwin Schrödinger Institute, Vienna.
01-05/09/2014	"Selected Problems in Mathematical Physics" Polo Universitario La Spezia
18-20/09/2013	"Dipersive PDEs: Models and Dynamics." Dipartimento di Matematica, Pisa

17-21/06/2013 "Mathematical Properties of Large Quantum Systems", part of the Trimester "Variational and Spectral Methods in Quantum Mechanics"
Institut Henri Poincare, Paris

27-31/05/2013 "Workshop on Analytical Aspects of Mathematical Physics"
ETH Zurich

29-02/02/2013 "Trails in Quantum Mechanics and Surroundings"
INFN Frascati National Laboratories

Formative activity: Summer- and Winterschools attended

19-23/7/2021 "Current Topics in Mathematical Physics", University of Zurich
https://www.math.uzh.ch/index.php?id=konferenzdetails0&key1=632

22-26/03/2021 "From Equilibrium Phenomena Towards Open Quantum System", Gran Sasso Science Institute (attended online)
https://indico.gssi.it/event/103/

16-19/07/2018 "Current Topics in Mathematical Physics", Fields Institute, Toronto http://www.fields.utoronto.ca/activities/18-19/physics-summer-school

17-21/07/2017 "Current Topics in Mathematical Physics", University of Zurich
https://www.math.uzh.ch/index.php?konferenzdetails0&key1=491

08-13/02/2016 "Mathematical Challenges in Quantum Mechanics", Bressanone
https://www.mcqm.cond-math.it/

10-14/02/2014 "BCS Theory and NLS Equations", Graduiertenkolleg 1838 "Spectral Theory and Dynamics of Quantum Systems", Blaubeuren
http://pnp.mathematik.uni-stuttgart.de/iadm/grk1838/Workshops/workshop2014/Workshop_2014..html

01-07/09/2013 "Current Topics in Mathematical Physics ", Centre international de rencontres mathématiques (CIRM), Marseille https://www.cirm-math.fr/Archives/?EX=info_rencontre&annee=2013&id_renc=904

Third–Party Funding

03/2019 Postdoctoral Fellowship, Institut Mittag–Leffler,
The Royal Swedish Academy of Sciences, 2 k€

10/2017 Career Grant from the program "Finding Talents",
FFG Austria, covering relocation costs to Austria, 2 k€

Participation in International Research Groups

11/2017-03/2021 participation in the research project of Prof. Robert Seiringer funded by ERC Advanced Grant 694227.
https://www2.ist.ac.at/research-groups-pages/seiringer-group/erc-grant/

04/2017-09/2017 Participation in the research project of Prof. Benjamin Schlein "Dynamical and energetic properties of Bose-Einstein condensates" funded by the Swiss National Science Foundation.
http://p3.snf.ch/Project-172623

04/2014-03/2017 Participation in the research project of Prof. Benjamin Schlein "Effective equations from quantum dynamics" funded by the Swiss National Science Foundation.
http://p3.snf.ch/Project-153621

Referee for Scientific Journals

Journal of Mathematical Physics

Journal of Statistical Physics

Cooperation Partners

Niels Benedikter (Università degli Studi di Milano), Christian Brennecke (University of Bonn), Serena Cenatiempo (GSSI), Andreas Deuchert (University of Zurich), Alessandro Olgiati (University of Zurich), Benjamin Schlein (University of Zurich), Robert Seiringer (IST Austria)

Membership in Professional Organizations

GNFM (Gruppo Nazionale di Fisica Matematica)

Languages

Italian (native speaker), English (fluent), German (good)

Dr. [redacted]

Personal details

Birth: [redacted]
Civil status: [redacted]
Languages: [redacted]

Education

2010–2013 **Doctoral studies**, *Paris-Saclay University* (Orsay, France) & *Max Planck Institute for Gravitational Physics* (Potsdam, Germany).
Thesis title: [redacted]
Supervisors: Prof. [redacted] (Orsay) & Prof. [redacted] (Potsdam).

2009–2010 **Agrégation in Mathematics**, *École Normale Supérieure de Lyon*, France.
Competitive examination. Ranked [redacted] nationwide (top 4% of all applicants).

2007–2009 **Master in Theoretical Physics**, *École Normale Supérieure de Lyon*, France.

2006–2007 **Bachelor in Physics**, *École Normale Supérieure de Lyon*, France.

2004–2006 **Classes Préparatoires aux Grandes Écoles**, *Lycée Thiers*, Marseille, France.
Admitted to École Normale Supérieure de Lyon (selection ratio $< 2\%$).

Academic positions

2020–present **Radboud University**, *Institute for Mathematics, Astrophysics and Particle Physics*, Nijmegen, Netherlands.
Radboud Excellence Fellow. Member of the Quantum Gravity group.

2016–2020 **Perimeter Institute for Theoretical Physics**, Waterloo, Canada.
Postdoctoral Fellow. Member of the Quantum Gravity group.

2015–2016 **University of Bordeaux**, *Laboratoire Bordelais de Recherche en Informatique*, France.
Postdoctoral Fellow. Member of the Combinatorics and Algorithms group.

2013–2015 **Aix-Marseille University**, *Centre de Physique Théorique*, France.
Postdoctoral Fellow. Member of the Quantum Gravity group.

Awards and fellowships

2020–2022 **Radboud University**, Nijmegen, The Netherlands. *Radboud Excellence Initiative* fellowship.

2014 **Springer Theses award**, leading to publication of Ph.D. thesis by Springer.
[redacted]

2006–2010 **École Normale Supérieure de Lyon**, France. *Normalien* fellowship (selection ratio $< 2\%$).

Other qualifications

since 2014 Qualified for faculty positions in France, in CNU sections **25** (mathematics) and **29** (fundamental constituents).

Publication record

Number of publications: **26** (1 monograph as author, 1 monograph as co-editor, 20 peer-reviewed articles, 1 peer-reviewed conference proceeding, 1 editorial, 2 preprints).

Total citations: $\sim$ **1010**. h-index: **16**. (source: google scholar)

Teaching experience

Undergraduate level

2021–2022 **Radboud University.** Teaching assistant.
Tutorials for [redacted]
7 weeks, 1.45h/week.

2020–2021 **Radboud University.** Teaching assistant.
Tutorials for [redacted]
14 weeks, 1.45h/week. Weekly evaluation and grading.

2017–2018 **African Institute for Mathematical Sciences (AIMS).**
Co-lecturer of "Thermodynamics and Statistical Physics" – 30h, ∼10h tutorials.
AIMS Senegal, M'Bour, Senegal (Nov. 2018).
AIMS Tanzania, Bagamoyo, Tanzania (Feb. 2017).

2010–2013 **Paris-Saclay University.** Teaching assistant – Lectures, tutorials and labs (64h/yr).

Graduate level

03/2022 (upcoming) **Centre International de Rencontres Mathématiques**, Marseille, France.
Invited lecturer, workshop on Random Tensors [redacted]

03 2018 **University of Heidelberg**, Germany. "Introduction to Tensor Models" – 3 lectures.

09 2016 **University of Bordeaux**, France. "Introduction to Topological Quantum Computation" – 2 lectures.

08 2016 **Beijing Normal University**, China. "Introduction to Group Field Theory" – 4 lectures.

Talks

∼ 60 presentations, 16 times as a plenary speaker in international workshops and conferences. Recent selection:

10/2020 Invited speaker at *Quantum spacetime and the Renormalization Group*, Odensee, Denmark (virtual)

07/2020 Invited speaker at *Quantum Gravity 2020*, Perimeter Institute (virtual)

11/2019 Invited speaker at *SIFT 2019: Strongly-Interacting Field Theories*, Jena, Germany

11/2019 Invited speaker at *First French-German Meeting in Physics, Mathematics and Artificial Intelligence Theory*, Paris, France

06/2019 Invited speaker at *Random Geometry and Physics*, Steklov Institute, Moscow, Russia.

04/2019 Invited speaker at *Quantum Gravity in Paris*, Institut Henri Poincaré, France.

10/2018 Invited speaker at *Symposium on Holographic Tensors*, OIST, Okinawa, Japan.

02/2018 Invited seminar at Princeton University (HET Seminar), USA.

Supervision of students

Research internships at Perimeter Institute (master level)

May-July 2018 [redacted] (ENS Lyon; now PhD student at Imperial College, London).
Project: *Tensor models with* $\mathrm{Sp}(N)$ *symmetry*.

May-July 2017 [redacted] (ENS Lyon; now PhD student at École Polytechnique, France).
Project: *Gurau-Witten tensor models and SYK-like models*.

Other projects

Summer 2016 Administrative supervision of two internships, Master 2 level (computer science).
University of Bordeaux.

2013–2014 Supervision of two bibliographic projects, Master 2 level. *Aix-Marseille University.*

Organization of scientific events and services

Perimeter Institute

3-7 02 2020 Co-organizer of an **interdisciplinary workshop on holography**.

11-14 02 2019 Co-organizer of a **workshop on quantum gravity**.
[redacted]

2019-2020 **Co-chair** of the ***Career Support*** working group of the *Perimeter Institute Platform*, an internal committee involving both administrative and scientific staff.

21 11 2017 Organizer of *Quantum Gravity Day*, a **one-day conference** with 17 short talks.

2016–2018 Organizer of the weekly Quantum Gravity group meeting.

Aix-Marseille University

2014–2015 Local organization of the bi-weekly International Loop Quantum Gravity phone Seminar.

Miscellanea

Referee for Class. Quant. Grav., EPL, GERG, JHEP, J. Math. Phys., Lett. Math. Phys., New. J. Phys., Phys. Rev. D, SIGMA, etc.

2020 **IOP trusted reviewer**.

2018–2019 **Co-editor** of [redacted] Universe (MDPI), [redacted]

09 2016 **Referee** and **jury member** of several Master 2 theses (in computer science). *University of Bordeaux.*

2015–2016 **Referee** of two Master 2 theses ([redacted]). *Aix-Marseille University.*

09 2014 Participation in the outreach event "Fête de la Science" in Marseille.

Previous research experience

04–07 2009 **Penn State University**, *Institute for Gravitation and the Cosmos*, USA.
Master 2 internship: [redacted]

05–07 2008 **Lyon I University**, *Institut de Physique Nucléaire*, France.
Master 1 internship: [redacted]

06–07 2007 **École Polytechnique**, *Laboratoire d'Optique Appliquée*, Palaiseau, France.
Bachelor internship: [redacted]

Nicolò Defenu – Curriculum Vitae

Education

11/2010 BSc with honors - Sapienza University of Rome, Roma

110/110 cum laude - 28/30 Average
Third Year Project - Second Quantization with application to phonon propagation.
Advisor: M. Testa

10/2012 MSc with honors - Sapienza University of Rome, Roma

110/110 cum laude - 29/30 Average
Final Year Project -Overhauser method for pair correlation function calculation applied to density functional theory.
Advisor: J. Lorenzana

01/2017 PhD with honors - International School for Advanced Studies (SISSA), Trieste

PhD cum laude (Maximum degree in the Italian System)
PhD Thesis -Application of Functional Renormalization Group Approach to spin systems and long range models.
Advisors: S. Ruffo, A. Trombettoni and A. Codello

Past Positions

Dec 2016 Institute for Theoretical Physics (ITP), Philosophenweg, 19 - 69120 Heidelberg, Germany
Four years Post-Doc position in the group of Dr. Tilman Enss and member of the ISOQUANT collaboration

Present Position

March 2020 Institute for Theoretical Physics, ETH Zürich, Wolfgang-Pauli-Str. 27, 8093, Zürich, Switzerland
Two years Post-Doc position in the group of Prof. Dr. Gian Michele Graf

Awards, Fellowships and Projects

- **Percorsi di eccellenza**

  2010-Awarded of the merit-based fellowship *Percorsi di eccellenza.*

- **Percorso Imprenditoriale Re-Seed**

  2014-Awarded of a project-based fellowship to fund a one year business management course.

- **Fellowship for EU collaborations**

  2015-Awarded of the merit-based *Job Placement* fellowship to fund a two months visit at the Ruprecht-Karls-Universität in Heidelberg.

- **Individual research fellow**

  2019-Individual research fellow of the Young Investigator Training Program: “Functional Renormalization Group Methods in Quantum and Statistical Physics”

- **Exploratory project within Structures Excellence Cluster**

  2019-Leading investigator of the exploratory project “Universality on network structures” within the Structures Excellence Cluster at the University of Heidelberg.

- **Exploratory project within Structures Excellence Cluster**

  2021-Coleading investigator of the exploratory project "Critical behavior of epidemic models on distinct network topologies and applications to the study of brain disease" within the Structures Excellence Cluster at the University of Heidelberg.

Organization of conferences

- **1st Workshop on Low Dimensional Quantum Many Body Systems**

  Internationales Wissenschaftsforum Heidelberg (IWH), Germany.

Memberships

- **Member of the SwissMAP collaboration.**
- **External Member of the Structures Excellence Cluster at the University of Heidelberg.**
- **External Member of the CNR Istituto officina dei materiali (Trieste).**
- **External Member of SISSA (Trieste).**

Memberships in boards

- **Member of the Young Researchers Board in the Structures Excellence Cluster Feb. 2019**

  The young researchers board proposes and organises scientific activities financed by the special fund for young researchers of the Structures Excellence Cluster. The board assigns travel stipends and internships, organises colloquia and invites scientific guests.

Research interests

- **Cold Atoms Physics**
- **Long range interactions**
- **Quantum Information**

Teaching experience

During my present employment at Heidelberg University it is part of my duties to participate at teaching activities. As a teaching assistant I have to correct and grade home exercise done by the students and to display the solution of such exercises in a lecture every week. Moreover, I have been a guest Instructor at SISSA (Trieste) where I was responsible for a one week intense course (4 ours per day) on Functional Renormalization Group.

- **Teaching Assistant for Advanced Condensed Matter Theory Feb.-Jul. 2017**

  Heidelberg University, Instructor Prof. Maurits Havenkort

- **Teaching Assistant for Condensed Matter Theory Oct. 2017- Feb. 2018**

  Heidelberg University, Instructor Prof. Maurits Havenkort

- **Teaching Assistant for Seminar on Statistical Physics Feb. - Jul. 2018**

  Heidelberg University, Instructor Prof. Andreas Mielke

- **Teaching Assistant for Theoretical Statistical Physics Oct. 2018 - Feb. 2019**

  Heidelberg University, Instructor Prof. Bjoern Malte Schaefer

- **Teaching Assistant for Seminar on Nonlinear Systems** **Mar. - Jul. 2019**
  Heidelberg University, Instructor Prof. Andreas Mielke

- **Main Instructor for Functional Renormalization Group** **Jun. 2019**
  SISSA (Trieste), Co-Instructor Dr. Andrea Trombettoni

- **Head Teaching Assistant (Oberassistent) for Theoretical Statistical Physics** **Oct. 2019- Oct. 2020**
  Heidelberg University, Instructor Prof. Luca Amendola

- **Main Instructor for Functional Renormalization Group** **Apr. 2020**
  SISSA (Trieste), Co-Instructor Dr. Andrea Trombettoni

- **Teaching Assistant for the master proseminar on Renormalization Group** **Oct.-Dec. 2020**
  ETH Zurich, main Instructor Dr. Ramasubramanian Citra

- **Teaching Assistant for the bachelor proseminar on Field theory and Classical physics** **Jan.-Jun. 2021**
  ETH Zurich, main Instructor Prof. Gian Michele Graf

- **Master thesis advisor** **Dec. 2020**
  Title: "Dynamical Quantum Phase Transitions in the Spherical Model"
  Candidate: Marvin Syed

- **Master thesis advisor** **Oct. 2020**
  Title: "Renomalization group approach to the calculation of integrals"
  Candidate: Alberto Catalano

- **Master thesis advisor** **Sept. 2021**
  Title: "Quantum Criticality and the Spherical Model on a Graph"
  Candidate: Pascal Schweizer

- **Master thesis co-advisor** **July 2021**
  Title: "A functional RG approach to PT-symmetric models"
  Candidate: Benjamin Liégeois

- **PhD thesis co-advisor** **Ongoing**
  Title: "Statistical mechanics of long-range interacting systems"
  Candidate: Guido Giachetti
  Local Advisor: Prof. Stefano Ruffo

Referee experience

- **Referee for *Phys. Rev. Lett.*** **multiple times since Feb. 2019**

- **Referee for *New J. Phys.*** **Sep. 2019**

- **Referee for *Phys. Rev. A*** **Nov. 2019**

- **Referee for *Eur. J. Phys. C*** **Feb. 2020**
- **Referee for *Phys. Rev. E*** **multiple times since Sep. 2020**
- **Referee for *Phys. Rev. B*** **multiple times since Dec. 2020**
- **Referee for *Nucl. Phys. B*** **July 2021**
- **Referee for *Sci. Post.*** **June 2021**

Activities

- **Invited Speakers**
  - *Conference on Long-Range-Interacting Many Body Systems: from Atomic to Astrophysical Scales*, 25th–29th July 2016, Trieste. Invited Speaker.
  - *CQD mini symposium*, April 19th–20th, 2017, Physikalisches Institut, Heidelberg. Invited Speaker.
  - *Stochastic Dynamics Out of Equilibrium: Young researchers' seminar*, 24th–05th April-May 2017, Institute Henri Poincare, Paris. Invited Speaker.
  - *Quantum Many-Body Systems out-of-equilibrium*, 12th–16th March 2018, NITheP, Stellenbosch, South Africa. Invited Speaker.
  - *Quantum Paths*, 28th–1st May-June 2018, Erwin Schrödinger International Institute for Mathematics and Physics (ESI), Vienna. Invited Speaker.
  - *EXPLORING NUCLEAR PHYSICS WITH ULTRACOLD ATOMS*, 8th–12th July 2019, ECT*, Trento. Invited Speaker.
  - *QUANTUM AND CLASSICAL SYSTEMS WITH LONG-RANGE INTERACTIONS*, 15th–19th July 2019, International Institute of Physics, IIP (Natal). Invited Speaker.
  - *Functional Renormalization Group methods-Italian Meeting*, 16th–20th Sept. 2019, ECT*, Trento, Italy. Invited Speaker.
  - *FRGIM@Trieste*, 26th Sept. 2019, SISSA, Trieste, Italy. Invited Speaker.
  - *Exact Renormalization Group 2020*, 2th–6th November 2020, Yukawa Institute for Theoretical Physics, Kyoto University. Invited Speaker.
  - *SISSA long-range workshop*, 18th November 2020, SISSA, Trieste, Italy. Invited Speaker.
  - *Non-Equilibrium Universality: From Classical to Quantum and Back*, 13th-September to 8th-October, 2021, Kavli Institute for Theoretical Physics, UC Santa Barbara. Invited Speaker.
- **Selected Scientific Visits**
  - *MTA Atomki, Hungarian Academy of science*, Debrezen. Repeated visits staring from December 2014. Seminar Presentation.
  - *International Institute of Physics*, Natal (Brasil), 1-7 December 2013, Natal. Seminar Presentation.

- *Theoretical Quantum Physics Group*, Universitaat des Saarlandes,
  Repeated visits staring from February 2016.
- *La Sapienza University*, Rome,
  Repeated visits staring from March 2016. Seminar Presentation.
- *International School for Advanced Studies*, *SISSA*, Trieste,
  Repeated visits staring from January 2017. Seminar Presentation.
- *ETH*, Zürich,
  02nd–04th October 2017, Zürich. Seminar Presentation.
- *University of Colorado, Boulder*, *JILA*,
  09th–12th October 2017, Boulder. Seminar Presentation.
- *Los Alamos National Laboratory*, *LANL*,
  13th–25th October 2017, Los Alamos. Seminar Presentation.
- *Boston University*, *BU*,
  3rd–17th May 2018, Boston.
- *Weizmann Institute of Science*,
  Rehovot, Israel. Repeated visits starting from November 2018. Seminar Presentation.
- *Massachusetts Institute of Technology*, *MIT*,
  22th–30th April 2019, Boston, USA.
- *Simons Center for Geometry and Physics*, *SCGP*,
  1st–2nd May 2019, Stony Brook, USA. Seminar Presentation.
- *Georgetown University*, *GU*,
  3rd–6th May 2019, Washington, USA. Invited Seminar.
- *Swinburne University of Technology*, *SUT*,
  20th–24th January 2020, Melbourne, Australia. Seminar Presentation.

Numerical Skills

- **Operative Systems**

  Windows
  OSX
  Linux-Ubuntu, Lubuntu, Linux Mint, OpenSUSE.

- **Text Editing**

  LaTeX
  Microsoft Office™
  Open Office

- **Programming Languages**

  Python - Numpy, Sympy, Scipy, Pandas
  C, C++
  PHP

- **Scientific Programs**

  Wolfram *Mathematica®*
  Matlab
  Gnuplot
  Origin

- **Web Development**

  Webmaster of Condensed Matter Department at SISSA

Languages

- **Italian - Native**
- **English - Excellent**
- **German - Basic**

Nicolò Defenu

September 13, 2021

Simone Del Vecchio

EDUCATION

PhD in Mathematics (Excellent, cum laude), 01/11/2013 - 19/4/2017
Thesis: Extensions in Quantum Field Theory: Q-systems and defects for infinite index inclusions.
Advisor: Professor Roberto Longo
University of Rome Tor Vergata
Rome (Italy)

Master Degree in Physics (GPA 5.6/6), 10/2010 - 1/2013
Thesis: Path sum formulae for propagators on graphs, gluing and continuum limit.
Advisors: Dr. Pavel Mnev, Professor Niklas Beisert
ETH Zurich,
Zurich (Switzerland)

Bachelor Degree in Physics, (mark 110/110 cum laude), 10/2006 - 12/2009
Thesis: Energia dello stato fondamentale del gas di bose con interazione a sfera rigida a bassa densità.
Advisor: Professor Alessandro Giuliani
University of Roma Tre,
Rome (Italy)

Diploma di Liceo Scientifico, (mark 100/100), 09/2001 - 06/2006
Liceo Scientifico Aristotele,
Rome (Italy)

EMPLOYMENT

- University of Rome Tor Vergata, Rome, Italy 09/2017 - 08/2019
  Postdoctoral Researcher.
  Employed by Prof. Roberto Longo, supported by ERC advanced grant 669240 QUEST Quantum Algebraic Structures and Models.
- Institut für Theoretische Physik: ITP - Universität Leipzig, Leipzig, Germany 09/2019 - 04/2021
  Postdoctoral Researcher
  Employed by Dr. Daniela Cadamuro, supported by the Deutsche Forschungsgemeinschaft (DFG) within the Emmy Noether grant CA1850/1-1.
- University of Rome Tor Vergata, Rome, Italy 05/2021 - currently
  Postdoctoral Researcher.
  Employed by Prof. Alessandro Pizzo, supported by MIUR CUP E83C18000100006.

PUBLICATIONS/PREPRINTS

Published/Accepted

- Simone Del Vecchio, Luca Giorgetti,
Infinite index extensions of local nets and defects,
Rev. Math. Phys. Volume 30, Issue 02 (2018) 1850002.
https://doi.org/10.1142/S0129055X18500022
- Simone Del Vecchio, Stefano Iovieno, Yoh Tanimoto,
Solitons and Nonsmooth Diffeomorphisms in Conformal Field Theory
Commun. Math. Phys. 375, 391-427 (2020).
https://doi.org/10.1007/s00220-019-03419-2
- Simone Del Vecchio, Francesco Fidaleo, Luca Giorgetti, Stefano Rossi,
Ergodic Properties of the Anzai Skew Product on the Noncommutative Torus,
Ergodic Theory and Dynamical Systems, 1-22. (2020)
https://doi.org/10.1017/etds.2019.116
- Simone Del Vecchio, Juerg Froehlich, Alessandro Pizzo, Stefano Rossi,
Lie-Schwinger block-diagonalization and gapped quantum chains: analyticity of the ground-state energy,
Journal of Functional Analysis, Volume 279, Issue 8 (2020) 108703, ISSN 0022-1236,
https://doi.org/10.1016/j.jfa.2020.108703
- Simone Del Vecchio, Juerg Froehlich, Alessandro Pizzo, Stefano Rossi,
Lie-Schwinger block-diagonalization and gapped quantum chains with unbounded interactions,
Commun. Math. Phys. 381, pages 1115-1152 (2021)
https://doi.org/10.1007/s00220-020-03878-y
- Sebastiano Carpi, Simone Del Vecchio, Stefano Iovieno, Yoh Tanimoto,
Positive energy representations of Sobolev diffeomorphism groups of the circle,
Anal.Math.Phys. 11, 12 (2021).
https://doi.org/10.1007/s13324-020-00429-5
- Marcel Bischoff, Simone Del Vecchio, Luca Giorgetti,
Compact Hypergroups from Discrete Subfactors,
Journal of Functional Analysis, Volume 281, Issue 1, 1 July 2021, 109004
https://doi.org/10.1016/j.jfa.2021.109004
- Simone Del Vecchio, Francesco Fidaleo, Stefano Rossi,
Skew-product dynamical systems for crossed product C^*-algebras and their ergodic properties
Journal of Mathematical Analysis and Applications, Available online 10 May 2021, 125302
https://doi.org/10.1016/j.jmaa.2021.125302
- Henning Bostelmann, Daniela Cadamuro, Simone Del Vecchio
Relative Entropy for Coherent States in General CCR Algebras,
accepted for publication on Commun. Math. Phys.
arXiv:2012.14401

Preprints

- Simone Del Vecchio, Juerg Froehlich, Alessandro Pizzo, Stefano Rossi,
Local iterative block-diagonalization of gapped Hamiltonians: a new tool in singular perturbation theory,
arXiv:2007.07667
- Marcel Bischoff, Simone Del Vecchio, Luca Giorgetti,
Galois Correspondence and Fourier Analysis for Local Discrete Subfactors,
arXiv:2107.09345

- Simone Del Vecchio, Francesco Fidaleo, Stefano Rossi,
  Invariant Conditional Expectations and Unique Ergodicity for Anzai Skew-Products
  arXiv:2108.11938
- Simone Del Vecchio, Juerg Froehlich, Alessandro Pizzo,
  Block-diagonalization of infinite-volume lattice Hamiltonians with unbounded interactions

TEACHING

University of Rome Tor Vergata, Italy:

- March-July 2018: Teaching Assistant (Tutoring) for Geometry 1 for civil and enviromental engineers.
  Main Lecturer: Prof. Paolo Salvatore.
  Macroarea di Ingegneria.
- March-July 2018: Teaching Assistant (Tutoring) for Geometry 1 for mechanical and management engineers.
  Main Lecturer: Prof. Stefano Trapani.
  Macroarea di Ingegneria.
- March-July 2019: Teaching Assistant (Tutoring) for Geometry 1 for civil and enviromental engineers.
  Main Lecturer: Prof. Giuseppe Ceresa.
  Macroarea di Ingegneria.
- March-July 2019: Teaching Assistant (Tutoring) for Geometry 1 for mechanical and management engineers.
  Main Lecturer: Prof. Eleonora Ciriza.
  Macroarea di Ingegneria.
- September-December 2021: Teaching Assistant (Tutoring) for Mathematical Analysis 1 for engineers (canale 1).
  Main Lecturer: Prof. Sebastiano Carpi.
  Macroarea di Ingegneria.

OTHER ACTIVITIES

- Co-organization of conference: Quantum Information and Operator Algebras
  Istituto Nazionale di Alta Matematica Francesco Severi - Rome (Italy)
  February 15-16, 2018
- Reviewer for Mathematical Reviews on MathSciNet.
- Member of the Emmy Noether Research Group "The Quantum Stress-Energy Tensor", supported by the Emmy Noether Programme of the German Research Foundation (DFG), grant CA1850/1-1 (09/2019-04/2021).

TALKS AND POSTERS

- 45th LQP workshop (and first virtual one) (talk)
  June 17 - 19, 2020
- Seminar on Quantum Field Theory, Gravitation, and Elementary Particles (talk)
  December 9 2019
  Insitüt für Theoretische Physik Leipzig
- Operator Algebras in Quantum Field Theory and Quantum Probability (talk)
  December 4 - 7, 2019
  Department of Mathematics, University of Rome Tor Vergata

- 43rd LQP workshop: Foundations and Constructive Aspects of QFT (talk)
  Galileo Galilei Institute, Firenze (Italy)
  February 20-22 2019
- Giornata di dipartimento 2017 (talk)
  Tor Vergata, Rome (Italy)
  20 December 2017
- LQP 40 Foundations and Constructive Aspects of Quantum Field Theory (talk)
  Max Planck Institute, Leipzig (Germany) 23-24 June, 2017
- Operator algebras: subfactors and their applications (poster)
  Newton Institute, Cambridge (UK)
  June 12-16 2017

RESEARCH STAYS

- 1-8 June 2019 at the Institüt für Theoretische Physik Leipzig, Germany.
- 2-9 November 2019 at Dipartimento di Matematica, Tor Vergata, Rome, Italy.
- 8-15 February 2020 at Dipartimento di Matematica, Tor Vergata, Rome, Italy.

PARTICIPATION TO CONFERENCES AND WORKSHOPS

- Operator Algebras in Quantum Field Theory and Quantum Probability
  December 4 - 7, 2019
  Department of Mathematics, University of Rome Tor Vergata

- Subfactors and Applications
  MFO, Oberwolfach (Germany)
  27 October- 2 November 2019
- 3rd LQP workshop: Foundations and Constructive Aspects of QFT
  Galileo Galilei Institute, Firenze (Italy)
  February 20-22 2019
- AQFT: where Operator Algebras meets Microlocal Analysis
  Palazzone, Cortona(Italy)
  June 4-8 2018
- Quantum Information and Operator Algebras
  Istituto Nazionale di Alta Matematica Francesco Severi - Rome (Italy)
  February 15-16, 2018
- LQP 40 Foundations and Constructive Aspects of Quantum Field Theory
  Max Planck Institute, Leipzig (Germany) 23-24 June, 2017
- Operator algebras: subfactors and their applications
  Newton Institute, Cambridge (UK)
  June 12-16 2017
- Quantum Field Theory: Concepts, Constructions and Curved Spacetimes
  University of York - York (England)
  April 4-7, 2017
- Operator Algebras and Quantum Field Theory
  INFN - Frascati (Italy)
  June 27 - 29, 2016
- Foundations and Constructive Aspects of QFT
  TUM - Munich (Germany)
  May 27 - 28, 2016
- Marcel Grossmann Meeting
  INFN - Rome (Italy)
  June 13 - 17, 2015

- Advances in Noncommutative Geometry
  University of Paris 7, Paris (France)
  April 20 - 24, 2015
- Noncommutative Geometry and Applications
  Frascati (Italy)
  June 16-21, 2014

LANGUAGE SKILLS

Italian (mother tongue), English (fluent).

Rome, 26/10/2021

CURRICULUM VITAE

DATI PERSONALI

Nome e Cognome: Sara Di Ruzza

ESPERIENZE PROFESSIONALI UNIVERSITARIE

Marzo 2021 - ora **Titolare di Assegno di Ricerca,** SSD MAT/07, presso il Dipartimento di Matematica dell'Università di Padova all'interno del progetto ERC n. 677793 "Stable and Chaotic Motions in the Planetary Problem". Responsabile del programma: Professoressa Gabriella Pinzari.

Marzo 2018 - Febbraio 2021 **Ricercatore RTD-A,** SSD MAT/07, presso il Dipartimento di Matematica dell'Università di Padova all'interno del progetto ERC n. 677793 "Stable and Chaotic Motions in the Planetary Problem". Responsabile del programma: Professoressa Gabriella Pinzari.

Gennaio 2012 - Settembre 2013 **Titolare di Assegno di Ricerca,** SSD MAT/07, presso il Dipartimento di Matematica "L.Tonelli" dell'Università di Pisa per lo svolgimento di attività di ricerca denominata "Gli esperimenti di Radioscienza delle Missioni BepiColombo e Juno". Responsabile del programma: Professor Andrea Milani Comparetti.

01 Aprile - 30 Settembre 2010 **Attività di Ricerca,** SSD MAT/07, presso l'Università degli Studi di Roma Tor Vergata, per il programma di ricerca: "Problemi di stabilità nel Sistema Solare". Responsabile del programma: Professoressa Alessandra Celletti, Docente dell'Università degli Studi di Roma Tor Vergata.

01 Maggio - 30 Giugno 2006 **Affidamento d'Incarico a Progetto** presso il dipartimento di Matematica "G. Castelnuovo", Università degli Studi di Roma La Sapienza.

INSEGNAMENTI UNIVERSITARI

Anno Accademico 2021 - 2022 Tutorato di **Analisi 2** presso il corso di Ingegneria Aerospaziale presso l'Università di Padova.

Anno Accademico 2020 - 2021 Corso di **Matematica** presso Scienze e Cultura della Gastronomia presso l'Università di Padova (7 CFU).

Anno Accademico 2019 - 2020 Corso di **Matematica** presso Scienze e Cultura della Gastronomia e Ristorazione presso l'Università di Padova (7 CFU).

Anno Accademico 2018 - 2019 Corso di **Matematica** presso Scienze e Cultura della Gastronomia e Ristorazione presso l'Università di Padova (7 CFU).

Anno Accademico 2017 - 2018 Corso di **Algebra Lineare e Geometria** per Ingegneria dell'Informazione, Ingegneria Biomedica, Ingegneria Informatica e Ingegneria Elettronica presso l'Università di Padova (12 CFU).

Anno Accademico 2009 - 2010 **Attività didattica sussidiaria ed integrativa** nell'insegnamento di "Laboratorio di Metodi Matematici e Informatici per la Biologia"**,** presso il dipartimento di Scienze, Università degli Studi di Roma La Sapienza.

Anno Accademico 2008 - 2009 **Attività didattica sussidiaria ed integrativa** nell'insegnamento di Meccanica Razionale**,** presso il dipartimento di Matematica, Università degli Studi di Roma La Sapienza.

Anno Accademico 2008 - 2009 **Attività didattica sussidiaria ed integrativa** nell'insegnamento di "Laboratorio di Metodi Matematici e per la Biologia"**,** presso il dipartimento di Scienze Biologiche, Università degli Studi di Roma La Sapienza.

COLLABORAZIONI UNIVERSITARIE

Ottobre 2019 Partecipazione all'organizzazione, alla realizzazione e allo svolgimento del progetto **"Kids University Padova 2019"** modulo di "Dinamica Caotica", attività rivolta a studenti e insegnanti per la divulgazione scientifica.

Ottobre 2018 Partecipazione all'organizzazione, alla realizzazione e allo svolgimento del progetto **"Kids University Padova 2018"** modulo di "Dinamica Caotica", attività rivolta a studenti e insegnanti per la divulgazione scientifica.

7 - 11 Febbraio 2011 **Incarico di Collaborazione** nell'ambito della manifestazione della Facoltà di Scienze MM.FF.NN. dell'Università degli Studi di Roma Tor Vergata dal nome ScienzeOrienta2011 riguardante la seguente attività: "Didattica matematica con esperimenti rivolta agli studenti delle superiori".

9 Dicembre 2010 **Collaborazione** all'incontro con le scuole "Newton: la natura e le leggi della natura", Piano Lauree Scientifiche - Direzione generale per gli

	Ordinamenti scolastici e per l'autonomia scolastica - Università degli Studi di Roma Tor Vergata: Facoltà di Scienze MM.FF.NN., Facoltà di Lettere e Filosofia.
26 Novembre 2010	**Lezione** dal titolo "Risonanze e collisioni nel Sistema Solare" all'interno del corso di Meccanica Celeste tenuto dalla Professoressa Alessandra Celletti, presso l'Università degli Studi di Roma Tor Vergata, dipartimento di Matematica.
14 - 18 Giugno 2010	**Collaboratrice** dello Stage estivo a Tor Vergata, modulo di Meccanica Celeste. Lo stage è stato promosso dal MIUR ed organizzato in collaborazione con l'Università degli Studi di Roma Tor Vergata, presso il dipartimento di Fisica.

GRUPPI DI RICERCA NAZIONALE E INTERNAZIONALI

Partecipazione al gruppo di Ricerca nazionale dell'ASI attraverso il gruppo di Meccanica Celeste dell'Università di Pisa per la missione spaziale BepiColombo.

Partecipazione al gruppo di Ricerca internazionale dell'ESA attraverso il gruppo di Meccanica Celeste dell'Università di Pisa per la missione spaziale BepiColombo.

Partecipazione al progetto internazionale ERC n. 677793 "Stable and Chaotic Motions in the Planetary Problem".

ALTRE ESPERIENZE PROFESSIONALI

Dicembre 2016 - ora	**Collaborazione** presso Casa Editrice Zanichelli per scrittura e revisione di libri di testo di Matematica per le scuole superiori.
Settembre - Novembre 2016	**Professoressa** di Matematica e Scienze presso la Scuola Media, Umberto Nobile, Ciampino, Roma.
Marzo 2016 - Giugno 2016	**Professoressa** di Sostegno presso il Liceo Artistico, via Romana, Marino, Roma.
Ottobre 2013 - Ottobre 2015	**Ricercatrice** presso SpaceDyS s.r.l., Navacchio, Cascina, Pisa.
3 Ottobre - 13 Novembre 2011	**Professoressa** di Matematica e Scienze presso l'Istituto Comprensivo Leonardo Da Vinci di Ciampino, Roma.
15 Marzo-14 Settembre 2011	**Stagista** presso la Thales Alenia Space, addetta ad un progetto di ricerca di controllo orbitale dal titolo "Modelli avanzati di controllo e determinazione orbitale".

ISTRUZIONE

21 Marzo 2012	Diploma di **Master di II livello in SCIENZA E TECNOLOGIA SPAZIALE**, presso la Facoltà di Scienze dell'Università degli Studi di Roma Tor Vergata, con la votazione di 110/110 e lode. Titolo Tesi: "Cassini-Huygens mission: how to reach and travel in the saturnian system". Stage in Thales Alenia Space. Titolo tesina relazione stage: "An analysis of the orbit control for Low Earth Orbit satellite".
21 Giugno 2010	**Dottore di Ricerca in Matematica** (XXII ciclo), presso il Dipartimento di Matematica "G. Castelnuovo" dell'Università degli Studi di Roma La Sapienza. Titolo Tesi: "Some results on the dynamics of conservative and dissipative systems with applications to Celestial Mechanics". Relatore: Professoressa Alessandra Celletti, Docente dell'Università degli Studi di Roma Tor Vergata.
30 Novembre 2005	**Laureata in Matematica** presso l'Università degli Studi di Roma La Sapienza, con la votazione di 110/110 e lode. Titolo Tesi: "Dinamica di un sistema di infiniti oscillatori anarmonici". Relatore: Professor Paolo Buttà, Docente dell'Università degli Studi di Roma La Sapienza.
11 Luglio 2000	**Diplomata in Maturità Scientifica** presso il Liceo Scientifico Vito Volterra di Ciampino (Roma) con la votazione di 100/100.

COMPETENZE DIDATTICHE

03 Luglio 2020	Badge "Teaching 4 Learning, new faculty" emesso dall'Università di Padova.
28 Settembre 2020	Badge "Teaching 4 Learning, 2.0" emesso dall'Università di Padova.

CONOSCENZE INFORMATICHE

Sistemi Operativi:	Windows, Linux, Mac OS X.
Linguaggi di Programmazione:	Fortran (buona conoscenza), Mathematica (buona conoscenza), Matlab (buona conoscenza).

Programmi Applicativi: Latex, Pacchetto Office, STK (Satellite Tool Kit).

LINGUE

Italiano: Madrelingua.

Inglese: Buona conoscenza della lingua Inglese scritta e parlata.

Francese: Buona conoscenza della lingua Francese scritta e parlata.

CONOSCENZE MATEMATICHE E SCIENTIFICHE

Teoria perturbativa; forme normali; studio di sistemi quasi integrabili conservativi e dissipativi; studio di orbite periodiche in sistemi dissipativi; studio di insiemi invarianti in sistemi conservativi e dissipativi (orbite periodiche, orbite quasi-periodiche, cantori); applicazione della teoria perturbativa a problemi di Meccanica Celeste, quali il problema spin-orbita e il problema dei tre corpi; dinamica caotica e dinamica simbolica; teoria KAM; teoria di Aubry-Mather; teorema di Nekhoroshev; problemi di stabilità e instabilità del sistema solare; risonanze orbitali; risonanze spin-orbita; dinamica orbitale satellitare; controllo orbitale di satelliti in orbita bassa intorno alla Terra (LEO); determinazione orbitale; studio di missioni interplanetarie (BepiColombo-mission ESA, Juno-mission NASA, Juice-mission ESA). Ottime capacità di programmazione in Fortran per affrontare analisi numeriche dei problemi studiati.

COMPETENZE GENERALI

Eccellente capacità nel trasmettere verbalmente concetti scientifici; ottima capacità di comunicazione anche davanti a platee estese e internazionali; grande abilità nel lavorare in gruppo su progetti internazionali, multidisciplinari e grande abilità nel guidare un gruppo; ottime capacità nel gestire lavori che richiedono precisione nei tempi e nelle scadenze; grande capacità nell'adattamento a nuovi ambienti lavorativi; forte abilità analitica. Ottime capacità di insegnamento.

PREMI E BORSE DI STUDIO

Ottobre 2010 Vincitrice di **Borsa di Studio ASI** (Agenzia Spaziale Italiana) per il Master in Scienza e Tecnologia Spaziale.

Ottobre 2006 Vincitrice di concorso di **Dottorato di Ricerca in Matematica** (XXII ciclo) con borsa, presso il Dipartimento di Matematica "G. Castelnuovo" dell'Università degli Studi di Roma La Sapienza.

A.A. 2003/2004 Rinnovo di **"Borsa di studio per studenti iscritti al primo anno di Matematica"** indetta dall'**INdAM.**

Sett. 2002-Feb. 2003 **Borsa di studio** per **Progetto Socrates-Erasmus** presso l'Università

	di Parigi VII "Denis Diderot", Francia, con 2 esami sostenuti e convalidati.
A.A. 2002/2003	Rinnovo di **"Borsa di studio per studenti iscritti al primo anno di Matematica"** indetta dall'**INdAM.**
A.A. 2001/2002	Rinnovo di **"Borsa di studio per studenti iscritti al primo anno di Matematica"** indetta dall'**INdAM.**
A.A. 2000/2001	Vincitrice di **"Borsa di studio per studenti iscritti al primo anno di Matematica"** indetta dall'**INdAM.**

PARTECIPAZIONE A CONVEGNI E CONFERENZE INTERNAZIONALI

18 - 22 Ottobre 2021	Partecipazione al **Symposium "IAUS 364: Multi-scale (time and mass) Dynamics of Space Objects"**, tenutosi in forma ibrida online e in presenza presso l'Università di Iasi (UAIC), Romania. Presentazione dal titolo: "Analysis of Euler integral in the three-body problem".
17 - 18 Dicembre 2020	Partecipazione su invito alla **terza edizione della "Giornata DinAmica" (Dynamics Day)**. Presentazione su invito a tenere il talk online "Symbolic dynamics in a binary asteroid system".
04 Maggio 2020	Invito a tenere il seminario online presso **I-CELMECH Seminar**: "Symbolic dynamics in a binary asteroid system".
03 - 07 Febbraio 2020	Partecipazione alla scuola internazionale **"I-CELMECH, New frontiers of Celestial Mechanics: Theory and Applications"** tenutasi presso l'Università Statale di Milano. Comunicazione: "Numerical evidence of symbolic dynamics in a three-body problem".
24 - 28 Giugno 2019	Partecipazione al convegno internazionale **"New Trends in Celestial Mechanics"** tenutosi a Cogne, Italy.
5 - 8 Febbraio 2019	Partecipazione al **"Workshop Dynamical Systems: from geometry to mechanics"** tenutosi a Roma presso l'Università di Roma Tor Vergata.

21 Dicembre 2018	Partecipazione alla **"2nd Giornata DinAmica 2018"**, presso l'accademia dei Lincei a Roma.
13 - 14 Settembre 2018	Partecipazione al convegno in onore dei 70 anni del Professor Giancarlo Benettin: **MATEMATICA A MISURA DELLA NATURA: Due giornate di conversazioni scientifiche con Giancarlo, "Che cosa ci piacerebbe capire, o che altri capissero, nei prossimi anni, e perché"**, tenutosi Padova, presso il Dipartimento di Matematica "Tullio Levi-Civita".
18 - 22 Giugno 2018	Partecipazione alla conferenza internazionale **"Perspectives in Hamiltonian Dynamics"**, tenutasi a Venezia e organizzato dall'Università di Padova. Ho presentato un talk dal titolo: "The radioscience experiment in BepiColombo mission to Mercury".
10 - 15 Giugno 2018	Partecipazione alla Scuola internazionale **"Stable and Chaotic Motions in the Planetary Problem"** tenutasi presso l'osservatorio di Asiago e organizzato dall'Università di Padova.
12 - 14 Aprile 2018	Partecipazione al Convegno **"Il problema di Fermi-Pasta-Ulam: stato dell'arte e prospettive"**, tenutosi a Padova, Aula Magna della Scuola Galileiana di Studi Superiori e organizzato dall'Università di Padova.
3 - 9 Settembre 2017	Partecipazione al Convegno Internazionale **"CELMEC VII, The Seventh International Meeting on Celestial Mechanics"** tenutosi al Balletti Park Hotel, San Martino al Cimino, Viterbo, Italia.
07 - 11 Luglio 2014	Partecipazione all' **"IAU-Symposium: Complex Planetary Systems"**, Namur, Belgium. Comunicazione: "Modern tests on general relativity in the Mercury Orbiter Radioscience Experiment in the BepiColombo mission".
4 Giugno 2014	Partecipazione alla **"Giornata di Planetologia ASI",** Roma, con comunicazione: "MORE: Mercury Orbiter Radioscience Experiment".
Maggio 2014	Partecipazione all'**"Open day"** presso il Dipartimento di Matematica, Università di Pisa, con presentazione del poster: "L'esperimento di radio scienza della missione spaziale BepiColombo".
1 - 7 Settembre 2013	Partecipazione al Convegno Internazionale **"CELMEC VI, The Sixth International Meeting on Celestial Mechanics"** tenutosi al Balletti

	Park Hotel, San Martino al Cimino, Viterbo, Italia. Comunicazione: "Determination of the rotation state of Mercury by the on-board camera in the BepiColombo mission".
27 - 29 Maggio 2013	Partecipazione al Workshop Internazionale **"Mathematical Models and Methods for Planet Earth"**, presso l'INDAM, Istituto Nazionale di Alta Matematica, Roma.
22 - 24 Aprile 2013	Partecipazione al Meeting Internazionale **"MESSENGER-BepiColombo Joint Science Meeting"**, presso Congress Plaza Hotel, Chicago, Il, Stati Uniti. Presentazione del poster: " Determination of the rotation state of Mercury from high resolution on-board camera in the BepiColombo Radio Science Experiment".
14 - 17 Gennaio 2013	Partecipazione alla Scuola Internazionale **"Astrodynamics of Natural and Artificial Satellites: from Regular to Chaotic Motions"** First Training School in the Framework of the. Astrodynamics European Network AstroNet-II, presso l'Università Tor Vergata, Roma.
10 - 12 Settembre 2012	Partecipazione alla Conferenza Internazionale **"1970-2010: The Golden Age of Solar System Exploration"** organizzata da IFAC -CNR, in onore del Prof. Marcello Fulchignoni, presso l'Accademia dei Lincei, Roma. Presentazione dal titolo: "The rotation experiment in BepiColombo space mission by using a high resolution on-board camera".
21 - 22 Giugno 2012	Partecipazione al **"BepiColombo Geodesy and Geophysics working group meeting"**, presso il Royal Observatory of Belgium, Brussels.
16 Marzo 2012	Partecipazione al Workshop "**Juice**" organizzato dall'INAF presso l'Osservatorio di Roma Monte Mario.
18 - 19 Febbraio 2011	Partecipazione al convegno **"Sistemi Dinamici Non lineari e Applicazioni"**, Conferenza conclusiva del progetto **"Dynamical Systems and Applications" (PRIN 2007B3RBEY)** presso la Scuola Normale Superiore di Pisa, Centro di Ricerca Matematica E. De Giorgi, Italia.
19 - 25 Settembre 2010	Partecipazione alla **XXXV SCUOLA ESTIVA DI FISICA MATEMATICA** organizzata dal GNFM, tenutasi a Ravello, Sa, Italia.
14 - 19 Febbraio 2010	Partecipazione al Workshop internazionale **"Classical and weak KAM theorem: the Aubry-Mather sets, a break-through in the**

	study of dynamical systems" tenutosi a Montegrotto Terme (Pd), Italia.
25 Nov. - 11 Dic. 2009	Visita e Collaborazione presso **"l'Observatoire de la Côte d'Azur"**, Nizza, Francia.
8 Ottobre 2009	Partecipazione all'**"International Conference Women and Space"** organizzata dall'Università degli Studi di Roma Tor Vergata, tenutasi presso l'Accademia Nazionale dei Lincei, Roma, Italia.
6 - 12 Settembre 2009	Partecipazione al Convegno Internazionale **"CELMEC V, TheFifth International Meeting on Celestial Mechanics"** tenutosi al Balletti Park Hotel, San Martino al Cimino, Viterbo, Italia. Ho presentato un poster dal titolo: "On the dynamics of the standard map".
28 Giugno - 4 Luglio 2009	Partecipazione all'**"Ecole de Mécanique Céleste, La Dynamique des systèmes gravitationnels: défis et perspectives "** tenutasi presso il Centre Paul Langevin, Aussois, Francia. Ho presentato un talk dal titolo "On the dynamics of the dissipative standard map".
31 Maggio - 6 Giugno 2009	Partecipazione all'**"International Conference DyToComp, in Dynamics, Topology and Computations"** organized by "Stefan International Mathematical Center", Warszawa and "Faculty of Mathematics and Computer Science", Jagiellonian University, Kraków. Bedlewo, Polonia.
21 Maggio 2009	Partecipazione al Convegno **"Astronomia: storia e cultura"** presso la Facoltà di Economia dell'Università degli Studi del Molise, Campobasso, Italia.
11 - 12 Febbraio 2009	Partecipazione al Convegno Informale su **"Sviluppi recenti in Fisica Matematica"** presso il Dipartimento di Matematica Pura e Applicata dell'Università di L'Aquila, Italia.
01 - 05 Dicembre 2008	Partecipazione al Workshop internazionale **"Workshop on KAM Theory and its applications"** presso il Lorentz Center, Leiden, Olanda.
22 - 26 Settembre 2008	Partecipazione al Workshop internazionale **"Workshop on Stability and Instability of Mechanical Systems"** presso il C.R.M. U.A.B., Barcellona, Spagna.

23 - 26 Giugno 2008	Partecipazione all'**"International conference on the Dynamics of Celestial Bodies".** Litohoro, Salonicco, Grecia.
30 Marzo - 5 Aprile 2008	Partecipazione al **"7° Alexander Von Humboldt Colloquium for Celestial Mechanics"**. Bad Hofgastein, Salisburgo, Austria.
4 - 8 Febbraio 2008	Partecipazione al **"Workshop GREFI-MEFI 2008: From Dynamical System to Statistical Mechanics"** presso il **CIRM** di Marsiglia, Francia.
3 - 7 Settembre 2007	Partecipazione all'**"Advanced Course on Long Time Integrations"** presso l'Institut de Matemàtica**,** Universitat de Barcelona, Spagna.
28 Maggio - 8 Giugno 2007	Partecipazione alla **"Scottish Universities Summer Schools in Physics No. 62",** "Cortina" series of Advanced Study Institutes in Astrodynamics, **"Extra-Solar Planets"**, presso il Sabhal Mor Ostaig, Isle of Skye, Scotland, Gran Bretagna.
3 - 9 Agosto 2003	Partecipazione all'**Incontro di Studi Matematici** per Borsisti INdAM svoltosi a Perugia, Italia.
4 - 10 Agosto 2002	Partecipazione all'**Incontro di Studi Matematici** per Borsisti INdAM svoltosi a Perugia, Italia.
6 - 7 Agosto 2001	Partecipazione all'**Incontro di Studi Matematici** per Borsisti INdAM svoltosi a Perugia, Italia.

ORGANIZZAZIONE DI SCUOLE E CONVEGNI INTERNAZIONALI

10 - 15 Giugno 2018	Organizzatore locale della scuola estiva internazionale **"Stable and Chaotic Motions in the Planetary Problem"** tenutasi presso l'Osservatorio di Asiago dal 10 al 15 Giugno 2018. L'evento è stato realizzato all'interno del progetto ERC n. 677793 "Stable and Chaotic Motions in the Planetary Problem".
18 - 22 Giugno 2018	Organizzatore locale della conferenza internazionale **"Perspectives in Hamiltonian Dynamics"** tenutasi a Venezia dal 18 al 22 Giugno 2018. L'evento è stato realizzato all'interno del progetto ERC n. 677793 "Stable and Chaotic Motions in the Planetary Problem".
8 Ottobre 2009	**Collaborazione** nell'organizzazione durante lo svolgimento del convegno internazionale **"Women and Space"**, Accademia Nazionale dei Lincei; comitato organizzatore: V. Baldoni (Università di Roma Tor Vergata), A. Celletti (Università di Roma Tor Vergata), A. Coradini

(INAF/IFSI), E. Strickland (Università di Roma Tor Vergata). Gli atti del convegno sono stati presentati presso la Società Geografica Italiana, Villa Celimontana, Roma.

06 - 12 Settembre 2009 **Collaborazione** nell'organizzazione del convegno internazionale **"Fifth Meeting on Celestial Mechanics - CELMEC V"**, avendo curato sia gli aspetti organizzativi pre-congressuali sia quelli durante il convegno; comitato organizzatore: A. Celletti (Università di Roma Tor Vergata), A. Giorgilli (Università di Milano), E. Perozzi (Telespazio, Roma), G.B. Valsecchi (CNR, Roma). Gli interventi del convegno sono stati pubblicati in un numero speciale di "Celestial Mechanics and Dynamical Astronomy".

PARTECIPAZIONE A COMMISSIONI DI CONCORSO UNIVERSITARI

Settembre 2020 **Commissione per l'Assegno di Ricerca** per il progetto ERC n. 677793 "Stable and Chaotic Motions in the Planetary Problem", Settore Scientifico-disciplinare: Mat/07 – Fisica Matematica, presso il Dipartimento di Matematica "Tullio Levi-Civita", Università di Padova.

Febbraio 2020 **Commissione per due Assegni di Ricerca** per il progetto ERC n. 677793 "Stable and Chaotic Motions in the Planetary Problem", Settore Scientifico-disciplinare: Mat/07 – Fisica Matematica, presso il Dipartimento di Matematica "Tullio Levi-Civita", Università di Padova.

Maggio 2019 **Commissione per l'Assegno di Ricerca** per il progetto ERC n. 677793 "Stable and Chaotic Motions in the Planetary Problem", Settore Scientifico-disciplinare: Mat/07 – Fisica Matematica, presso il Dipartimento di Matematica "Tullio Levi-Civita", Università di Padova.

Aprile 2018 **Commissione per l'Assegno di Ricerca** "Statistical study of gravitational system", Bando n. 6/2018, Settore Scientifico-disciplinare: Mat/07 – Fisica Matematica, presso il presso il Dipartimento di Matematica "Tullio Levi-Civita", Università di Padova.

PARTECIPAZIONE A COMITATI EDITORIALI

A dicembre 2019 sono entrata a far parte del comitato editoriale del volume dei Proceedings relativo alla scuola internazionale *I--CELMECH, New frontiers of Celestial Mechanics: Theory and Applications* tenuta presso l'Università Statale di Milano dal 3 al 7 Febbraio 2020. Il volume verrà

pubblicato con la Springer in *Proceedings in Mathematics and Statistics (PROMS)*.

ATTIVITA' DI REFERAGGIO

Da dicembre 2019: referaggio per la rivista *International Journal of Non-Linear Mechanics.*
Da settembre 2020: referaggio per la rivista internazionale *Celestial Mechanics and Dynamical Astronomy.*

ATTIVITA' DIVULGATIVA

22 Febbraio 2019	Invito a tenere la conferenza divulgativa dal titolo **"Il nostro caotico sistema solare"** presso il circolo "Galileo Galilei" di Mogliano Veneto, all'interno del ciclo di seminari Ordine e Caos, il presso Mogliano Veneto.
10 - 11 Marzo 2010	**Lezione divulgativa** dal titolo "Il Sistema Solare" tenuta presso il Liceo Scientifico Vito Volterra, Ciampino, Roma.
26 Maggio 2009	**Lezione divulgativa** dal titolo "Il Sistema Solare" tenuta presso la scuola Germanica di Roma.

PUBBLICAZIONI

S. Di Ruzza, J. Daquin, G. Pinzari, "Symbolic dynamics in a binary asteroid system", Communications in Nonlinear Science and Numerical Simulation, Vol. 91, 2020.

F. Cardin, S. Di Ruzza, L. Donà, "Il problema degli n-corpi in relatività generale", Padova University Press (2019), Traduzione dal francese all'italiano dell'ultimo lavoro di Tullio Levi Civita pubblicato postumo nel 1950, "Le problème des n corps en relativité générale". Introduzione, traduzione e note a cura di Franco Cardin, Sara Di Ruzza e Leonardo Donà.

G. Schettino, S. Di Ruzza, F. De Marchi, S. Cicalò, G. Tommei and A. Milani "The radio science experiment with BepiColombo mission to Mercury", Memorie della Società Astronomica Italiana, Volume 87, 24-29 (2016).

S. Cicalò, G. Schettino, S. Di Ruzza, E.M. Alessi, G. Tommei and A. Milani "The BepiColombo MORE gravimetry and rotation experiments with the ORBIT14 software", Monthly Notices of Royal Astronomical Society, Volume 457 Issue2, pp. 1507-1521 (2016).

G. Schettino, S. Cicalò, S. Di Ruzza and G. Tommei "The relativity experiment of MORE: global full-cycle simulation and results", Proceedings of 2nd International Workshop in Metrology for Aerospace (2015).

Di Ruzza S., Lhotka C., "High order normal form construction near the elliptic orbit of the Sitnikov

problem", Celestial Mechanics and Dynamical Astronomy: Vol. **111**, Issue 4, 449-464 (2011).

Celletti A., Di Ruzza S., "Periodic and quasi-periodic orbits of the dissipative standard map", DCDS-B, vol. **16**, n. 1, 151-171 (2011).

Celletti A., Di Ruzza S., "Resonances in the solar system", First Meeting on Cultural Astronomy, edited by E. Badolati, LOFFREDO EDITORE Napoli, 2010.

Celletti A., Di Ruzza S., Lhotka C., Stefanelli L., "Nearly-Integrable Dissipative Systems and Celestial Mechanics", The European Phys. Jour. - Special Topics, Vol. **186**, n. 1, 33-66 (2010).

P. Buttà, E. Caglioti, S. Di Ruzza, C. Marchioro, "On the propagation of a perturbation in an anharmonic system", Journal of Statistical Physics, Vol. **127** No. 2 (2007), pp. 313-325.

PREPRINTS

J. Daquin, S. Di Ruzza, G. Pinzari, "A new analysis of the three–body problem", **accettato** per la pubblicazione in I-CELMECH, New frontiers of Celestial Mechanics: Theory and Applications, Proceedings in Mathematics and Statistics (PROMS), (2021).

S. Di Ruzza, "Classical and relativistic n-body problem: from Levi-Civita to the most advanced interplanetary missions" **accettato** in European Physical Journal Plus, (2021).

S. Di Ruzza, G. Pinzari, "Euler integral as a source of chaos in the three–body problem", **sottomesso** in Communications in Nonlinear Science and Numerical Simulation, (2021).

PUBBLICAZIONI DIVULGATIVE

S. Di Ruzza, "La risonanza tra la Terra e la Luna", CaoStabile N.2 [03.05.2011], http://caostabile.altervista.org.

S. Di Ruzza, "Il moto dei pianeti intorno al Sole", CaoStabile N.4 [04.07.2011], http://caostabile.altervista.org.

S. Di Ruzza, "Il navigatore satellitare e la costellazione Galileo", CaoStabile N.5 [01.11.2011], http://caostabile.altervista.org

S. Di Ruzza, "In viaggio verso Saturno (Capitolo 1)", CaoStabile N.6 [09.01.2012], http://caostabile.altervista.org

Le dichiarazioni rese nel presente curriculum sono da ritenersi rilasciate ai sensi degli artt. 46 e 47 del D.P.R. 445/2000.

Io sottoscritta Sara Di Ruzza, ai sensi del D.P.R. 445 del 28.12.2000, autorizzo il trattamento dei dati da me trasmessi.

Roma, 27/10/2021

Alessandro Duca

Curriculum Vitae

✉ *alessandro.duca@uvsq.fr*
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.

Posizioni occupate

10/2020 – In corso **Post-doc** finanziato da "Fondation Mathématiques Jacques Hadamard" di Parigi al "Laboratoire de Mathématiques de Versailles" (supervisionato da V. Nersesyan).

09/2018 – 09/2020 **Post-doc** finanziato da "ANR-ISDEEC" (ANR-16-CE40-0013) a "Institut Fourier" di Grenoble (Francia) (supervisionato da R. Joly).

11/2014 – 04/2018 **Dottorando** in matematica all'Università degli studi di Torino, al Politecnico di Torino e a "Université de Bourgogne Franche-Comté" (Francia) (relatori N. Boussaid, T. Chambrion and R. Adami).

Finanziamenti e progetti

09/2020 – In corso Beneficiario del finanziamento post-dottorale del programma VINCI 2020 dell'Università Italo-Francese per il progetto "Graphes quantiques de métamatériaux".

09/2018 – In corso Membro del progetto "ANR-ISDEEC: Interaction entre Systèmes Dynamiques, Equations d'Evolution et Contrôle" (ANR-16-CE40-0013).

11/2014 – 04/2018 Membro del gruppo INRIA "SPHINX: Heterogeneous Systems: Inverse problems, Control and Stabilization, Simulation".

Qualifiche

01/2019 – In corso Qualifica francese a concorrere come "maîtres de conférences" in matematica pura.

02/2019 – In corso Qualifica francese a concorrere come "maîtres de conférences" in matematica applicata.

Formazione

11/2014 – 04/2018 **Ph.D:** Matematica pura e applicata.
Istituzioni: "Università degli studi di Torino" e "Politecnico di Torino", in cotutela con "Université de Bourgogne Franche-Comté" (Francia).
Titolo della tesi: "Analysis of the controllability of bilinear closed quantum systems."
Commissione: F. Rossi (Presidente), O. Glass (Referee), A. Sarychev (Referee), N. Boussaïd (Relatore), T. Chambrion (Relatore), R. Adami (Relatore).

2011 – 2014 **Laurea Magistrale:** Matematica, voto: 110/110 "cum laude".
Istituzione: "Università degli studi di Milano-Bicocca".
Titolo della tesi: "Few-body problem in quantum mechanics and Efimov effect" (relatore D. Noja).

2008 – 2011 **Laurea Triennale:** Matematica.
Istituzione: "Università degli studi di Milano-Bicocca".
Titolo della tesi: "Construction of self-adjoint operators to extend symmetric operators" (relatore R. Adami).

Pubblicazioni

1. M. Abdelli, A. Ben Aissa, A. Duca, Well-posedness and exponential decay for the Euler-Bernoulli beam conveying fluid equation with non-constant velocity and dynamical boundary conditions. *Z. Angew. Math. Phys*, 72(2):49, 2021.

2. K. Ammari, A. Duca. Controllability of localized quantum states on infinite graphs through bilinear control fields. *Internat. J. Control*, 94(7):1824–1837, 2021.

3. K. Ammari, A. Duca. Controllability of periodic bilinear quantum systems on infinite graphs. *Journal of Mathematical Physics*, 61(10):101507, 2020.

4. A. Duca. Bilinear quantum systems on compact graphs: well-posedness and global exact controllability. *Automatica J. IFAC,* 123:109324, 2021.

5. A. Duca. Controllability of bilinear quantum systems in explicit times via explicit control fields. *Internat. J. Control*, 94(3):724–734, 2021.

6. A. Duca. Global exact controllability of bilinear quantum systems on compact graphs and energetic controllability. *SIAM J. Control Optim.*, 58(6):3092–3129, 2020.

7. A. Duca. Simultaneous global exact controllability in projection of infinite 1D bilinear Schrödinger equations. *Dynamics of Partial Differential Equations*, 17(3):275–306, 2020.

8. A. Duca, R. Joly, Schrödinger equation in moving domains. *Annales Henri Poincaré*, 22(6):2029–2063, 2021.

9. A. Duca, R. Joly, D. Turaev. Permuting quantum eigenmodes by a quasi-adiabatic motion of the potential wall. *Journal of Mathematical Physics*, 61(10):101511, 2020.

Articoli inviati

10. P. Cannarsa, A. Duca, C. Urbani. Exact controllability to eigensolutions of the bilinear heat equation on compact networks. *preprint*, 2021.

11. C. Castro, A. Duca, Achieving energy permutation of modes in the Schrödinger equation with moving Dirac potentials. *preprint arXiv:2107.03929*, 2021.

12. A. Duca, V. Nersesyan, Bilinear control and growth of Sobolev norms for the nonlinear Schrödinger equation. *preprint arXiv:2101.12103*, 2021.

Lavori in corso

13. K, Ammari, E. Bonnetier, A. Duca. Superlinsing using hyperbolic metamaterials in quantum graph geometry.

14. A. Duca, V. Nersesyan. Local exact controllability of the 2D non-linear Schrödinger equation via bilinear controls.

15. A. Duca, R. Joly, D. Turaev. Control of the Schrödinger equation by deformations of the domain.

Interessi scientifici

- **Controllo bilineare dell'equazione di Schrödinger lineare e non-lineare.** Durante il dottorato, ho studiato controllabilità bilineare dell'equazione di Schrödinger lineare definita su un intervallo in [5,7] e su grafi compatti in [4,6]. Nei due anni successivi, ho proseguito la ricerca studiando i grafi infiniti in [2,3] in collaborazione con *Kaïs Ammari*. In futuro, prevediamo di studiare in collaborazione con *Luc Robbiano* la controllabilità bilineare dell'equazione di Schrödinger lineare frazionaria.

  Sto attualmente collaborando con *Vahagn Nersesyan* ad un progetto sulla controllabilità bilineare dell'equazione di Schrödinger non-lineare. In [12], abbiamo dimostrato la controllabilità approssimata tra autofunzioni nel toro. In [14], stiamo studiando la controllabilità esatta dell'equazione sui rettangoli. Questo progetto è sovvenzionato da "Fondation Mathématiques Jacques Hadamard".

- **Sistemi quantistici di metamateriali.** Sto collaborando con *Kaïs Ammari* e *Eric Bonnetier* ad uno studio delle reti composte da materiali dielettrici e materiali a conduttività negativa. In [13], mostriamo la buona positura dei problemi stazionari associati al problema e caratterizziamo i sistemi d'evoluzione corrispondenti. Questo progetto è finanziato dal programma VINCI 2020.

- **L'equazione di Schrödinger su domini in movimento.** Ho collaborato in [8] con *Romain Joly* ad uno studio sull'esistenza e l'unicità delle soluzioni di un'equazione di Schrödinger definita su un dominio in movimento. Il prossimo passo di questa ricerca è studiare tale risultato anche in presenza di non-linearità. Questo progetto è finanziato da ANR-ISDEEC (ANR-16-CE40-0013).

- **Controlli quasi-adiabatici per sistemi quantistici chiusi.** In collaborazione con *Dmitry Turaev* e *Romain Joly*, ho studiato in [9] la controllabilità dell'equazione di Schrödinger uni-dimensionale via potenziali quasi-adiabatici. In [15], tecniche simili ci permettono di dimostrare la controllabilità via le deformazioni del dominio. In [11], ho collaborato con *Carlos Castro* per verificare numericamente i risultati contenuti in [9]. Prossimamente, vorremmo anche analizzare numericamente i risultati contenuti in [15]. Questo progetto è finanziato da ANR-ISDEEC (ANR-16-CE40-0013).

- **Un'equazione di Eulero-Bernoulli per un fluido canalizzato.** In collaborazione con *Mama Abdelli* e *Akram Ben Aissa*, Ho studiato in [1] la buona positura e la stabilità esponenziale di un'equazione di Eulero-Bernoulli per un fluido canalizzato con velocità non constante e condizioni al bordo dinamiche.

- **Controllabilità bilineare di equazioni paraboliche su reti.** Collaboro con *Piermarco Cannarsa* e *Cristina Urbani* ad uno studio sulla controllabilità bilineare delle equazioni paraboliche su reti. In [10], proviamo diversi tipi di controllabilità esatta per l'equazione del calore.

Relazioni/comunicazioni in conferenze, workshop e scuole

- "Controllability of PDEs in physics models and applied sciences", Febbraio 2020, Università degli Studi di Roma Tor Vergata.

- "VIII PDEs, optimal design and numerics", Agosto 2019, "Centro de Ciencias de Benasque Pedro Pascual", Benasque (Spagna).

- "Identification and Control: Some challenges", Giugno 2019, "Université de Monastir" (Tunisia).

- "11^e rencontre du GDR Dynqua Bordeaux", Febbraio 2019, "Institut de Mathématiques de Bordeaux" (Francia).

- "Workshop on PDE's: Modelling & Theory", Maggio 2018, "Université de Monastir" (Tunisia).

- "Journées Jeunes EDPistes" (esposizione di poster), Marzo 2018, "Institut Élie Cartan de Lorraine", Nancy (Francia).

- "Mathematical Challenges in Quantum Mechanics", Febbraio 2018, Sapienza Università di Roma.

- "Colloque INFINITI IHP" (esposizione di poster), Novembre 2017, "Institut Henri Poincaré", Parigi (Francia).

- "EDP-Normandie" (esposizione di poster), Ottobre 2017, "Université de Caen Normandie" (Francia).
- "Mathematical Control Theory", Giugno 2017, Porquerolles (Francia).
- "Journée de the ANR DISQUO", Dicembre 2016, INRIA, Parigi (Francia).
- "Réunion du GT-EDP", Maggio 2016, "École des Mines", Parigi (Francia).

Relazioni/comunicazioni in seminari

- Novembre 2021, seminario per il gruppo di ricerca in EDP, "Institut Élie Cartan de Lorraine", Nancy (Francia).
- Ottobre 2021, seminario per il gruppo di ricerca MAC, "Laboratoire de Mathématiques de Toulouse" (Francia).
- Aprile 2021, seminario per il gruppo di ricerca in EDP, "Laboratoire de Mathématiques de Versailles" (Francia).
- Aprile 2021, seminario del "Laboratoire de Mathématiques et leurs Applications de Valenciennes" (Francia).
- Marzo 2021, seminario per il gruppo OSSUR-PDEs, Gran Sasso Science Institute.
- Gennaio 2020, seminario per il gruppo di ricerca in controllo, "Université de Monastir" (Tunisia).
- Dicembre 2019, seminario per il gruppo di ricerca in controllo, "Institut de Mathématiques de Toulouse" (Francia).
- Dicembre 2019, seminario per il gruppo di ricerca in EDP, "Institut de Mathématiques de Toulouse" (Francia).
- Maggio 2019, seminario per il gruppo di ricerca in EDP, "Laboratoire de Mathématiques Université Savoie Mont Blanc", Chambery (Francia).
- Gennaio 2019, seminario per il gruppo di ricerca in controllo, "Université de Monastir" (Tunisia).
- Dicembre 2017, seminario per il gruppo di ricerca in fisica-matematica, "Institut Fourier", Grenoble (Francia).
- Novembre 2017, seminario per il gruppo di ricerca in EDP, "Institut Élie Cartan de Lorraine", Nancy (Francia).
- Gennaio 2017, seminario dei dottorandi, "Laboratoire de Mathématiques de Besançon" (Francia).

Inviti

- Novembre 2021, invitato da Serge Nicaise a "Laboratoire de Mathématiques et leurs Applications de Valenciennes" (Francia).
- Ottobre 2021, Dicembre 2019, invitato da Patrick Martinez e Franck Boyer a "Institut de Mathématiques de Toulouse" (Francia).
- Settember 2021, Febbraio 2020, invitato da Piermarco Cannarsa all'Università degli Studi di Roma Tor Vergata.
- Luglio 2021, Dicembre 2017, invitato da Romain Joly a "Institut Fourier" (Francia).

- Gennaio 2020, Giugno 2019, Gennaio 2019, Maggio 2018, invitato da Kaïs Ammari a "Université de Monastir" (Tunisia).
- March 2018, Novembre 2016, December 2016, invitato da Thomas Chambrion a "Institut Élie Cartan de Lorraine" di Nancy (Francia).
- Ottobre 2017, invitato da Kaïs Ammari a "Laboratoire de Mathématiques de Versailles" (Francia).
- Settembre 2017, invitato da Arnaud Munch a "Université Clermont-Auvergne of Clermont-Ferrand" (Francia).
- Maggio 2016, invitato da Ugo Boscain e Mario Sigalotti a "École Polytechnique de Paris" (Francia).

Premi e responsabilità

- Ottobre 2017: premio qualità del programma di dottorato del Politecnico di Torino e dell' Università degli studi di Torino XXX ciclo.
- Referee per riviste scientifiche (Mathematical Methods in the Applied Sciences, International Journal of Control, Journal of Dynamical and Control Systems, etc...) e per "Mathematical Reviews".

Insegnamento

- Corso: "Probabilités et Statistique pour la Biologie" (corso TD), Université de Versailles Saint-Quentin-en-Yvelines, 2021-2022 (programmato per il secondo semestre), corso di 36 ore a degli studenti della Laurea Triennale in Biologia.
- Corso: "Mathématiques assistées par ordinateur (Python)" (corso TD), Université de Versailles Saint-Quentin-en-Yvelines, 2021-2022 (in corso - primo semestre), corso di 36 ore a degli studenti della Laurea Triennale in Matematica.
- Corso: "Analyse des EDP" (corso TD), Université de Versailles Saint-Quentin-en-Yvelines, 2020-2021, 6 ore a degli studenti della Laurea Specialistica in Matematica.
- Corso: "Aspects Différentiels" (corso TD), Université de Versailles Saint-Quentin-en-Yvelines, 2020-2021, corso di 36 ore a degli studenti della Laurea Triennale in Matematica.
- Corso: "Méthodes mathématiques pour la chimie" (corso TD), Université de Versailles Saint-Quentin-en-Yvelines, 2020-2021, corso di 30 ore a degli studenti della Laure Triennale in Chimica.
- Corso: "Introduction à la biologie mathématique et à la dynamique des populations" (corso TD), Université Grenoble Alpes, 2019-2020, corso di 32 ore a degli studenti della Laurea Triennale in Biologia.
- Corso: "Outils mathématiques fondamentaux pour les sciences de la vie: modéliser, calculer, expliquer" (corso TD), Université Grenoble Alpes, 2019-2020, corso di 32 ore a degli studenti della Laurea Triennale in Biologia.
- Corso: "Esercitazioni in Analisi Matematica" (esercitazioni), Politecnico di Torino, 2016 - 2017, corso di 33 ore a degli studenti della Laurea Triennale in Ingegneria.

Lingue

- Italiano: madrelingua.
- Inglese: fluente.
- Francese: fluente.

Titoli di studio (Laurea, M.S. e Dottorato di Ricerca):

- Laurea in Matematica, *magna cum laude*, conseguita presso University of Alabama at Birmingham (Birmingham, Alabama, USA) nel Dicembre 2003.
- *Master of Science* in Matematica, conseguito presso University of Alabama at Birmingham (Birmingham, Alabama, USA) nel Dicembre 2004.
- Dottorato di Ricerca in Matematica, conseguito presso Concordia University (Montréal, Canada) nel Ottobre 2011. Supervisore: Pawel Góra. Titolo della tesi: "On existence and stability of absolutely continuous invariant measures in some chaotic dynamical systems".

Recedenti posizioni accademiche ricoperte:

- Research Assistant Professor presso il Departimento di matematica e statistica dell'Università Concordia, Montréal, Canada (Gennaio 2012 – Maggio 2012).
- *Marie Curie INDAM cofund* Research Fellow presso il Departimento matematica dell'Università Roma Tor Vergata (Agosto 2012 – Agosto 2014). "Characterizing the stability of absolutely continuous invariant measures of piecewise expanding dynamical systems" CSACIMPEDS. PI e Coordinatore.
- Research Fellow (ERC AdG MALADY, PI: Carlangelo Liverani) presso il Departimento matematica dell'Università Roma Tor Vergata (Ottobre 2014 – Ottobre 2015).
- Research Fellow (ERC AdG StochExtHomog, PI: Ian Melbourne) presso il Departimento matematica dell'Università di Warwick, United Kingdom (Ottobre 2014 – Ottobre 2018).
- Research Fellow presso il Departimento matematica dell'Università Roma Tor Vergata: dalle Febbraio 2019

Elenco delle pubblicazioni:

1. Eslami, Peyman; Melbourne, Ian; Vaienti, Sandro. Sharp statistical properties for a family of multi-dimensional non-Markovian non-conformal intermittent maps. *Adv. Math.* 388 (2021), 107853.
2. Eslami, Peyman. Inducing schemes for multi-dimensional piecewise expanding maps. *Discrete Contin. Dyn. Syst.* Online first: 10.3934/dcds.2021120
3. Eslami, Peyman; Liverani, Carlangelo. Mixing rates for symplectic almost Anosov maps. *Nonlinearity* 34 (2021), 3709–3731.
4. Eslami, Peyman. Stretched-exponential mixing for $\mathcal{C}^{1+\alpha}$ skew products with discontinuities. *Ergodic Theory Dynam. Systems* 37 (2017), no. 1, 146–175.
5. Butterley, Oliver; Eslami, Peyman. Exponential mixing for skew products with discontinuities. *Trans. Amer. Math. Soc.* 369 (2017), no. 2, 783–803.
6. Boyarsky, Abraham; Eslami, Peyman; Góra, Pawel; Li, Zhenyang; Meddaugh, Jonathan; Raines, Brian E. Chaos for successive maxima map implies chaos for the original map. *Nonlinear Dynam.* 79 (2015), no. 3, 2165–2175.
7. Eslami, Peyman; Góra, Pawel. Stronger Lasota-Yorke inequality for one-dimensional piecewise expanding transformations. *Proc. Amer. Math. Soc.* 141 (2013), no. 12, 4249–4260.
8. Li, Zhenyang; Góra, Pawel; Boyarsky, Abraham; Proppe, Harald; Eslami, Peyman. Family of piecewise expanding maps having singular measure as a limit of ACIMs. *Ergodic Theory Dynam. Systems* 33 (2013), no. 1, 158–167.
9. Góra, Pawel; Boyarsky, Abraham; Eslami, Peyman. Metastable systems as random maps. *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* 22 (2012), no. 11, 1250279, 11 pp.
10. Eslami, Peyman; Misiurewicz, Michal. Singular limits of absolutely continuous invariant measures for families of transitive maps. *J. Difference Equ. Appl.* 18 (2012), no. 4, 739–750.
11. Eslami, Peyman; Góra, Pawel. On eventually expanding maps of the interval. *Amer. Math. Monthly* 118 (2011), no. 7, 629–635.
12. Acosta, Gerardo; Eslami, Peyman; Oversteegen, Lex G. On open maps between dendrites. *Houston J. Math.* 33 (2007), no. 3, 753–770.

Svolgimento di attività didattica:

- **A.A. 2000/2001**. Attività di tutoraggio presso Student Support Services, Jefferson State Community College e Math Resource Center e Maple Lab (per tutti i corsi di livello BA e BS) presso University of Alabama at Birmingham , Birmingham, AL, United States.
- **A.A. 2001/2002**. Attività di tutoraggio presson Math Resource Center e Maple Lab (per tutti i corsi di livello BA e BS) presso University of Alabama at Birmingham, Birmingham, AL, United States.
- **A.A. 2002/2003**. Assistente per il corso "Statistics" (Prof. James Buckley) per tre trimestri presso University of Alabama at Birmingham, Birmingham, AL, United States.
- **A.A. 2003/2004** Assistente per il corso "Finite Mathematics" (Prof. John Mayer) per due trimestri e docente per il corso "Basic Algebra" presso University of Alabama at Birmingham, Birmingham, AL, United States.
- **A.A. 2004/2005** Docente per il corso "Basic Algebra", "Pre-Calculus Trigonometry" e "Survey of Calculus" (Sessione di 3 settimane a maggio e trimestre estivo) presso University of Alabama at Birmingham, Birmingham, AL, United States.
- **A.A. 2005/2006** Docente per il corso "Survey of Calculus" e "Intermediate Algebra" presso University of Alabama at Birmingham, Birmingham, AL, United States.
- **A.A. 2008/2009** Docente per il corso "Intermediate Algebra" presso Concordia University, Montréal, QC, Canada.
- **A.A. 2009/2010** Docente per il corso "Fundamental Mathematics" presso Concordia University, Montréal, QC, Canada.
- **A.A. 2010/2011** Docente per il corso "Fundamental Mathematics" presso Concordia University e docente per il corso "Business Mathematics" presso Dawson College, Montréal, QC, Canada.
- **A.A. 2011/2012** Docente per il corso "Fundamental Mathematics" presso Concordia University, Montréal, QC, Canada.

Riconoscimenti scientifici ed accademici ricevuti:

- *Fast-Track Scholarship*, University of Alabama at Birmingham, United States (anno accademico 2001–2003, 5.200 USD all'anno).
- *Teaching Assistantship and Tuition Waver Scholarship*, University of Alabama at Birmingham, United States (anno accademico 2004–2006, 15.000 USD all'anno).
- *Carolyn and Richard Renaud Teaching Assistantship Award*, Concordia University, Montréal, Canada (Settembre 2008 – Decembre 2008, Totale: 5.000 CAD).
- *International Tuition Fee Remission Award*, Concordia University, Montréal, Canada (anno accademico 2008)
- *Institut des sciences mathématique (ISM) Scholarship*, Montréal, Canada (anno accademico 2008–2009, 6.000 CAD all'anno).
- *Centre de recherches mathématiques/Fonds québécois de la recherche sur la nature et les technologies (CRM/FQRNT) International Internship*, Indiana University Purdue University Indianapolis (IUPUI), Indianapolis, United States (Settembre 2010 – Decembre 2011, Totale: 9.240 CAD).
- *Marie Curie INDAM cofund fellowship 2012-2014*: "Characterizing the stability of absolutely continuous invariant measures of piecewise expanding dynamical systems" CSACIMPEDS. PI e Coordinatore.

Visite scientifiche e di svolgimento di attività di ricerca all'estero:

- **Settembre 2010 – Decembre 2010:** Visita presso Indiana University Purdue University Indaianapolis (IUPUI), Indaianapolis, United States (Attività di ricerca in collaborazione con il Prof. Michal Misiurewicz).
- **Maggio 2011:** Visita di una settimana presso Fields Institute, Toronto, Canada, su invito del Prof. Carlangelo Liverani. (Attività di ricerca in collaborazione con il Prof. Carlangelo Liverani)

- **Febbraio 2017:** Visita di una settimana presso Centre de Physique Théorique, su invito del Prof. Sandro Vaienti. (Attività di ricerca in collaborazione con il Prof. Sandro Vaienti)
- **Aprile 2018:** Visita di una settimana presso ICTP, su invito del Prof. Stefano Luzzatto.

Seminari tenuti e di interventi a conferenze nazionali ed internazionali:

- Smooth and homogeneous dynamics conference and workshop, ICTS Bangalore, India. Settembre 2019.
- Dynamics, Equations and Applicaiton (DEA) conference, Krakow, Poland. Settembre 2019.
- Dinamici workshop, Pisa, Italy. Giugno 2019.
- ICTP dynamical systems seminar, ICTP, Trieste, Italy. Aprile 2019
- The 38th Dynamics Days Europe conference, Loughborough University, United Kingdom. Settembre 2018
- TMU-ICTP School and Conference on Dynamical Systems Theory, Tehran, Iran. Maggio 2018.
- Dynamical systems seminar, Concordia University, Montreal, QC, Canada. Marzo 2018.
- Dynamical systems seminar, University of Toronto, Ontario, Canada. Marzo 2018.
- Dynamical systems seminar, University of Exeter, Exeter, United Kingdom. Novembre 2017.
- Dynamical systems seminar, Imperial College London, London, United Kingdom. Ottobre 2017.
- Conference: "Just a little calculation in dynamics", Institute of Mathematics of the Polish Academy of Sciences (IMPAN), Bedlewo, Poland. Agosto 2017.
- 5th Conference of "Frontiers in mathematical sciences" at Institute for Research in Fundamental Sciences (IPM), Tehran, Iran. Luglio 2017.
- Conference in Dynamical Systems and Ergodic Theory at Institute for Research in Fundamental Sciences (IPM), Tehran, Iran. Maggio 2017.
- Dynamical systems seminar at Shahid Bahonar University, Kerman, Iran. Maggio 2017.
- Thematic Program (workshop) in Dynamical systems at Institute for Research in Fundamental Sciences (IPM), Tehran, Iran. Maggio 2017.
- Conference: "Aspects of dynamical systems", Imperial College, London, United Kingdom. Marzo 2017.
- 4th Meeting of the Post-Graduates in Mathematics of UFBA, UFBA, Salvador, Brazil. Novembre 2016.
- "Dynamique, Arithmétique, Combinatoire (Ernest)" seminar, Institute de Mathématiques de Marseille, Luminy, France. Settembre 2016.
- One-day Ergodic Theory Meeting, University of Warwick, England. Giugno 2016.
- "Thermodynamic Formalism and Mixing workshop", Edwin Shrödinger International Institute for Mathematics and Physics, Vienna, Austria. Aprile 2016.
- Conference dedicated to the memory of Nikolai Chernov, University of Alabama at Birmingham, Birmingham, Alabama, United States. Maggio 2015.
- "The Budapest - Wien dynamics seminar", University of Vienna, Vienna, Austria. Giugno 2014.
- Dynamical systems seminar, Concordia University, Montréal, Canada. Marzo 2013.
- "Geometry and analysis" seminar, Institute for Studies in Theoretical Physics and Mathematics (IPM), Tehran, Iran. Gennaio 2013.
- Dynamical systems seminar, Shahid Bahonar University of Kerman, Kerman, Iran. Decembre 2012.
- Dynamical systems seminar, University of Rome Tor Vergata, Rome, Italy. Ottobre 2012.
- Dynamical systems seminar, University of Tor Vergara, Rome, Italy. Ottobre 2012.
- Conference: "Open Dynamical Systems: Ergodic Theory, Probabilistic Methods and Applications", Banff International Research Station, Banff, Alberta, Canada. Aprile 2012.

- IUPUI Dynamical Systems Seminar, Indianapolis, Indiana, United States. Novembre 2010.
- "Spring Topology and Dynamical Systems" conference, Birmingham, Alabama, United States. Marzo 2004.

Partecipazione a convegni e scuole:

- Research school *Thermodynamic Formalism: Modern Techniques in Smooth Ergodic Theory*, Centre International de Rencontres Mathématiques (CIRM), Luminy, France. Luglio 2019.
- *Just a Little Calculation in Dynamics*, Institute of Mathematics of the Polish Academy of Sciences (IMPAN), Bedlewo, Poland. Agosto 2017. Relatore invitato.
- *Current Trends in Dynamical Systems and the Mathematical Legacy of Rufus Bowen*, Pacific Institute for the Mathematical Sciences (PIMS), Vancouver, Canada. Agosto 2017.
- *School on Analytical Aspects of Hyperbolic Flows in Partnership with ERC*, Centre de Mathématiques Henri Lebesgue, Nantes, France. Luglio 2017.
- *5th Conference of Frontiers in Mathematical Sciences*, School of Mathematics of Institute for Research in Fundamental Sciences (IPM), Tehran, Iran. Luglio 2017. Relatore invitato.
- *Workshop on Hyperbolic Dynamics*, International Center for Theoretical Physics (ICTP), Trieste, Italy. Giugno 2017.
- *School on Hyperbolic Dynamics*, Centro di Ricerca Matematica Ennio de Giorgi, Pisa, Italy. Giugno 2017.
- *5th DinAmici Workshop*, Istituto Nazionale di Alta Matematica "F. Severi" (INdAM), Rome, Italy. Giugno 2017.
- *Workshop and Conference in Dynamical Systems*, School of Mathematics of Institute for Research in Fundamental Sciences (IPM), Tehran, Iran. Maggio 2017. Relatore invitato per un minicorso e la conferenza.
- *Aspects of dynamical systems*, Imperial College, London, United Kingdom. Marzo 2017. Relatore invitato.
- *Nonuniformly Hyperbolic Dynamical Systems, Coupling and Renewal Theory*, Centre International de Rencontres Mathématiques (CIRM), Luminy, France. Febbraio 2017.
- *New Trends in One-Dimensional Dynamics*, Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil. Novembre 2016.
- *Analytical Methods in Classical and Quantum Dynamical Systems*, Centro di Ricerca Matematica Ennio de Giorgi, Pisa, Italy. Giugno 2016.
- *One-day Ergodic Theory Seminar*, University of Warwick, Coventry, United Kingdom. Giugno 2016. Relatore invitato.
- *Mixing Flows and Averaging Methods*, Thematic Programme at Erwin Schrödinger International Institute for Mathematics and Physics, Vienna, Austria. Aprile e Maggio 2016.
- *Stochastic Methods for Non-Equilibrium Dynamical Systems*, American Institute of Mathematics (AIM), San Jose, California. Giugno 2015.
- *Averaging and Homogenization in Deterministic and Stochastic Systems* CIRM, Luminy, France. Maggio 2015.
- *The dynamical system, ergodic theory and probability conference dedicated to the memory of Nikolai Chernov* Birmingham, Alabama, United States. Maggio 2015. Relatore invitato.
- *Statistical Properties of Dynamical Systems* LMS-CMI Research School, Loughborough, UK. Aprile 2015.
- *Limit Theorems and Applications*, CIRM, Luminy, France. Luglio 2014.
- *The Budapest - Wien Dynamics seminar*, Vienna, Austria. Luglio 2014. Relatore invitato.
- *Advances and Perspectives in Ergodic Theory and Dynamical Systems*, Erlangen, Germany. Maggio 2014.
- *Hyperbolicity and Dimension*, CIRM, Luminy, France. Decembre 2013.

- *Workshop on Mathematical Paradigms of Climate Science*, INdAM, Rome, Italy. Giugno 2013.
- *Third Workshop of the Young Italian Dynamicists*, Corinaldo, Italy. Giugno 2013.
- *Conference on Limit Theorems for dynamical systems*, CIB-EPFL, Lausanne, Switzerland. Giugno 2013.
- *Geometric, Analytic and Probabilistic approaches to Dynamics in Negative Curvature*, Rome, Italy. Maggio 2013.
- *ICTP-ESF School and Conference in Dynamical Systems*, ICTP, Trieste, Italy. Maggio 2012.
- *Open Dynamical Systems: Ergodic Theory, Probabilistic Methods and Applications*, Banff international research station, Banff, Alberta, Canada. Aprile 2012. Relatore invitato.
- *Fields Institute Workshop on Recent Advances in Topological and Measure-Theoretic Methods in Dynamical Systems*, Nipissing University, North Bay, Ontario, Canada. Maggio 2010.
- *Summer School in Probability*, Pacific Institute for the Mathematical Sciences (PIMS), Vancouver, British Columbia, Canada. Luglio 2009.
- *40th Annual Iranian Mathematics conference*, Sharif University of Technology, Tehran, Iran. Agosto 2008.
- *Spring Topology and Dynamical Systems Conference*, The university of North Carolina Greensboro, Greensboro, North Carolina, United States. Marzo 2006.
- *Spring Topology and Dynamical Systems Conference*, Berry College, Rome, Georgia, United States. Marzo 2005.
- *Spring Topology and Dynamical Systems Conference*, University of Alabama at Birmingham (UAB), Birmingham, Alabama, United States. Marzo 2004. Relatore invitato.

Altri titoli:

- Referee per le riviste: Ergodic Theory and Dynamical Systems, Discrete and Continuous Dynamical Systems, Annales Henri Poincaré.
- Organizzatore del settimanale Ergodic Theory and Dynamical Systems (ETDS) seminari presso University of Warwick per gli anni accademici 2016–2017 and 2017–2018.
- Presidente del Mathematics and Statistics Graduate Student Association (MASGSA) presso Concordia University per gli anni accademici 2009–2010 e 2010–2011.
- Titolo di Minore in Computer Engineering al livello BS e minore in Computer Science al livello di dottorato dell'università di Alabama a Birmingham (UAB).

DAVIDE FERMI

Curriculum Vitae et Studiorum

Personal Data

Name and surname:	Davide Fermi
Place and date of birth:	[redacted]
Citizenship:	Italian
Civil status:	[redacted]
Work address:	Dipartimento di Matematica e Fisica Università degli Studi Roma Tre Largo S. Leonardo Murialdo, 1 I–00146 Roma RM, Italy
Email addresses:	[redacted], [redacted]
Webpage:	[redacted]
Spoken Languages:	Italian: mother tongue English: fluent
Orcid ID:	0000-0002-4651-1784
Scopus Author ID:	54383178400
Researcher ID:	S-6536-2018
MR Author ID:	1142559

Academic Positions

01/06/2021 - present	**Researcher** in Mathematical Physics (RTD-a – art.24, c.3–a, legge 240/2010, s.c. 01/A4, s.s.d. MAT/07 Fisica Matematica) Università degli Studi Roma Tre, Mathematics and Physcis Dep. (Roma, Italy) Position funded by ERC consolidator grant UniCoSM (PI: Prof. Alessandro Giuliani)
01/01/2021 - 31/05/2021	**Postdoc**, Università degli Studi di Roma La Sapienza, Mathematics Dep. (Roma, Italy) Project: "*Metodi matematici in meccanica quantistica*" (transl. "*Mathematical methods in quantum mechanics*") Supervisor: Prof. Alessandro Teta
02/03/2020 - 31/12/2020	**Postdoc**, Scuola Normale Superiore, Classe di Scienze (Pisa, Italy) Project: "*Aspetti matematici della fisica della materia condensata*" (transl. "*Mathematical aspects of condensed matter physics*") Supervisor: Prof. Michele Correggi
01/12/2016 - 29/02/2020	**Postdoc**, Università degli Studi di Milano, Mathematics Department (Milano, Italy) Project: "*Metodi analitici e geometrici per le equazioni differenziali e la teoria quantistica dei campi*" (transl. "*Analytical and geometrical methods for differential equations and quantum field theory*") Supervisors: Prof. Marco M. Peloso and Prof. Livio Pizzocchero
15/04/2016 - 30/11/2016	**Postdoc**, Università degli Studi dell'Insubria, DiSAT (Como, Italy) Project: "*Problemi matematici nella fisica della materia condensata - FIR 2013*" (transl. "*Mathematical problems in condensed matter physics*") Supervisors: Dr. Claudio Cacciapuoti and Prof. Andrea Posilicano

Qualifications and Education

2020	**Abilitazione Scientifica Nazionale** for *Associate Professor* in Mathematical Physics (Professore di II Fascia, s.c. 01/A4 Fisica Matematica, valid from 09/11/2020 until 09/11/2029)
2012 - 2016	**Ph.D. degree in Mathematics**, Università degli Studi di Milano, Math. Dep. (Milano, Italy) (XXVIII cycle, with scholarship) Thesis: "*A functional analytic framework for local zeta regularization and the scalar Casimir effect*" defended in Milan, Italy on 22 February 2016 Advisor: Prof. Livio Pizzocchero

2010 - 2012 **Master degree in Physics**, Università degli Studi di Milano, Physics Dep. (Milano, Italy)
Thesis: "*L'Effetto Casimir e la Regolarizzazione Zeta*"
(transl. "*Zeta regularization and the Casimir effect*")
defended in Milan, Italy on 24 July 2012
Marks: 110/110 *magna cum laude*
Advisor: Prof. Livio Pizzocchero
Co - advisor: Prof. Franco Gallone

2007 - 2010 **Bachelor degree in Physics**, Università degli Studi di Milano, Physics Dep. (Milano, Italy)
Thesis: "*Lo Spaziotempo di Alcubierre*" (transl. "*Alcubierre's spacetime*")
defended in Milan, Italy on 21 October 2010
Marks: 110/110 *magna cum laude*
Advisor: Prof. Livio Pizzocchero

2002 - 2007 **Italian High School diploma**, Liceo Scientifico Statale Giordano Bruno, Melzo (Milan, Italy)
(diploma di Maturità Scientifica PNI - Piano Nazionale Informatica)
Marks: 100/100

Honors and awards

09/2021 **Shortlisted** (2nd place) for Associate Professor position in mathematical physics
(Professore Associato, s.c. 01/A4, s.s.d. MAT/07)
Università di Bologna, Dip. di Matematica (Bologna, Italy)
Selection committee: Prof. Pierluigi Contucci, Prof. Maria Letizia Bertotti, Prof. Maria Groppi

09/2021 **Shortlisted** for tenured researcher position in mathematical physics
(RTD-b, s.c. 01/A4, s.s.d. MAT/07)
Università degli Studi di Torino, Dipartimento di Matematica 'Giuseppe Peano' (Torino, Italy)
Selection committee: Prof. Gregorio Falqui, Prof. Lorenzo Fatibene, Prof. Addolorata Marasco

05/2021 **Shortlisted** for tenured researcher position in mathematical physics
(RTD-b, s.c. 01/A4, s.s.d. MAT/07)
Università Cattolica del Sacro Cuore, Facoltà di Scienze matematiche, fisiche e naturali (Brescia, Italy)
Selection committee: Prof. Alfio Grillo, Prof. Alfredo Marzocchi, Prof. Giuseppe Saccomandi

05/2021 **Shortlisted** for tenured researcher position in mathematical physics
(RTD-b, s.c. 01/A4, s.s.d. MAT/07)
Università degli Studi di Modena e Reggio Emilia, Dip. di Scienze Fisiche, Informatiche e Matematiche
Selection committee: Prof. Roberto Cianci, Prof. Claudio Giberti, Prof. Lamberto Rondoni

03/2021 **Winner** of non-tenured researcher position in mathematical physics
(RTD-a, s.c. 01/A4, s.s.d. MAT/07)
funded by ERC Consolidator Grant "*Universality in Condensed Matter and Statistical Mechanics*"
Università degli Studi di Roma Tre, Dip. di Matematica e Fisica (Roma, Italy)
Selection committee: Prof. Michele Correggi, Prof. Alessandro Giuliani, Prof. Marcello Porta

03/2021 **Shortlisted** for non-tenured researcher position in mathematical physics
(RTD-a, s.c. 01/A4, s.s.d. MAT/07)
Università degli Studi di Parma, Dip. di Scienze Matematiche, Fisiche e Informatiche (Parma, Italy)
Selection committee: Prof. Luigi Barletti, Prof. Maria Groppi, Prof. Andrea Tosin

01/2021 **Shortlisted** for tenured researcher position in mathematical physics
(RTD-b, s.c. 01/A4, s.s.d. MAT/07)
Università degli Studi di Palermo, Dip. di Ingegneria (Palermo, Italy)
Selection committee: Prof. Florinda Capone, Prof. Maria Groppi, Prof. Vittorio Romano

12/2020 **Shortlisted** for tenured researcher position in mathematical physics
(RTD-b, s.c. 01/A4, s.s.d. MAT/07)
Politecnico di Milano, Dip. di Matematica (Milano, Italy)
Selection committee: Prof. Michele Correggi, Prof. Diego Noja, Prof. Alessandro Giuliani

12/2020 **Shortlisted** for non-tenured researcher position in mathematical physics
(RTD-a, s.c. 01/A4, s.s.d. MAT/07)
Università degli Studi di Genova, Dip. di Matematica (Genova, Italy)
Selection committee: Prof. Stefano Vignolo, Prof. Cristian Giardinà, Prof. Maria Grazia Naso

12/2020 **Shortlisted** for non-tenured researcher position in mathematical physics
(RTD-a, s.c. 01/A4, s.s.d. MAT/07)
Università degli Studi di Milano, Dip. di Matematica "Federigo Enriques" (Milano, Italy).
Selection committee: Prof. Giuseppe Gaeta, Prof. Maria Groppi, Prof. Marcello Porta

11/2020 **Winner** of a 1−year postdoc scholarship (assegno di ricerca)
funded by Università degli Studi di Roma "La Sapienza", Mathematics Dep. (Roma, Italy)
Selection committee: Dott. Domenico Monaco, Prof. Gianluca Panati, Prof. Alessandro Teta

11/2020 **Shortlisted** for non-tenured researcher position in mathematical physics
(RTD-a, s.c. 01/A4, s.s.d. MAT/07)
SISSA - Scuola Internazionale Superiore di Studi Avanzati (Trieste, Italy)
Selection committee: Prof. Giada Basile, Prof. Alessandro Giuliani, Prof. Marcello Porta

2019/2020 **Shortlisted** (6^{th} place, >20 partecipants) for a permanent full-time researcher position at INdAM
(concorso pubblico per titoli ed esami per l'assunzione con contratto di lavoro a tempo pieno
e indeterminato di una unità di personale Profilo Ricercatore, III Livello Professionale
presso l'Istituto Nazionale di Alta Matematica "Francesco Severi"),
Selection procedure: 1 preliminary written evaluation, 2 written exams, 1 oral exam
(8 partecipants selected for final stage).
Selection committee: Prof. Dario Bambusi, Prof. Carla Manni, Prof. Marco Romito

01/2020 **Winner** (2 partecipants) of a 2 – years postdoc scholarship (assegno di ricerca) at SISSA, Trieste,
funded by ERC Starting Grant "*MaMBoQ-Macroscopic Behavior of Many-Body Quantum Systems*"
(I renounced the assignment in favour of a postdoc scholarship at Scuola Normale Superiore).
Selection committee: Prof. Gianni dal Maso, Prof. Marcello Porta, Prof. Ludwik Dabrowski

01/2020 **Winner** (2 partecipants) of a 1 – year postdoc scholarship (assegno di ricerca),
funded by Scuola Normale Superiore (Faculty of Sciences).
Selection committee: Prof. Michele Correggi, Prof. Andrea Malchiodi, Prof. Stefano Marmi

07/2019 **Shortlisted** for non-tenured researcher position in mathematical physics
(RTD-a, s.c. 01/A4, s.s.d. MAT/07)
Università degli Studi di Roma "La Sapienza", Mathematics Dep. (Roma, Italy)
Selection committee: Prof. Alessandro Giuliani, Prof. Diego D. Noja, Prof. Alessandro Teta

05/2019 **Shortlisted** for non-tenured researcher position in mathematical physics
(RTD-a, s.c. 01/A4, s.s.d. MAT/07)
Università degli Studi di Firenze, Dip. di Matematica e Informatica "Ulisse Dini" (Firenze, Italy)
Selection committee: Prof. Luigi Barletti, Prof. Luigi Preziosi, Prof. Fabio Rosso

02/2019 **Shortlisted** for non-tenured researcher position in mathematical physics
(RTD-a, s.c. 01/A4, s.s.d. MAT/07)
Università degli Studi di Milano Bicocca, Dip. di Matematica e Applicazioni (Milano, Italy).
Selection committee: Prof. Gregorio Falqui, Prof. Annalisa Marzuoli, Prof. Marco Pedroni

11/2018 **Shortlisted** for non-tenured researcher position in mathematical physics
(RTD-a, s.c. 01/A4, s.s.d. MAT/07)
GSSI - Gran Sasso Science Institute (l'Aquila, Italy)
Selection committee: Prof. Paolo Buttà, Prof. Andrea Sacchetti, Prof. Alessandro Teta

05/2018 **Shortlisted** for non-tenured researcher position in mathematical physics
(RTD-a, s.c. 01/A4, s.s.d. MAT/07)
Università Cattolica del Sacro Cuore, Facoltà di Scienze matematiche, fisiche e naturali (Brescia, Italy)
Selection committee: Prof. Paolo Maremonti, Prof. Alfredo Marzocchi, Prof. Luciano Teresi

08/2016 **Winner** (2^{nd} place, 7 partecipants) of a 2 – years renewable postdoc scholarship (assegno di ricerca),
funded by Università degli Studi di Milano, Mathematics Dep. (Milano, Italy).
Selection committee: Prof. Giovanni Gallavotti, Prof. Valter Moretti, Prof. Marco Rigoli

03/2016 **Winner** (3 partecipants) of a 1 – year postdoc scholarship (assegno di ricerca),
funded by FIR project 2014-2017 "*COND-MATH - Condensed Matter in Mathematical Physics*",
Università degli Studi dell'Insubria, DiSAT (Como, Italy).
Selection committee: Prof. Claudio Cacciapuoti, Prof. Andrea Posilicano, Dott.ssa Stefania Ugolini

11/2012 **Winner** (1^{st} place, 26 partecipants) of a 3 – years Ph.D. scholarship funded by MIUR (Italy),
Università degli Studi di Milano, Mathematics Dep. (Milano, Italy).
Selection committee: Prof. Livio Pizzocchero, Prof. Paolo Stellari, Prof. Enrico Valdinoci

Scientific Works

Preprints

2. D. Fermi, L. Pizzocchero,
A note on "Algebraic approach to Casimir force between two δ-like potentials" (K. Ziemian, Ann. Henri Poincaré, Online First, 2021),
arXiv:2104.11029 [quant-ph] (2021);

1. C. Cacciapuoti, D. Fermi, A. Posilicano,
The semi-classical limit with a delta-prime potential,
arXiv:2012.12735 [math-ph] (2020);

Books

1. D. Fermi, L. Pizzocchero,
Local zeta regularization and the scalar Casimir effect. A general approach based on integral kernels,
World Scientific Publishing, Singapore (2017) [276 pages]
ISBN: 978-981-3224-99-5 (hardcover), ISBN: 978-981-3225-01-5 (ebook); arXiv:1505.00711, arXiv:1505.01044.

Published papers

17. D. Fermi,
Vacuum polarization with zero-range potentials on a hyperplane,
Universe **2021**, 7(4) (2021), 92 [27 pages]
(invited feature article).
DOI:10.3390/universe7040092 ; arXiv:2103.13720 [math-ph] (2021);

16. M. Correggi, D. Fermi,
Magnetic perturbations of anyonic and Aharonov-Bohm Schrödinger operators,
J. Math. Phys. **62**(3) (2021), 032101 [25 pages]
DOI:10.1063/5.0018933 ; arXiv:2006.09056 [math-ph]

15. C. Cacciapuoti, D. Fermi, A. Posilicano,
The semiclassical limit on a star-graph with Kirchhoff conditions,
Analysis and Math. Phys. **11** (2021), 45 [43 pages]
DOI:10.1007/s13324-020-00455-3 ; arXiv:2005.03790 [math-ph]

14. C. Cacciapuoti, D. Fermi, A. Posilicano,
Scattering theory for delta-potentials supported by locally deformed planes,
pp. 35–55 in A. Michelangeli (Ed.), "Mathematical Challenges of Zero-Range Physics", Springer (2021) [20 pp]
DOI:10.1007/978-3-030-60453-0_2

13. D. Fermi, M. Gengo, L. Pizzocchero,
Integrable scalar cosmologies with matter and curvature,
Nucl. Phys. B **957** (2020), 115095 [102 pages]
DOI:10.1016/j.nuclphysb.2020.115095 ; arXiv:2001.03228 [gr-qc]

12. C. Cacciapuoti, D. Fermi, A. Posilicano,
The semi-classical limit with a delta potential,
Annali di Matematica Pura ed Applicata (2020), **200**(2), 453–489 [37 pages]
DOI:10.1007/s10231-020-01002-4 ; arXiv:1907.05801 [math-ph]

11. D. Fermi,
The Casimir energy anomaly for a point interaction,
Mod. Phys. Lett. A **35**(03) (2020), 2040008 [5 pages]
DOI:10.1142/S0217732320400088 ; arXiv:1909.00604 [math-ph]

10. D. Fermi,
Some remarks on a new exotic spacetime for time travel by free fall,
pp. 243–265 in S. Cacciatori, B. Güneysu, S. Pigola (Eds.), "Einstein Equations: Physical and Mathematical Aspects of General Relativity. DOMOSCHOOL 2018", Birkhäuser, Cham, Springer Nature Switzerland AG (2019) [23 pages]
DOI:10.1007/978-3-030-18061-4_8 ; arXiv:1812.09021 [gr-qc]

9. D. Fermi, M. Gengo, L. Pizzocchero,
On the necessity of phantom fields for solving the horizon problem in scalar cosmologies,
Universe **2019**, 5(3) (2019), 76 [20 pages]
(invited feature article).
DOI:10.3390/universe5030076 ; arXiv:1901.11511 [gr-qc]

8. C. Cacciapuoti, D. Fermi, A. Posilicano,
Scattering from local deformations of a semitransparent plane,
J. Math. Anal. Appl. **473**(1) (2019), 215-257 [43 pages]
DOI:10.1016/j.jmaa.2018.12.045 ; arXiv:1807.07916 [math-ph]
Corrigendum,
J. Math. Anal. Appl. **482**(1) (2020), 123554 [2 pages]
DOI:10.1016/j.jmaa.2019.123554

7. C. Cacciapuoti, D. Fermi, A. Posilicano,
On inverses of Krein's Q-functions,
Rend. Mat. Appl. (7) **39**(2) (2018), 229–240 [12 pages]
Editor's page ; arXiv:1809.05150 [math.SP]

6. D. Fermi, L. Pizzocchero,
A time machine for free fall into the past,
Class. Quant. Grav. **35**(16) (2018), 165003 [42 pages]
DOI:10.1088/1361-6382/aace6e ; arXiv:1803.08214 [gr-qc]

5. D. Fermi, L. Pizzocchero,
Local Casimir Effect for a Scalar Field in Presence of a Point Impurity,
Symmetry **2018**, **10**(2) (2018), 38 [20 pages]
(invited contribution in I. H. Brevik, K. A. Milton (guest Eds.), Special Issue of Symmetry "Casimir Physics and Applications").
DOI:10.3390/sym10020038 ; arXiv:1712.10039 [math-ph]

4. C. Cacciapuoti, D. Fermi, A. Posilicano,
Relative-Zeta and Casimir energy for a semitransparent hyperplane selecting transverse modes,
pp. 71–97 in G.F. Dell'Antonio and A. Michelangeli (Eds.), "Advances in Quantum Mechanics: contemporary trends and open problems", Springer (2017) [26 pages]
DOI:10.1007/978-3-319-58904-6_5 ; arXiv:1702.05296 [math-ph]

3. D. Fermi, L. Pizzocchero,
Local zeta regularization and the scalar Casimir effect IV. The case of a rectangular box,
Int. J. Mod. Phys. A **31**(04&05) (2016), 1650003 [56 pages]
DOI:10.1142/S0217751X16500032 ; arXiv:1505.03276 [math-ph]

2. D. Fermi, L. Pizzocchero,
Local zeta regularization and the scalar Casimir effect III. The case with a background harmonic potential,
Int. J. Mod. Phys. A **30**(35) (2015), 1550213 [42 pages]
DOI:10.1142/S0217751X15502139 ; arXiv:1505.01651 [math-ph]

1. D. Fermi, L. Pizzocchero,
Local Zeta Regularization and the Casimir Effect,
Prog. Theor. Phys. **126**(3) (2011), 419 – 434 [15 pages]
DOI:10.1143/PTP.126.419 ; arXiv:1104.4330 [math-ph]

Invited Talks

2021 "*An axiomatic zeta-function approach to Casimir physics*",
Karlsruher Institut für Technologie, Zoom online seminar, 31 May 2021.

2021 "*Semiclassical limit with zero-range potentials in one dimension*",
"Sapienza" Università degli Studi di Roma, Google Meet online seminar, 5 May 2021.

2020 "*Magnetic perturbations of anyonic and Aharonov-Bohm Hamiltonians*",
Scuola Normale Superiore, Microsoft Teams online seminar, 9 December 2020.

2019 "*Casimir energy and relative zeta function for a semitransparent plane*",
Dipartimento di Matematica, Università degli Studi di Genova, 21 May 2019.

2019 "*Zeta regularization in the scalar Casimir effect*",
invited talk at *1st Vacuum Fluctuations at Nanoscale and Gravitation conference: theory and experiments*,
Orosei, 28 April – 3 May 2019.

2018 "*Free fall into the past. A time-orientable spacetime model with closed timelike curves and no curvature singularity*",
Dipartimento di Matematica, Università degli Studi di Milano, 18 January 2018.

2017 "*Local Casimir effect and ζ-regularization: scalar field in a rectangular box*",
invited talk at *QFT Day in Milan: mathematical aspects of renormalization*,
Dipartimento di Matematica, Università degli Studi di Milano, 13 April 2017.

2017 "*Zeta regularization and Casimir effect for a scalar field with singular background potentials*",
invited talk at *Microlocal analysis: a tool to explore the quantum world*,
Dipartimento di Matematica, Università degli Studi di Genova, 12–13 January 2017.

2016 "*Zeta-function regularization in Wightman scalar field theory and applications to the Casimir effect*",
invited talk at *Workshop in Mathematical Physics*,
ETH Zürich 28–30 November 2016.

2016 "*Casimir energy for singular potentials concentrated on a plane*",
invited talk at *Mathematical Challenges of Zero-Range Physics: rigorous results and open problems*,
SISSA Trieste 7–10 November 2016.

2015 "*A functional analytic framework for local zeta regularization and the scalar Casimir effect*",
Dipartimento di Matematica, Università degli Studi di Trento, 5 October 2015.

2011 "*La regolarizzazione zeta locale e l'effetto Casimir*" (transl. "*Local zeta regularization and the Casimir effect*"),
Dipartimento di Matematica, Università degli Studi di Milano, 28 June 2011.

Contributed Talks & Posters

2021 "*The semiclassical limit with zero-range potentials*",
poster presented at *International Congress on Mathematical Physics (ICMP 2021)*,
Geneva, 2–7 August 2021.

2020 "*Magnetic perturbations of Aharonov-Bohm and 2-body anyonic Hamiltonians*",
contributed talk at *Mathematics of Condensed Matter and Beyond (MCMB)*,
American University of Beirut - online Zoom conference, 22–25 February 2021.

2019 "*Scattering from local deformations of a semitransparent plane*",
contributed talk at *XXI Congresso dell'Unione Matematica Italiana*,
Università degli Studi di Pavia, 2–7 September 2019.

2019 "*Scalar Casimir effect for delta-type potentials*",
contributed talk at *10th Alexander Friedmann International Seminar on Gravitation and Cosmology, and 4th Symposium on the Casimir Effect*,
Saint Petersburg Polytechnic University, 23–29 June 2019.

2018 "*Free fall into the past*",
contributed talk at *DOMOSCHOOL - International Alpine School of Mathematics and Physics. Einstein's Equations: Physical and Mathematical Aspects of General Relativity*,
Domodossola, 16–20 July 2018.

2018 "*Some results on scattering theory for delta interactions concentrated on deformed planes*",
contributed talk at *Mathematical Challenges in Quantum Mechanics 2018*,
"Sapienza" Università degli Studi di Roma, 19–24 February 2018.

2016 "*Zeta regularization and the Casimir effect: a functional analytic framework*",
contributed talk at *Mathematical Challenges in Quantum Mechanics 2016*,
Bressanone, 8–13 February 2016.

2015 "*Local zeta regularization and the scalar Casimir effect*",
contributed talk at *Assemblea Scientifica GNFM*,
Montecatini, 22–24 October 2015.

Invited visiting

2020 Visiting professor at Scuola Normale Superiore di Pisa,
Pisa, 12–14 February 2020.

2016 Visiting scientist at SISSA (International School for Advanced Studies, Trieste),
Trieste, 26–29 September 2016.

Research Projects and Funding

- **Participant** to **ERC Consolidator Grant 2016** "*UniCoSM - Universality in Condensed Matter and Statistical Mechanics*" (from June 2021)
  Principal investigator: Prof. Alessandro Giuliani
- **Participant** to **Progetto Giovani GNFM 2020** "*Emergent Features in Quantum Bosonic Theories and Semiclassical Analysis*"
  Principal investigator: Dr. Marco Falconi
- **Participant** to **INFN Project 2017-2019** "*BELL - Fundamental Problems in Quantum Physics*"
  National coordinator: Prof. Pierantonio Zanghì
  Local coordinator: Prof. Bassano Vacchini
- **Participant** to **Progetto Giovani GNFM 2017** "*Quasi-classical dynamics for the polaron model*"
  Principal investigator: Prof. Raffaele Carlone
- **Participant** to **FIR project 2014-2017** "*COND-MATH - Condensed Matter in Mathematical Physics*" (University of Insubria Unit, from April 2016)
  Principal investigator: Prof. Michele Correggi
- **Participant** to **MIUR - PRIN 2010 - 2011** "*Teorie geometriche e analitiche dei sistemi Hamiltoniani in dimensioni finite e infinite*" (transl. "*Geometric and analytic theories of Hamiltonian systems in finite and infinite dimensions*")
  National coordinator: Prof. Boris A. Dubrovin.
  Local coordinator: Prof. Dario P. Bambusi

Supervised Students

- [redacted], M.Sc. in Theoretical Physics, Università degli Studi di Pavia, Physics Department
  Supervision period: from March 2021 (ongoing)
  Co-supervised with Prof. Claudio Dappiaggi and Prof. Livio Pizzocchero
- [redacted], M.Sc. in Theoretical Physics, Università degli Studi di Milano, Physics Department
  Thesis: "*Scalar Casimir effect on a line in presence of delta-interaction*"
  Dissertation date: 2 April 2020
  Co-supervised with Prof. Livio Pizzocchero

Teaching activity

Total hours of teaching activity: 260 (+ 60 from September 2021 to January 2022)
Total hours of support for exams: 60

- Course "Matematica - Modulo 1" (basic mathematics course) for the B.Sc. degree in Geological Sciences, Università degli Studi di Roma Tre, academic year 2020/2021 (24 hours of theory lectures, 36 hours of exercise lectures, to be held from September 2021 to January 2022).
- Teaching assistant for "Meccanica Razionale" (Analytical Mechanics) for the B.Sc. degree in Materials and Nanotechnology Engineering, Politecnico di Milano, academic year 2020/2021 (20 hours of blended teaching).
- '*Stati legati in guide d'onda*' ('*Bound states in waveguides*'), introductive seminar for the MCQM Seminar by Pavel Exner '*Discrete spectrum of two-dimensional soft waveguides*', Politecnico di Milano, 11 January 2021.
- Teaching assistant for "Fisica Matematica" (Mathematical Physics) for the B.Sc. degree in Mathematics, Università degli Studi dell'Insubria, academic year 2020/2021 (12 hours of online teaching activity).
- Teaching assistant for "Meccanica Analitica" (Analytical Mechanics) for the B.Sc. degree in Physics, Università degli Studi di Milano, academic years 2017/2018, 2018/2019, 2019/2020 (20 hours of teaching activity per year).
- Teaching assistant for "Matematica del continuo" (basic mathematics course) for the B.Sc. degree in Computer Science, Università degli Studi di Milano, academic years 2014/2015, 2015/2016 (48 hours of teaching activity, 20 hours of support for exams per year).
- Teaching assistant for "Istituzioni di matematica" (basic mathematics course) for the B.Sc. degree in Computer Science, Università degli Studi di Milano, academic year 2013/2014 (48 hours of teaching activity, 20 hours of support for exams).
- Freshmen tutor for "Corsi di azzeramento" (mathematics pre-introductory course) for the B.Sc. degree in Biological Sciences, Università degli Studi di Milano, September 2014 (24 hours of teaching activity).

Referee and Reviewer activity

Reviewer for

- Mathematical Reviews (Americal Mathematical Society)
- zbMath

Referee for the following journals

- *Classical and Quantum Gravity* (by IOP Science)
- *Communications in Mathematical Physics* (by Springer)
- *European Journal of Physics* (by IOP Science)
- *European Physical Journal C* (by Springer)
- *International Journal of Geometric Methods in Modern Physics* (by World Scientific)
- *Journal of Physics A: Mathematical and Theoretical* (by IOP Science)
- *Journal of Physics G: Nuclear and Particle Physics* (by IOP Science)
- *Journal of Statistical Physics* (by Springer)
- *Physica Scripta* (by IOP Science)
- *Universe* (by MDPI)

Affiliations

- Member of the "*Unione Matematica Italiana*" (UMI) since 2019.
- Member of the "*International Association of Mathematical Physics*" (IAMP) since 2017.
- Member of the "*Istituto Nazionale di Fisica Nucleare*" (INFN, Italian National Institute for Nuclear Physics) from March 2017 to March 2020.
- Member of the "*Gruppo Nazionale per la Fisica Matematica*" (INdAM-GNFM, Italian National Group for Mathematical Physics) since 2015.

Administration Posts

- Representative of postdoc researchers at the Department Council ("Consiglio di Dipartimento") of the Department of Mathematics, Università degli Studi di Milano, academic years 2017/2018, 2018/2019, 2019/2020.
- Member of the Didactic Board ("Collegio Didattico") of the Department of Physics, Università degli Studi di Milano, academic years 2017/2018, 2018/2019, 2019/2020.

Citation Metrics

	Scopus	Web of Science	Google Scholar
Number of publications	18	31*	25
Total number of citations	72	52	108
Average number of citations per paper	4.00	1.68*	4.32
H-index	6	6	8

*The chapters of the book "*Local zeta regularization and the scalar Casimir effect. A general approach based on integral kernels*" (World Scientific Publishing, Singapore 2017) are counted as separate publications.

Research Interests

- Emergence of Efimov effect in few body quantum systems.
- Schrödinger operators with Aharonov-Bohm potentials; anyonic systems and fractional statistics.
- Schrödinger operators with singular potentials; perturbations of self-adjoint operators and self-adjoint extensions of symmetric operators; scattering theory for non-relativistic quantum particles; semi-classical limit; quantum graphs.
- Mathematical aspects of relativistic quantum field theories (axiomatic QFT); zeta-regularization and its applications to the renormalization of vacuum expectation values; Casimir effect for a scalar field in presence of external potentials or classical boundaries.
- Exotic solutions of Einstein's field equations; violations of the classical positive energy conditions; non-standard causal structures with closed timelike curves; scalar field models for early-stage inflation in cosmology.

Attended Schools and Meetings

2021 "*Statistical and Quantum Mechanics: reconsidering their foundations in the light of new cutting edge experiments and theoretical models*", https://indico.gssi.it/event/93/, 20–23 September 2021.

2021 "*One World IAMP Mathematical Physics Seminar Series*", http://www.iamp.org/page.php?page=page_seminar, May 2020 - September 2021.

2021 "*Mathematical Challenges in Quantum Mechanics - MCQM seminars*", https://www.mcqm.it/talks/, December 2020 - July 2021.

2021 "*Seminari delle Meccaniche*", https://agenda.infn.it/category/1345/, February – June 2021.

2021 "*Mathematical Challenges in Quantum Mechanics 2021 - MCQM miniworkshop*", https://mcqm.it/workshop21.html, 14–15 June 2021.

2021 "*Gran Sasso Quantum Meetings @GSSI: From Equilibrium Phenomena Towards Open Quantum Systems*", https://indico.gssi.it/event/103/, 22–26 March 2021.

2020 "*Online Minisymposium: Nonlinear Dynamics in Quantum Mechanics*", http://math.jacobs-university.de/petrat/conferences/2020_nonlinear_dynamics/index.html, 1–2 October 2020.

2020 "*Mathematical Methods in Field Theory and Quantum Mechanics - GSSI-SISSA joint lectures*", https://indico.gssi.it/event/127/, June-July 2020.

2020 "*Applications of Bogoliubov Theory, Mathematical Physics of Quantum Many-Body Systems - Online Summer School*", http://nielsbenedikter.de/conference/conference.html, 19-22 June 2020.

2020 "*Munich-Aarhus-Santiago Seminar in Mathematical Physics*", https://math.au.dk/en/projects/sqm/mas-mp-seminar/, April-June 2020.

2019 "*From semi-classical to quantum many body through normal forms*", workshop at Dipartimento di Matematica, Università degli Studi di Milano, 17-20 December 2019.

2019 "*Meccanica quantistica e dintorni*", workshop at "Sapienza" Università di Roma, 7–8 November 2019.

2019 "*Quantum graphs and quantum random walks*", Lake Como School of Advanced Studies at Villa del Grumello, Como, 5–9 August 2019.

2019 "*Foundations and Constructive Aspects of QFT*", 43rd workshop of the LQP series at Galileo Galilei Institute, Firenze, 20–22 February 2019.

2018 "*Mathematical Challenges of Zero Range Physics: rigorous results and open problems*", INdAM workshop at "Sapienza" Università di Roma, 9–13 July 2018.

2018 "*Trails in Quantum Mechanics and Surroundings*", workshop at SISSA Trieste, 29–30 January 2018.

2017 "*Spectral and scattering theory: from selfadjoint operators to boundary value problems - Insubria Summer School in Mathematical Physics*", workshop at Department of Science, Università degli Studi dell'Insubria (Como), 18–22 September 2017.

2017 "*Fundamental problems of quantum physics*", workshop INFN BELL 2017 at Dipartimento di Fisica, Università degli Studi di Milano, 16 June 2017.

2017 "*Linear and Nonlinear Dirac Equation: advances and open problems*", workshop at Dipartimento di Scienza e Alta Tecnologia, Università degli Studi dell'Insubria (Como), 08–10 February 2017.

2016 "*EMS – IAMP Summer School in Mathematical Physics. Universality, Scaling Limits and Effective Theories*", "Sapienza" Università di Roma, 11–15 July 2016.

2016 "*Contemporary Trends in the Mathematics of Quantum Mechanics*", INdAM workshop at "Sapienza" Università di Roma, 04–08 July 2016.

2016 "*Operator Algebras and Quantum Field Theory*", workshop at Frascati INFN-LNF, 27–29 June 2016.

2016 "*Mathematical Challenges in Quantum Mechanics*", workshop at Bressanone, 8–13 February 2016.

2016 "*Geometric and Analytic Theory of Hamiltonian Systems in Finite and Infinite Dimensions*", workshop at SISSA (Trieste), 18–21 January 2016.

2015 "*Assemblea Scientifica GNFM*", workshop at Montecatini, 22–24 October 2015.

2015 "*New Trends in Algebraic Quantum Field Theory (AQFT2015)*", workshop at Frascati INFN-LNF, 11–13 February 2015.

2014 "*Operator and Geometric Analysis on Quantum Theory*", workshop at Levico Terme (Trento), 15–19 September 2014.

2014 "*Algebraic Quantum Field Theory: its status and its future*", workshop at ESI Wien, 19–23 May 2014.

2013 "*Finite and Infinite Dimensional Hamiltonian Systems*", workshop at Dipartimento di Matematica, Università di Roma Tre, 24–25 October 2013.

2013 "*Recent Advances in Partial Differential Equations and Applications*", International School at Dipartimento di Matematica, Università degli studi di Milano, 17–21 June 2013.

2013 "*Analytical Aspects of Mathematical Physics*", workshop at ETH Zürich, 27–31 May 2013.

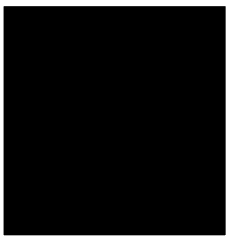
2012 "*La geometria degli atomi e delle molecole. La Meccanica negli studi di Carlo Cercignani*", workshop at Istituto Lombardo, Accademia di Scienze e Lettere, 22 November 2012.

Milano, October 21, 2021

Davide Fermi

Emanuela Laura Giacomelli

[redacted]



Curriculum vitae

Personal Information

Date of birth [redacted]
Place of birth [redacted]
Nationality [redacted]

Accademic Positions

Oct. 2019 - today **Akademische Rätin (Beamtenverhältnis auf Zeit)**.
(non tenure track Assistant Professor position)
Math Department - Ludwig-Maximilians-University Munich (Germany)

Nov. 2017 - Sept. 2019 **Postdoc**.
Research group of Prof. Marcello Porta
Math Department - Eberhard Karls University of Tübingen (Germany).

Degrees and habilitations

2019 -2023 **French national qualification for the role of Maître de Conférences**.
Sections 25-26 issued by the French Ministry of Higher Educational and Research.

Jan. 18, 2018 **PhD's degree in Mathematics**, Sapienza University of Rome (Italy).
Thesis: *Surface superconductivity in presence of corners*
Supervisor: Michele Correggi
Grade: Excellent

Oct. 29, 2014 **Master's degree in Mathematics**, Sapienza University of Rome (Italy).
Thesis: *Time reversal symmetry for periodic Pauli operator*
Supervisor: Gianluca Panati
Grade: 110/110 cum laude

Sept. 25, 2012 **Bachelor's degree in Mathematics**, Sapienza University of Rome (Italy).
Thesis: *On the existence of weak solutions for quasilinear elliptic equations*
Supervisor: Luigi Orsina
Grade: 110/110 cum laude

Research Interests

Superconductivity Ginzburg-Landau Theory of Superconductivity, type-II Superconductors, critical magnetic fields, domains with corners.

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Many-Body Quantum System Equilibrium properties of interacting quantum systems, low density Fermi gas, effective theories

Coordination and partecipation to research project

2018 **Member** *Two-dimensional Quantum Phases* funded by Progetto Giovani GNFM 2018 (4 Partecipants, PI: Michele Correggi, 4.000 €).

2016 **Member** *Superconductivity and Superfluidity* funded by Progetto Giovani 2016 (3 Partecipants, PI Michele Correggi, 5.000 €).

2016 **Principal Investigator** *Superconductivity for type-II superconductors in presence of corners'* funded by Progetto di Avvio alla Ricerca 2016, Sapienza University of Rome (Italy) (1 Partecipant 1.000 €).

Publications

2021 W. Assaad, E. L. Giacomelli, *3D-Schrödinger operators under magnetic steps*, Preprint at arXiv:2108.04580.

2021 M. Correggi, E. L. Giacomelli, *Almost flat angles contribution to surface superconductivity regime*, **Nonlinearity** 34 (2021) 7633–7661.

2021 M. Correggi, E. L. Giacomelli, *Effects of corners in surface superconductivity*, **Calc. Var. Partial Differential Equations**, 60 (2021), 236.

2021 M. Falconi, E. L. Giacomelli, C. Hainzl, M. Porta, *The dilute Fermi gas via Bogoliubov theory*, **Ann. Henri Poincaré** 22(7), 2283-2353.

2017 M. Correggi, E. L. Giacomelli, *Surface superconductivity in presence of corners*, **Rev. Math. Phys.** 1750005.

PhD Thesis E. L. Giacomelli, *Surface superconductivity in presence of corners*, available at http://www.worldscientific.com/doi/abs/10.1142/S0129055X17500052.

In preparation D. Dimonte, E. L. Giacomelli, *On the Bose-Einstein condensation in the Thomas-Fermi regime*

Fellowships and grants

2021 **LMU Mentoring program** - research funds for excellent junior academics

2015 **Laureato Eccellente Sapienza**, Sapienza University of Rome (Italy).

2014 **Selected for a PhD scholarship** Sapienza University of Rome (Italy).

2013 - 2014 **Percorso d'Eccellenza** Math. Department, Sapienza University of Rome (Italy): advanced courses and tuition fees reimbursement for the accademic year 2013/2014, 8 positions available.

2010 - 2012 **Percorso d'Eccellenza** Math. Department, Sapienza University of Rome (Italy): advanced courses and tuition fees reimbursement for the accademic year 2011/2012, 30 positions available.

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Communications

Invited talks

Upcoming **Quantum before Christmas**, *University of Milan (Italy)*.

Sept. 2021 **DMV-ÖMG Annual Conference 2021, Minisymposium *Mathematische Analyse komplexer Quantensysteme***, *University of Passau (Germany)*, Slides.

Mar. 2021 **13th (Online) Meeting of the GDR DYNQUA**, *Dijon (France)*, Slides.

Feb. 2021 **Mathematics of Condensed Matter and Beyond (MCMB)**, *Center for Advanced Mathematical Science at the American University of Beirut (Lebanon)*, Slides.

Nov. 2018 **Nonlinear Phenomena in Stockholm: Kinetic Meets Dispersive**, *KTH Royal Institute of Technology (Sweden)*, Slides.

May 2017 **Assemblea Scientifica GNFM 2017**, *Montecatini Terme (Italy)*, Slides.

Jul. 2015 **Trails in Quantum Mechanics and Surroundings 2015**, *University of Insubria (Italy)*, Slides.

Invited seminars

Oct. 2021 **Gran Sasso Science Institute school of advanced studies**, *L'Aquila (Italy)*.

Oct. 2021 **Bilbao Analysis and PDE**, *Bilbao (Spain)*.

Jul. 2021 **Mathematical Challenges in Quantum Mechanics (MCQM)**, *Politecnico di Milano, the University of Insubria in Como, Federico II University of Naples (Italy)*.

Dec. 2020 **KIAS Analysis Seminar**, *Kias University (South Korea)*.

Nov. 2020 **Seminar Analysis and Mathematical Physics**, *University of Basel (Switzerland)*.

Nov. 2020 **Munich-Aarhus-Santiago Seminar in Mathematical Physics**, *LMU Munich (Germany), Aarhus University (Denmark), Pontificia Universidad Catolica de Chile, Santiago (Chile)*.

Jun. 2020 **Seminario di Analisi**, *Federico II University of Naples (Italy)*.

Apr. 2018 **Math/Phys Seminar**, *Aarhus University (Denmark)*.

Nov. 2017 **Seminario di Fisica Matematica**, *Sapienza University of Rome (Italy)*.

Dec. 2016 **SISSA Seminar Analysis, Math-Phys, and Quantum**, *SISSA, Trieste (Italy)*.

Jun. 2016 **Seminario di Fisica Matematica**, *Roma Tre University (Italy)*.

Contributed talks

Jun. 2019 **Hamiltonian PDEs: KAM, Reducibility, Normal Forms and Applications**, *Casa Matemática Oaxaca (CMO), (Mexico)*.

Mar. 2019 **Many-body theory, effective equations & PDE's** , *Institut Mittag-Leffler, Stockholm (Sweden)*.

Sept. 2018 **Many-Body Quantum Mechanics**, *Centre de Recherches Mathématiques (CRM) Montréal (Canada)*.

Feb. 2018 **Mathematical Challenges in Quantum Mechanics**, *Sapienza University of Rome (Italy)*.

Jul. 2017 **Current Topics in Mathematic Physics**, *Universität Zürich (Switzerland)*.

Nov. 2016 **Mathematical Foundations of Physics**, *Ludwig-Maximilians-University Munich (Germany)*.

Poster

Apr. 2017 **Spectral Days 2017**, *Surface Superconducitivity in Presence of Corners*, Stuttgart University (Germany).

Selected invitations

Research Visits

Oct. 2021 **Gran Sasso Science Institute school of advanced studies (Italy)**, invited by Giulia Basti and Serena Cenatiempo, (1 week).

Feb. - Mar. 2019 **Spectral Methods in Mathematical Physics**, *Institut Mittag-Leffler, Stockholm (Sweden)*, (4 weeks).

Feb. 2019 **Sapienza University of Rome (Italy)**, invited by Michele Correggi, (1 week).

Sept. 2018 **Thematic Semester: Mathematical challenges in many-body physics and quantum information**, *Centre de Recherches Mathématiques (CRM) Montréal (Canada)*, (3 weeks).

Apr. 2018 **Aarhus University (Denmark)**, invited by Soeren Fournais, (1 week).

Nov. -Dec. 2016 **SISSA Trieste (Italy)**, invited by Alessandro Michelangeli, (1 week).

Events by Invitation

Sept. 2019 **Many Body Quantum Systems**, Mathematisches Forschunginstitut Oberwolfach (MFO), Oberwolfach (Germany).

Jun. 2019 **Hamiltonian PDEs: KAM, Reducibility, Normal Forms and Applications**, *Casa Matemática Oaxaca (CMO) (Mexico)*.

Teaching

Teaching activities at Ludwig-Maximilians-University Munich (Germany)

2020 - 2021 **Teaching assistant**, *Mathematical Quantum Mechanics II*, Math Department, Summer Term, 4h lect. per week.

2020 - 2021 **Teaching assistant**, *Mathematical Quantum Mechanics I*, Math Department, Winter Term, 4h lect. per week.

2019 - 2020 **Teaching assistant**, *Functional Analysis I*, Math Department, Summer Term, 4h lect. per week.

2019 - 2020 **Teaching assistant**, *Advanced Analysis*, Math Department, Winter Term, 4h lect. per week.

Teaching activities at Eberhard Karls University of Tübingen (Germany)

2018 - 2019 **Teaching assistant**, *Advanced Topics in Mathematical Quantum Theory*, Math Department, Summer Term, 2h lect. per week.

2018 - 2019 **Teaching assistant**, *Mathematical Quantum Theory*, Math Department, Winter Term, 2h lect. per week.

2018 - 2019 **Teaching assistant**,*Introduction to Partial Differential Equations*, Math Department, Winter Term, 2h lect. per week.

2017 - 2018 **Teaching assistant**, *Spectral Theory of Schrödinger Type Operators*, Math Department, Summer Term, 2h lect. per week.

2017 - 2018 **Teaching assistant**, *Introduction to Partial Differential Equations*, Math Department, Winter Term, 2h lect. per week.

Teaching activities at Sapienza University of Rome (Italy)

2016 - 2017 **Teaching assistant**, *OFA*, Sapienza University of Rome (Italy), 30h.

2015 - 2016 **Teaching assistant**, *Mathematical Methods and Computer Systems to Biology*, Department of Biology, Sapienza University of Rome (Italy), Summer Term, 150h.

2014 - 2015 **Teaching assistant**, *Mathematical Methods and Computer Systems to Biology*, Department of Biology, Sapienza University of Rome (Italy), Summer Term, 150h.

Teaching activities at Roma 3 University (Italy)

2015 - 2016 **Teaching assistant**, *Analytical Mechanics*, Department of Mathematics and Physics, Summer Term, 2h lect. per week.

Selection of recent meeting and conferences attended

Oct. 2019 **The Analysis of Complex Quantum Systems: Large Coulomb Systems and Related Matters**, *International Centre Meetings Mathématiques (France)*.

Aug. 2019 **QMath14: Mathematical Results in Quantum Physics**, *Aarhus University (Denmark)*.

Mar. 2019 **Mathematical physics of anyons and topological states of matter**, *NORDITA - Nordic Institute for Theoretical Physics (Sweden)*.

Jul. 2017 **Quantum Mean Field and Related Problems**, *Laboratoire Analyse, Géométrie et Applications (France)*.

Aug. 2016 **Frontiers in Mathematical Physics**, *Centre de Recherches Mathématiques (CRM) Montréal (Canada)*.

Aug. 2016 **Methods of Modern Mathematical Physics**, *Fields Institute Toronto (Canada)*.

Academic Services

Oct. 2021 - today **Organiser** *Mathematical Challenges in Quantum Mechanics (MCQM) Seminar*, online seminar.

2020, 2021 **Organiser** *Mathematisches Oberseminar: Mathematische Physik*, Ludwig-Maximilians-University Munich (Germany).

2018 - 2019 **Organiser**, *Mathematical Physiscs Colloquium*, Math Department, Eberhard Karls University of Tübingen (Germany), Summer Term, 2h lect. per week.

2018 **Organiser** *Preparation Course for M.Sc. Mathematical Physics*, Math Department, 1-5 October, 6h lect. per day.

Outrech

May 2021 **Dalla teoria alla pratica: la rivoluzione dei superconduttori in scienza e tecnologia**, *A volte ritornarno*, Liceo Scientifico Statale "P. Ruffini", Viterbo (Italy).

Jan. 2020 **Le Geometrie non euclidee: muoversi in $4D$ - parte 1**, *A volte ritornarno*, Liceo Scientifico Statale "P. Ruffini", Viterbo (Italy).

Mar. 2019 **Dall'astratto al concreto: l'affascinante struttura dei numeri reali – parte 1**, *A volte ritornarno*, Liceo Scientifico Statale "P. Ruffini", Viterbo (Italy).

Mar. 2018 **Da tante particelle a un modello efficace**, *A volte ritornarno*, Liceo Scientifico Statale "P. Ruffini", Viterbo (Italy).

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Apr. 2017 **Problemi variazionali in Natura**, *A volte ritornarno*, Liceo Scientifico Statale "P. Ruffini", Viterbo (Italy).

Mar. 2016 **La somma degli angoli interni di un triangolo è 180°? Lo strano mondo delle geometrie non euclidee**, *A volte ritornarno*, Liceo Scientifico Statale "P. Ruffini", Viterbo (Italy).

Affiliations

2016 - Member of the *International Association of Mathematical Physics* (IAMP).

2017 - Member of INDAM group *Gruppo Nazionale di Fisica Matematica* (GNFM).

Languages

Mother Tongue: Italian

Other languages: English

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FILIPPO GIULIANI

POSIZIONE ATTUALE

Assegnista di ricerca, UPC, BARCELONA

04/10/2018–Oggi

Assegnista di ricerca per il progetto ERC *Haminstab: Instabilities and homoclinic phenomena in Hamiltonian systems*, con P.I. Prof. Marcel Guardia.
Link: https://haminstab.barcelonatech-upc.eu/

Feb. 2018–Oggi

Contratto come professore associato a tempo parziale (Profesor asociado a tiempo parcial) per impartire il corso di Calculus 2 alla Scuola di Ingegneria Industriale, UPC, Barcelona.

RUOLI PRECEDENTI

Assegnista di ricerca, UNIV. ROMA TRE

01/10/2017-30/09/2018

Assegnista di ricerca per il progetto ERC *Hamiltonian EDPs and small divisor problems: a dynamical systems approach* , con P.I. Prof. Michela Procesi.
Link: http://ricerca.mat.uniroma3.it/users/procesi/ERC-project.html

EDUCAZIONE

PhD, SISSA, Trieste

Oct. 2013-Set. 2017

PhD *cum laude* in Mathematical Analysis, Modeling and Applications presso SISSA, Scuola Internazionale Superiore di Studi Avanzati in Trieste, con relatore Prof. Massimiliano Berti. Titolo della tesi: *KAM for quasi-linear EDPs*.
Tesi su esistenza e stabilita' di soluzioni periodiche e quasi-periodiche per Equazioni alle Derivate Parziali con condizioni periodiche al bordo. Data della difesa di dottorato: 29/09/2017. http://hdl.handle.net/20.500.11767/57306

Laurea Magistrale, UNIV. DEGLI STUDI DI PISA

2011-2013

Laurea Magistrale in Matematica all'Universita' di Pisa, Curriculum Analisi e Probabilita', 110/110 *cum laude*.
Relatore: Prof. P. Acquistapace, co-relatore: Prof V. Georgiev. Titolo della tesi: *Controllo lineare quadratico per problemi ai limiti parabolici e iperbolici*.
Data della discussione: 18/10/2013.

SCHOLARSHIPS, FELLOWSHIPS E ABILITAZIONI

2021

Abilitazione da Profesor Ayudante Doctor in matematica (posizione tenure-track spagnola).

2018

ERC Postdoctoral Fellowship per il progetto *Haminstab: Instabilities and homoclinic phenomena in Hamiltonian systems*, con P.I. Prof. Marcel Guardia.

2017

ERC Postdoctoral Fellowship per il progetto *Hamiltonian EDPs and small divisor problems: a dynamical systems approach* , con P.I. Prof. Michela Procesi.

2013

PhD scholarship presso SISSA / ISAS (Scuola Internazionale Superiore di Studi Avanzati).

INTERESSI DI RICERCA

La mia area principale di ricerca e' lo studio della dinamica di Equazioni alle Derivate Parziali (EDP) (*Dynamics of Partial Differential Equations*). Sono interessato a entrambi fenomeni di stabilita' e instabilita' per EDPs con struttura Hamiltoniana su varieta' compatte e sistemi dinamici infinito dimensionali (ad esempio reticoli infiniti).

- KAM per EDPs: risultati di esistenza e stabilita' di soluzioni quasi-periodiche in tempo per EDPs con condizioni periodiche al bordo.
- Studio della dinamica per tempi lunghi per EDPs nonlineari tramite metodi di forma normale.
- Studio della dinamica di equazioni per le onde d'acqua.
- Crescita delle norme di Sobolev e trasferimenti di energia per EDPs su verieta' compatte.
- Diffusione di Arnold per sistemi dinamici infinito dimensionali (reticoli, EDPs, ...).

PUBBLICAZIONI

[1] *Quasi-periodic traveling waves on an infinitely deep perfect fluid under gravity* accepted on Memoirs of American Mathematical Society (2021). **(167 pages)**
Autori: R. FEOLA, F. GIULIANI

[2] *Transfers of energy through fast diffusion channels in some resonant EDPs on the circle* , In press on Discrete and Continuous Dynamical Systems-Series A, 41 (11), 5057-5085, (2021). **(29 pages)**
Autori: F. GIULIANI

[3] *Chaotic-like transfers of energy in Hamiltonian EDPs*, Communications in Mathematical Physics, 384, 1227-1290, (2021). **(64 pages)**
Autori: F. GIULIANI, M. GUARDIA, P. MARTIN, S. PASQUALI

[4] *Chaotic resonant dynamics and exchanges of energy in Hamiltonian EDPs*, Rendiconti Lincei. Matematica e Applicazioni, 32, 149–165 (2021), **(16 pages)**.
Autori: F. GIULIANI, M. GUARDIA, P. MARTIN, S. PASQUALI

[5] *Time quasi-periodic traveling gravity water waves in infinite depth*, Rendiconti Lincei. Matematica e Applicazioni, 31, 901–916 (2020). **(16 pages)**
Autori: R. FEOLA, F. GIULIANI

[6] *Reducible KAM tori for Degasperis-Procesi equation*, Communications in Mathematical Physics, 377, 1681–1759 (2020). **(79 pages)**
Autori: R. FEOLA, F. GIULIANI M. PROCESI

[7] *Reducibility for a class of weakly dispersive linear operators arising from the Degasperis Procesi equation*, Dynamics of Partial Differential Equations 16(1): 25-94 (2019). **(69 pages)**
Autori: R. FEOLA, F. GIULIANI M. PROCESI

[8] *Reducibility of first order operators on tori via Moser theorem*, Journal of Functional Analysis 276(3) : 932-970 (2019). **(39 pages)**
Autori: R. FEOLA, F. GIULIANI, R. MONTALTO, M. PROCESI

[9] *On the integrability of the Degasperis-Procesi equation: control of Sobolev*

norms and Birkhoff resonances, Journal of Differential Equations 266 (6), 3390-3437 (2018). **(48 pages)**
Autori: R. FEOLA, F. GIULIANI, S. PASQUALI

[10] *Quasi-periodic solutions for quasi-linear generalized KdV equations*, Journal of Differential Equations, Volume 262, Issue 10, 15, Pages 5052-5132 (2017). **(81 pages)**
Author: F. GIULIANI

IN PREPARAZIONE

[1] *Long time NLS approximation on large domains*.
Autori: R. FEOLA, F. GIULIANI

[2] *Arnold diffusion in infinite dimensional pendulum lattices*.
Autori: F. GIULIANI M. GUARDIA

[3] *Growth of Sobolev norms for the cubic NLS on irrational tori*.
Autori: F. GIULIANI M. GUARDIA

DIDATTICA

2020-2021 CORSO DI CALCULUS 2 come professore associato a tempo parziale, Scuola Industriale di Ingegneria, UPC, Barcelona.

2019-2020 CORSO DI CALCULUS 2 come professore associato a tempo parziale, Scuola Industriale di Ingegneria, UPC, Barcelona.

2018-2019 CORSO DI CALCULUS 2 come professore associato a tempo parziale, Scuola Industriale di Ingegneria, UPC, Barcelona.

2018 ATTIVITA' DI TUTORATO per l'esame di MATEMATICA alla facolta' di Biologia, Universita' degli studi di Roma Tre.

INVITI A CONFERENZE

2020 Relazione ad invito al Congresso Internazionale Barcelona Mathematical Days, svoltasi online, 22-23 Ottobre 2020. Seminario nella sessione "Dynamical Systems", titolo: "Chaotic resonant dynamics and exchanges of energy in Hamiltonian EDPs".
Link: https://bmd2020.espais.iec.cat/thematic-sessions/dynamical-systems/

2020 Relazione ad invito alla Scuola Internazionale "Winter School: Implicit function theorems in Geometry and Dynamics", svoltasi a Schloss Rauischholzhausen (Germania), 19-22 Febbraio 2020. Seminario dal titolo: "Proof of the KAM theorem by a Nash-Moser approach".
Link: https://sites.google.com/view/ifthm-gnd/startseite

2019 Relazione ad invito alla Scuola Internazionale "Second BMS-BGSMath Junior Meeting", svoltasi a Berlino (Germania), 26-28 Giugno 2019. Seminario dal titolo: "KAM theory for quasi-linear EDPs".
Link: https://www.math-berlin.de/academics/workshops-a-special-courses/bms-bgsmath-junior-meeting

2018 Relazione ad invito al MINI - Workshop EDP postdoc students working on

EDP in MATH Physics, svoltosi a Pisa, 29 Maggio 2018. Seminario dal titolo: "Integrability and quasi-periodic solutions for the Degasperis-Procesi equation".

SEMINARI A CONFERENZE

2018 Relazione alla Conferenza Internazionale "Perspectives in Hamiltonian dynamics", svoltasi a Venezia, 18-22 Giugno 2018. Seminario dal titolo: "Integrability and quasi-periodic dynamics for the Degasperis- Procesi equation".

2018 Relatore alla Conferenza Internazionale "Symmetry and Perturbation Theory", svoltasi a S.Margherita di Pula, 3-10 Giugno 2018. Seminario dal titolo: "On the integrability of the Degasperis-Procesi equation: control of Sobolev norms and Birkhoff resonances".

SEMINARI SU INVITO A UNIVERSITA'

2019 Universite' de Nantes, 21 Marzo 2019, Titolo: "Reducible KAM tori for Degasperis-Procesi equation ".

2019 Universita' di Roma Tre, 18 Ottobre 2019, Titolo: "Chaotic resonant dynamics for some EDPs ".

2018 Universita' di Tor Vergata, 22 Maggio 2018, Titolo: "Integrability and KAM theory for the Degasperis-Procesi equation".

2017 Universita' di Napoli Federico II , 30 Novembre 2017, Titolo: "Quasi- periodic solutions for Hamiltonian perturbations of the Degasperis-Procesi equation".

2016 Universita' di Roma Tre, 18 October 2016, Titolo: "Quasi-periodic solutions for quasi-linear generalized KdV equations".

Vari seminari interni alla SISSA di Trieste (5) e presso UPC Barcelona (4).

VISITE A UNIVERSITA'

2020 Universita' di Roma Tre, invitato dai prof. Procesi and prof. Biasco, 20-23 January.

2020 SISSA (Trieste), invitato dal prof. M. Berti, 15-17 January.

2019 Universite' de Nantes, invitato dal Dr. R. Feola, 19-23 March

2019 Universita' di Roma Tre, invitato dalla prof. M. Procesi, 13-20 October.

2017 Universita' di Napoli Federico II , invitato dal prof P. Baldi, November.

2016 Universita' di Roma Tre, invitato dalla prof. Procesi, October.

MEMBRO DI PROGETTI DI RICERCA

2018–Oggi ERC grant, Haminstab: Instabilities and homoclinic phenomena in Hamiltonian systems, P.I: M. Guardia (UPC, Barcelona) .

2017-2018 ERC grant, Hamiltonian EDPs and small divisor problems: a dynamical systems approach, P.I: M. Procesi (Universita' degli studi di Roma Tre).

2015-2017 PRIN 2015, Variational methods, with applications to problems in mathematical physics and geometry, coordinatore locale: Massimiliano Berti, coordinatore nazionale: Andrea Malchiodi.

2013-2015 PRIN 2012, Variational and perturbative aspects of nonlinear differential

problems, coordinatore locale: Massimiliano Berti, coordinatore nazionale: Susanna Terracini.

MEMBERSHIP

2019–Oggi Membro della Barcelona Graduate School Math community.

ORGANIZZATORE DI CONFERENZE

2020 Organizzatore della Conferenza internazionale ”19-th School on interactions between dynamical systems and Partial Differential Equations (JISD2021)”. Rimandata al 2023 causa situazione pandemica mondiale Covid-19.

2020 Organizzatore della Conferenza internazionale ”18-th School on interactions between dynamical systems and Partial Differential Equations (JISD2020)”. Rimandata al 2022 causa situazione pandemica mondiale Covid-19.

ATTIVITA’ COME REFEREE PER LE RIVISTE

Journal of Differential Equations.

Nonlinearity.

Journal of Nonlinear Science.

Journal of Mathematical Physics.

Nonlinear analysis.

Analysis and Mathematical Physics.

Applicable Analysis.

Communications in Nonlinear Science and Numerical Simulation.

PARTECIPAZIONE A CONFERENZE E SCUOLE

2019 17-th School on interactions between dynamical systems and Partial Differential Equations, Barcelona.

2019 ”Leaning tori, An Hamiltonian event under the tower”, Centro Ennio De Giorgi, Pisa.

2018 16-th School on interactions between dynamical systems and Partial Differential Equations, Barcelona.

2018 Perspectives in Hamiltonian dynamics, Venezia.

2018 Symmetry and Perturbation Theory, S. Margherita di Pula.

2018 BeKAM International Meeting, Cargese.

2016 Hamiltonian Dynamics, EDPs and Waves on the Amalfi Coast, Maiori.

2016 Nonlinear Waves 2016: Summer School, IHES, Paris.

2015 Normal Forms and Large Time Behavior for Nonlinear EDP, Centre Henri Lebesgue, Nantes.

2015 Sixth Itinerant Meeting in EDPs, SISSA, Trieste.

2014 KAM and Dispersive Methods in EDPs, Universita’ di Milano, Milano.

2014 Roman Summer School and Workshop on KAM Theory and Dispersive EDPs, Universita’ Roma Sapienza, Roma.

CORSI E ESAMI DI DOTTORATO SOSTENUTI PRESSO SISSA

2013-2014	Nonlinear analysis and bifurcation theory, prof. Malchiodi (esame sostenuto con giudizio finale: 30 cum laude).
	Nonlinear analysis and dynamical systems, prof. Berti (esame sostenuto con giudizio finale: 30 cum laude).
	Introduction to elliptic EDP's, prof. Dal Maso (esame sostenuto con giudizio finale: 30 cum laude).
	Topics in computational Fluid Dynamics, prof. Rozza (esame sostenuto con giudizio finale: 30 cum laude).
2014-2015	An introduction to KAM theory, prof. Bolle.
	Global solutions of Klein-Gordon type equations and semi-classical microlocal normal forms, prof. Delort.
2015-2016	Variational methods for linear and nonlinear Dirac equations, prof. Sere.
	KAM theory for EDP's, prof. Berti.
	Dynamics of Hamiltonian EDP's, prof. Procesi.
2016-2017	Dynamics of nonlinear EDP's, prof. Berti.
	Reducibility and KAM theory for EDP's, prof. Bambusi.

Lingue Parlate	ITALIAN · Madrelingua
	SPANISH · Scorrevole
	ENGLISH · Scorrevole

October 27, 2021

Dott. Paolo Giulietti

CURRICULUM SCIENTIFICO

✉ paolo.giulietti@unipi.it

PARTE I – INFORMAZIONI GENERALI

Nome Cognome: Paolo Giulietti

Cittadinanza: Italiana

Posizione attuale : RTD/A — *1 October 2020 - Ongoing*
Dipartimento di Matematica - Università di Pisa

Parte II – TITOLI DI STUDIO

Università degli studi di Roma "La Sapienza" — **Roma, Italia**
Dottorato in Matematica, Dottorato con Borsa — *October 2006 - February 2011*
Fisica matematica - Sistemi Dinamici
Tesi: On Transfer operator for Anosov flows
Relatore: Prof. C. Liverani

Scuola Matematica Interuniversitaria — **Cortona, Italia**
Formazione complementare — *July 2006 – August 2006*
Financial Mathematics - Stochastic Analysis and Modeling

Università di Pisa — **Pisa, Italia**
Laurea — *September 2000 – May 2006*
Tesi: Anosov flows
Relatore: Prof. P. Majer

United World College of the American West — **Montezuma - New Mexico, USA**
IB Baccalaureate — *August 1998 - May 2000*

PARTE III – Attività

III.1 - Attività didattica

Translation surfaces from geometry to spectral theory — **Università di Pisa**
Codocenza — *Giugno - Luglio 2021*
Corso di Dottorato in Matematica

Analisi Matematica — **Università di Pisa**
Incarico di codocenza — *Marzo 2020 - Giugno 2021*
Laurea Magistrale Ciclo Unico Ingegneria Edile-Architettura

Analisi Matematica I — **Università di Pisa**
Incarico di codocenza — *October 2020 - Giugno 2021*
Corso di Laurea in Ingegneria Chimica

Istituzioni di Analisi — **Università di Pisa**
Supporto alla didattica — *October 2017 - 2019*
Corso di Laurea in Matematica

Analisi Reale, Combinatoria — **UFRGS**
Lecturer — *February 2016 - July 2016*
Universidade Federal do Rio Grande do Sul - Porto Alegre (BR)

Calculus, Algebra Lineare — **UFRGS**
Lecturer — *February 2015 - December 2016*

Analisi Funzionale — **UFRGS**
Lecturer - Phd Course — *February 2014 - July 2014*

Algebra Lineare — **UFRGS**
Lecturer — *February 2014 - December 2014*

Matematica applicata — **UFRGS**
Lecturer — *February 2013 - December 2013*

Calculus — **LUISS Guido Carli, Rome**
Tutor — *September 2007 – June 2010*

III.2 Formazione e ricerca

CRM - Scuola Normale Superiore — **Pisa, IT**
Postdoc — *March 2017 - September 2020*

Universidade Federal do Rio Grande do Sul — **Porto Alegre, Brasile**
Professor Adjunto — *February 2013 - February 2017*
Tenure Position

Université de Bretagne-Occidentale — **Brest**
BREUDS Secondment — *December 2015*
On fractional derivatives and dynamical systems

Universidade Federal do Rio Grande do Sul — **Porto Alegre**
CNPq Grant - PVE Scheme — *September 2014 - July 2017*
Team member of the research group “On Dynamical zeta functions”

Université Grenoble Alpes — **Grenoble, Francia**
BREUDS Secondment — *July 2014*
On transport equations and the transfer operator

Universidade Federal do Rio Grande do Sul — **Porto Alegre, Brasile**
Post-doc Scholarship - CNPq — *April 2012 - February 2013*
On thermodynamic formalism

Università di Roma - Tor Vergata — **Roma, Italia**
Post-doc Scholarship — *September 2010 - February 2012*
Team member of ERC Grant “Macroscopic laws and dynamical systems”

Università di Lille, Francia — **Lille, Francia**
GREFI-MEFI Secondment — *12 -24 November 2008*
Obstructions to cohomological equations

III.3 - Attività Collaborative

Univ. Tor Vergata
PRIN Regular and stochastic behaviour in dynamical systems — *PRIN 2019 - 2021*

Team member
Scuola Normale Superiore **https://www.sns.it/it/gruppo-ricerca-sistemi-dinamici**
Gruppo di ricerca di Sistemi dinamici
Team Member
Universidade Federal do Rio Grande do Sul **Porto Alegre**
CNPq Grant - PVE Scheme *September 2014 - July 2017*
Team member of the research group "On Dynamical zeta functions"

Università of Rome Tor Vergata **Roma, Italia**
Post-doc Scholarship *September 2010 - February 2012*
Team member of ERC Grant "Macroscopic laws and dynamical systems"

III.4 - Relatore a congressi e convegni nazionali e internazionali - Su Invito

University of Vienna **Austria**
Dynamical Systems Seminars *24 September 2021*
Random Like properties of Skew Products

SIAM DS21 **USA**
https://www.siam.org/conferences/cm/conference/ds21 *23 May 2021*
Extreme Value Theory via Transfer Operators

Yeshiva University
Mathematical Physics Seminars *April 14, 2021*
Quantitative global-local mixing for accessible skew products

Dai - Dinamici
https://www.dinamici.org/event/paolo-giulietti-universita-di-pisa-italy/ *February 25, 2021*
Infinite mixing for accessible skew products

Queen Mary University of London **UK**
Dynamical Systems Seminar *2-7 March 2020*
Parabolic dynamics via anisotropic spaces

KTH **Stockholm, Sweden**
The Dynamical Systems Seminar *16-19 February 2020*
Parabolic dynamics via anisotropic spaces

Università di Roma - Tor Vergata **Roma**
Regular and stochastic behaviour in dynamical systems *12-14 February 2020*
Infinite Mixing for Skewproducts

Pennsylvania State University **PA - USA**
Minicourse: Parabolic dynamics via anisotropic spaces *4-23 November 2019*

University of Bremen **Bremen, Germany**
7th Bremen Summer School- Dynamical Systems *5-9 August 2019*
Parabolic dynamics - An introduction

CIRM - Marseille **France**
Thermodynamic formalism: Ergodic Theory and Validated Numerics *8-13 July 2019*
Linear response for random dynamical systems with noise

Univ. of Zurich and ETH **Switzerland**
Ergodic Theory and Dynamical Systems seminars *24 June 2019*
On Non-linear Pseudo-Anosov maps and parabolic flows

MFO Oberwolfach **Germany**
Séminaire de Géométrie et Dynamique *13 June 2019*

On Non-Linear Pseudo-Anosov maps and parabolic flows

Université de Lille **France**
Séminaire de Géométrie et Dynamique *26 April 2019*
Parabolic Dynamics and Anisotropic Banach Spaces

Università di Pisa **Pisa**
Dynamical systems and beyond *25-27 March 2019*
Parabolic Dynamics and Anisotropic Banach Spaces

HSE & Skoltech, Moscow **Russia**
Moscow-Pisa Colloquium *1-5 October 2018*
Parabolic dynamics via transfer operator

Loughborough University **UK**
Dynamics Days Europe *3-8 September 2018*
Linear response for dynamical systems with random noise

Queen's University **Canada**
Dynamics in Number Theory and Geometry - Fields Institute *21 -25 August 2017*
Infinite mixing for one dimensional maps with an indifferent fixed point

Centre de Physique Théorique **Marseille, France**
Seminars *July*
On parabolic dynamics

Indam **Roma**
Modern Trends in the Ergodic Theory of Dynamical Systems *5-9 June 2017*
Infinite mixing for maps with an indifferent fixed point

IMPA **Rio de Janeiro, Brasile**
The first Joint Meeting Brasile – Italia in Mathematics *29 August - 2 September 2016*
On anisotropic Banach spaces for parabolic dynamics

SNS **Pisa, Italia**
Analytical Methods in Classical and Quantum Dynamcial Systems *27 June- 1 July 2016*
On Parabolic dynamics

Laboratoire de Mathématiques de Bretagne Atlantique **Brest, France**
Systèmes dynamiques, probabilités et statistique LMBA *19 May 2016*
The calculus of thermodynamic formalism

CIRM **Marseille, Francia**
Extreme Value Theory and Laws of Rare Events *7 - 18 July 2014*
On Anisotropic Banach Spaces

UFSC **Florianopolis, Brasile**
Colóquio de Matemática da Região Sul *28 April - 2 May 2014*
On Zeta functions

Università di Pisa **Pisa, Italia**
Dynamical System Seminars *30 January 2014*
Anosov Flows and L-function

Universidade Federal Fluminense **Rio de Janeiro, Brasile**
Seminário Edaí IME - UFF 2012 *21 September 2012*
Dynamical zeta functions for Anosov flows

Università di Pisa **Pisa, Italia**
Second Meeting of Italian Hyperbolicians *20 - 23 September 2011*
Zeta functions

Centro de Giorgi - SNS **Pisa, Italia**
Sistemi dinamici nonlineari e applicazioni *18 - 19 February 2011*
Zeta functions in Dynamical Systems

III.5 Eventi - Coordinazione

DinAmici VI **Pisa**
http://www.crm.sns.it/event/450 *June 2019*
Conference - Organizing Committee

Leaning Tori - An Hamiltonian event under the Tower **SNS - Pisa**
http://www.crm.sns.it/event/447/ *May 2019*
Conference- Organizing Committee

Dynamical Systems Seminar **SNS - Pisa**
http://www.crm.sns.it/event/439/speakers.html?table=1 *2018 - 2019*
with Jessica Massetti

Dynamical Systems Seminar **SNS - Pisa**
http://www.crm.sns.it/event/418/speakers.html?table=1 *2017 - 2018*
with Mauro Artigiani

III Escola Brasileira de Sistemas Dinâmicos **UFRGS, Porto Alegre, Brasile**
https://www.ufrgs.br/3ebsd/ *20- 24 October 2016*
Conference - Organizing Committee

III.6 - Partecipazione ad eventi

InDAM **Rome**
Geometric, analytic and probabilistic appr. to dynamics in negative curvature *13 - 17 May 2013*

ICTP **Trieste**
ESF - School and Conference in Dynamical Systems *21 May - 20 June 2012*

Fields Institute **Università of Toronto**
Dynamics and Transport in Disordered Systems *1 April - 30 June 2011*

INdAM Meeting **Corinaldo - Italia**
Hyperbolic Dynamical Systems in Science *31 May - 4 June 2010*

Mathematisches Forschungsinstitut **Oberwolfach**
Spectrum of Transfer Operators *8 - 14 November 2009*

Università of Gottingen **Gottingen**
Summer school on Dynamical Systems *12 - 26 July 2009*

ICTP **Trieste**
School and Workshop on Dynamical Systems *30 June - 17 July 2008*

Erwin Schrodinger Institute **Vienna**
Hyperbolic Dynamical Systems *25 May - 30 June 2008*

CIRM **Marseille**
From dynamical systems to statistical mechanics *4 February - 7 March 2008*

III.6 – Atri titoli posseduti

Virology Database Analyst **Università degli studi Roma Tor Vergata**
Department of experimental medicine *December 2006 – June 2007*

Qualification au maître de conference **2016**
25 - Mathématiques

Undergraduate Supervisor - Master Thesys **UFRGS**
Rafael Pereira *March 2015 - March 2016*
"Uma Introdução as Aplicaçaoes do tipo Twist" (Dynamical system thesys: "On Twist applications")

Undergraduate Research Mentorship Program **UFRGS**
Cassiê Fernanda Longhi *August 2013 - July 2015*
Computational aspects of zeta functions

Undergraduate Research Mentorship Program **UFRGS**
Arthur Lovato *August 2014 - July 2015*
A transfer operator approach to the rotary drill

Ph.D. External Examiner **Universidade Federal do Rio de Janeiro**
Rafael Nóbrega de Oliveira Lucena *September 2015*
Spectral Gap for Contracting Fiber Systems and Applications

Progetto Finanziato **INDAM - GNFM Progetti Giovani 2020**
Principal Investigar *February 2021 - July 2022*
"Deterministic and stochastic dynamical systems for climate studies" - Value: 3.4K

Parte IV – PUBBLICAZIONI SCIENTIFICHE

1. P. Giulietti. "On Transfer Operators for Anosov Flows". PhD thesis. Universitá degli studi di Roma "La Sapienza", 2011
2. P. Giulietti, C. Liverani, and M. Pollicott. "Anosov Flows and Dynamical Zeta Functions". In: *Annals of Mathematics* (2013), pp. 687–773
3. P. Giulietti. "Zeta functions and Continuous time Dynamics". In: ed. by A. A. Pinto and D. Zilberman. Vol. 73. Springer Proceedings in Mathematics and Statistics. Springer-Verlag, 2014, pp. 285–303
4. P. Giulietti, A.O. Lopes, and V. Pit. "Duality between Eigenfunctions and Eigendistributions of Ruelle and Koopman operators via an integral kernel". In: *Stochastics and Dynamics* 16-3 (2016)
5. P Giulietti, A.O. Lopes, D. Marcon, and B. Kloeckner. "The Calculus of Thermodynamic Formalism". In: *Journal of the European Mathematical Society* 20 (2018). DOI: 10.4171/JEMS/814
6. P. Giulietti and C. Liverani. "Parabolic dynamics and Anisotropic Banach spaces". In: *"Journal of the European Mathematical Society"* (2019). DOI: 10.4171/JEMS/892
7. S. Galatolo and P. Giulietti. "Linear response, dynamical systems with additive noise and the control of their statistical properties". In: *"Nonlinearity"* (2019). DOI: 10.1088/1361-6544/ab0c2e
8. C. Bonanno, P. Giulietti, and M. Lenci. "Global-local mixing for the Boole Map". In: *Chaos, Solitons and Fractals* (2018). DOI: 10.1016/j.chaos.2018.03.020
9. C. Bonanno, P. Giulietti, and M. Lenci. "Infinite mixing for one-dimensional maps with an indifferent fixed point". In: *Nonlinearity* 31.11 (2018). URL: doi.org/10.1088/1361-6544/aadc04
10. P. Giulietti, P. Koltai, and S. Vaienti. "Targets and Holes". In: *Proceedings of the American Mathematical Society* (2020). DOI: 10.1090/proc/15384
11. P. Giulietti, A. Hammerlindl, and D. Ravotti. "Quantitative global-local mixing for accessible skew products". In: *Annales Henri Poincaré* (2021). DOI: 10.1007/s00023-021-01102-8

12. P. Giulietti, S.Marmi, and M. Tanzi. "Random-like properties of chaotic forcing". In: *arxiv.org:2104.06434* (2021)

Pisa, 29 09 2021

CURRICULUM VITAE

Posizioni Accademiche

- Dal 01/10/2021. Assegnista di Ricerca Senior, Centro Ricerche Enrico Fermi, Roma, Italia

- Dal 29/05/2019. Research Associate. Centre for Blockchain Technologies, UCL, London, UK

Titoli Accademici

2017. Dottore di Ricerca in Matematica ed Informatica. Curriculum: Matematica SSD: MAT/07, Università di Cagliari, Italia. Tesi: Statistical Physics of Evolutionary Game Theory and its Applications, valutazione: Lode

2013. Dottore di Ricerca in Ingegneria Elettronica ed Informatica. Curriculum: Ing.Informatica, SSD:ING-INF/05. Università di Cagliari. Tesi: Models and Frameworks for Studying Social Behaviours, valutazione: Eccellente

Visite Scientifiche

2018. Visiting Lecturer. ITMO University, St Petersburg, Russia

2016. Visiting Dept. of Data Analysis at University of Ghent, Belgio.

2016. Visiting Dept. of Physics – Ecole Normale Superieure de Paris, Paris (France).

2016. Visiting Dept. of Mathematics - Queen Mary University of London, London (UK).

Grants

- P.I. Dr M.A Javarone. Visiting Grant - ITMO University, St Petersburg Russia, 2018
- P.I. Dr M.A. Javarone. Research Grant - University of Ghent, Belgium, 2016
- P.I. Dr E. Agliari, Research Grant Indam. Membro del gruppo di ricerca, 2015

Posizioni Accademiche Precedenti

01/07/2019 – 30/09/2020. **Lecturer** in Applied Mathematics, UCL, London, UK

10/09/2018 – 15/03/2019 **Senior Lecturer** in Statistical Physics, Coventry University, Coventry, UK

12/02/2018 – 09/09/2018 **Research Associate**. University of Kent, Medway, UK

03/04/2017 – 31/01/2018 **Senior Research Fellow**. University of Hertfordshire, Hatfield, UK

01/01/2014 – 31/12/2016 **Studente di dottorato** in Matematica. Università di Cagliari, Cagliari, Italia

01/10/2014 – 30/09/2015. **Assegno di Ricerca**. Università di Sassari, Sassari, Italia

19/05/2014 – 20/06/2014. **Invited-Researcher**. Ecole Polytechnique de Paris – France.

15/07/2012 – 15/07/2014. **Assegno di Ricerca**. Università di Sassari, Sassari, Italia

11/2011-02/2012. **Collaborazione di Ricerca**: Study and development of new methods for supervised clustering. Università di Cagliari, Cagliari, Italia

03/2010 – 03/2013 **Studente di dottorato** in Ingegneria Informatica. Università di Cagliari, Cagliari, Italia

Ricerca e posizioni in ambito industriale

08/01/2018 — 22/12/2018. *Senior Researcher*, nChain LTD, London

16/03/2018. *Invited talk* Implementing Deep Learning Models at “Deep Learning in Finance” London Summit 2018, London

02/2016. *Visiting Researcher* at Invenia Labs – Cambridge, UK. Application of Evolutionary Strategies and Machine Learning Algorithms to Financial Time Series.

23/09/2016. *Speaker* at “Deep Learning in Finance Summit” London, UK.

Seminari

09/03/2017. From Evolutionary Games to the Dynamics of Innovation. CEU, Budapest

10/05/2016. Evolutionary Game Theory and its Applications to Optimisation Tasks – Dept. of Mathematics, Queen Mary University of London, London

18/02/2016. Statistical Physics of Evolutionary Game Theory. Dept. of Mathematics – Imperial College London, London

15/10/2015. Statistical Physics and Evolutionary Game Theory. Dept. of Mathematics, Università di Bologna, Bologna

14/07/2015. Introduction to Complex Networks. DIEE - Università di Cagliari, Cagliari

23/05/2014. Fermionic Networks: Modelling and Applications. University College London (UCL), London

03/2014. Seminario sulle Complex Networks. Dipartimento di Fisica, Università di Cagliari.

Attività Editoriale

Nominato EPL - Distinguished Referee 2018

Scientific Reports, Reviewer; Journal of Physics A: Mathematical and Theoretical, Reviewer; Proceedings of the Royal Society, Reviewer; Physical Review (APS), Reviewer; Chaos, Solitons and Fractals, Reviewer; Physica A: Statistical Mechanics and its Applications, Reviewer; Journal of Statistical Mechanics: Theory and Experiment (JSTAT), Reviewer; Nature Human Behaviour, Reviewer; Complexity, Editor and Reviewer; Social Network Analysis and Mining (SNAM), Reviewer; Europhysics Letters (EPL), Reviewer; Entropy, Review Editor; EPJ Data Science, Reviewer; EPJ-B Reviewer; PlosOne, Reviewer; Games, Reviewer; Applied Network Science, Reviewer; Journal of Physics: Complexity; Physics Letters A, Reviewer; Frontiers in Physics, Reviewer; Modern Physics Letters B, Reviewer; Frontiers in ICT – Quantum Computing, Review Editor; Frontiers in Human Neuroscience, Reviewer; Frontiers in Psychology; Reviewer, **Review Editor**, **Frontiers in Blockchain**

Conferenze – Organizzatore (O) e Program Committee (PC)

- (PC) Complex Networks 2021, Madrid (November 2021)
- (PC) CCS21 Conference on Complex Systems. Lyon (October 2021)
- (PC) NETSCI 2020. International School and Conference on Network Science, Rome, Italy 2020
- (PC) ACM WebSci. Web Science, 2020 Southampton, UK 2020
- (PC) ICCS 2020. 10th International Conference on Complex Systems. New England, 2020
- (PC) Complex Networks 2020. 9th International conference on complex networks and their applications, Exeter, UK 2020
- (PC) CCS19 Conference on Complex Systems. Singapore (September 2019)
- **(O) CSS18 Satellite: Braincomputing – Thessaloniki, Greece (September 2018)**
- (PC) CCS19 Conference on Complex Systems. Thessaloniki, Greece (September 2018)
- (PC) SocInfo. 10th International Conference on Social Informatics Saint Petersburg, Russia (September 2018)
- (PC) International Workshop on Complex Networks and their Applications. Lyon 12/2017
- (PC) CCS17 Conference on Complex Systems. Cancun (September 2017)
- (PC) SocInfo 2017. 9Th International Conference on Social Informatics (Oxford 2017)
- (PC) CompleNet17. 8Th Workshop on Complex Networks. Dubrovnik (Croatia). March 2017
- **(O) CSS16 Satellite: Evolutionary Game Theory: from Biology to Social Systems (EGT-BiSS) – Amsterdam (September 2016)**
- (PC) ICCSS2016. International Conference on Computational Social Science 2016 – Evanston, IL USA (June 2016)
- (PC) CCS16 Conference on Complex Systems. Amsterdam (September 2016)
- (PC) SocInfo 2016. 8Th International Conference on Social Informatics (November 2016)
- (PC) International Workshop on Complex Networks and their Applications. Co-located at SITIS 2016 - Milano (December 2016)
- (PC) CompleNet16. 7Th Workshop on Complex Networks. Dijon (France). March 2016
- (PC) Computational Social Science. LC2S2. NetSci2015 (June 2015)
- (PC) ICCSS2015. International Conference on Computational Social Science 2015 – Helsinki, Finland (June 2015)
- (PC) Complenet15. 6Th Workshop on Complex Networks. New York City, USA. (25-27 March 2015)
- **(O) SEDNAM. Workshop on Social and Economic Dynamics co-located at SocInfo2014 (November 2014) Barcelona**

- **(O) SEDPAM. Workshop on SocioPhysics and Econophysics co-located at ECCS14 (September 2014) IMT Lucca.**
- (PC) CSS – Computational Social Science. Contagion, Collective Behaviour, and Networks. 24-25 September 2014. IMT Lucca
- (PC) CRIMENET – Workshop on Criminal Network Analysis and Mining co-located at SocInfo2014, November 2014, Barcelona
- (PC) SocInfo2014, 6th International Conference on Social Informatics 10-13, November 2014, Barcelona.
- (PC) COOL2014 8, April 2014 Seoul. Located with WWW2014 South Korea.

Attività Didattica Accademica

- 2020/2021. Lecturer. Modelling Complex Systems. Università di Cagliari
- 2019/2020. Lecturer. Operational Research, Department of Mathematics, UCL
- 2019/2020. Tutor. Applied Mathematics, Department of Mathematics, UCL
- 2018/2019. Lecturer. Mathematics for Theoretical Physics. Coventry University, Coventry, UK
- 2018/2019 Lecturer. Mathematical Analysis. Coventry University, Coventry, UK
- 2018/2019. Tutor. Applied Mathematics 1 and of Applied Mathematics 2. Coventry University, Coventry, UK
- 2018. Visiting Lecturer at ITMO University. Mathematical and Computational Models for Complex Systems, St Petersburg, Russia
- 2017/2018. Professore a contratto Fisica presso Università di Sassari
- 2016/2017. Professore a contratto Fisica presso Università di Sassari
- 2016/2017. Tutor di Meccanica Analitica, presso Università di Cagliari.
- 2015/2016. Tutor of Meccanica Analitica, presso Università di Cagliari.
- 2014/2015. Professore a contratto di Informatica presso Università di Sassari
- 2014/2015. Tutor di Fisica 2, presso Università di Cagliari
- 2013/2014. Professore a contratto di Informatica presso Università di Sassari
- 2013/2014. Professore a contratto di Elettromagnetismo and Campi Elettromagnetici con elements di radioprotezione presso Università di Sassari
- 2011/2012. Professore a contratto di Informatica, Università di Sassari
- 2011/2012. Professore a contratto di Circuiti Elettrici ed Elettronici, Università di Sassari
- 2011/2012. Tutor of Fondamenti di Informatica, Università di Cagliari
- 2010/2011. Professore a contratto di Informatica, Università di Sassari
- 2010/2011. Professore a contratto Circuiti Elettrici ed Elettronici, Università di Sassari

Supervisione studenti di Dottorato

- Inizio 2019/2020 (Secondo supervisore), Department of Mathematics, UCL, London, UK
- Inizio 2019/2020 (Secondo supervisore), Department of Mathematics, UCL, London, UK
- Inizio 2019/2020 (Secondo supervisore), Department of Mathematics, UCL, London, UK

Supervisore di Tesi MSc, Laurea Magistrale e Triennale

UK

MSc in Mathematical Modelling, UCL, London UK

- 2019/2020. Understanding cooperation: analysing human behaviours by mathematical models.
- 2019/2020. Modelling emergent phenomena in the human brain.

MSc in Financial Mathematics, UCL, London UK

- 2019/2020. Cybersecurity and fraudulent behaviours in Blockchain based systems.
- 2019/2020. Cryptographic protocols in blockchain based technologies.
- 2019/2020. Econophysics models for studying financial markets.
- 2019/2020. The evolution of financial markets with the advent of blockchain based technologies and cryptocurrencies.
- 2019/2020. Modelling the dynamics of cryptocurrencies.
- 2019/2020. Machine Learning Techniques For The Cryptocurrency Market.

Italia

- 2014. Co-supervisore Laurea Magistrale in Fisica Teorica. Università di Cagliari. Tesi: Agent-based Models in Game Theory: Cooperation as an Emergent Phenomenon.
- 2014. Co-supervisore Laurea in Scienze del turismo. Università di Sassari. Tesi: Marketing and Social Networks: an analysis on human factors that influence decisions.

Elenco pubblicazioni su riviste, atti di conferenze, presentazioni poster/orale

Pubblicazioni

Riviste:

- Dynamics of one-dimensional spin models under the line-graph operator, Marco A. Javarone, Josh A. O'Connor, Proceedings of the Royal Society A 477 (2250), 20210282, DOI: https://doi.org/10.1098/rspa.2021.0282, 2021

- An epidemiological model with voluntary quarantine strategies governed by evolutionary game dynamics, M.A. Amaral, M.M. de Oliveira, M.A. Javarone, Chaos, Solitons and Fractals 143 (110616), 2021
- A mean field approach to model levels of consciousness from EEG recordings. Marco A. Javarone et al., Journal of Statistical Mechanics: Theory and Experiment 083405, 2020
- Strategy equilibrium in dilemma games with off-diagonal payoff perturbations, M.A. Amaral and Marco A. Javarone, Physical Review E, 101(6), 2020
- Heterogeneity in evolutionary games: an analysis of the risk perception, M.A. Amaral and Marco A. Javarone, Proceedings of the Royal Society - A, 476(2237), 2020
- Invited Review of 'The Perfect Bet by Adam Kucharski', Marco A. Javarone, The Mathematical Intelligencer, Springer, 2019
- The Host-Pathogen Game: an evolutionary approach to biological competitions. Marco Alberto Javarone. Frontiers in Physics 6(94), 2018
- Heterogeneous update mechanisms in evolutionary games: mixing innovative and imitative dynamics. Marco A. Amaral and Marco Alberto Javarone. Physical Review E 97 2018
- Dilution of Ferromagnets via a Random Graph-based Strategy. Marco Alberto Javarone and Daniele Marinazzo. Complexity, 2845031, 2018
- Evolutionary Dynamics of Group Formation. Marco Alberto Javarone and Daniele Marinazzo, PloS ONE 12(11) e0187960, 2017
- Solving Optimization Problems by the Public Goods Game. Marco Alberto Javarone EPJ-B 90:171, 2017
- The beneficial role of 'mobility' for the emergence of Innovation. Giuliano Armano and Marco Alberto Javarone. Scientific Reports (7) 1781, 2017
- A Statistical Physics Perspective to Understand Social Visual Attention in Autism Spectrum Disorder. Alessio Liberati, Roberta Fadda, Giuseppe Doneddu, Sara Congiu, Marco Alberto Javarone, Tricia Striano and Alessandro Chessa. Perception, doi:10.1177/0301006616685976, Perception 2017
- Modeling Poker Challenges by Evolutionary Game Theory. Marco Alberto Javarone, 7(4) 39, Games, 2016
- An Evolutionary Strategy based on Partial Imitation for Solving Optimization Problems. Marco Alberto Javarone. http://arxiv.org/abs/1602.04186 Physica A: Statistical Mechanics and Its Applications 463, 2016
- The Role of Noise in the Spatial Public Goods Game. Marco Alberto Javarone and Federico Battiston. http://arxiv.org/abs/1605.08690 Journal of Statistical Mechanics: Theory and Experiment P073404 2016
- Conformity-driven agents support ordered phases in the spatial Public Goods Game. Marco Alberto Javarone, Alberto Antonioni and Francesco Caravelli EPL 114(3) 38001 2016 (*Listed among "The 2016 "Top of the Top" Biophysical Works in the World*" http://dx.doi.org/10.1142/S1793048016010037)
- Modeling Radicalization Phenomena in Heterogeneous Populations. Serge Galam and Marco Alberto Javarone. http://arxiv.org/abs/1508.05269 PloS ONE 11(5): e0155407 2016

- Statistical Physics of the Spatial Prisoner's Dilemma with Memory-aware Agents. Marco Alberto Javarone. European Physical Journal B (89:2) 2 2016
- Emerging Heterogeneities in Italian Customs and Comparison with Nearby Countries. Elena Agliari, Adriano Barra, Andrea Galluzzi, Marco Alberto Javarone, Andrea Pizzoferrato, Daniele Tantari. PloS ONE 10(12): e0144643 2015
- Conformism-driven phases of opinion formation on heterogeneous networks: The q-voter model case. Marco Alberto Javarone and Tiziano Squartini, Journal of Statistical Mechanics: Theory and Experiment, P10002, 2015
- The Role of Competitiveness in the Prisoner's Dilemma. Marco Alberto Javarone and Antonio Emanuele Atzeni. Computational Social Networks (2) 2015
- Fermionic Networks: Modeling Adaptive Complex Networks with Fermionic Gases. Marco Alberto Javarone. International Journal of Modern Physics – C, 2015
- Is Poker a Skill Game? New Insights from Statistical Physics. Marco Alberto Javarone. EuroPhysics Letters (EPL), 110 – 58003, 2015
- Poker as a Skill Game: Rational vs Irrational Behaviors. Marco Alberto Javarone. Journal of Statistical Mechanics: Theory and Experiment, P03018, 2015
- Gaussian networks generated by random walks. Marco Alberto Javarone. Journal of Statistical Physics, 159-1, 2015
- Social Influences in Opinion Dynamics: the Role of Conformity. Marco Alberto Javarone. Physica A: Statistical Mechanics and Its Applications – volume 414, 2014
- Network Strategies in the Election Campaigns. Marco Alberto Javarone. Journal of Statistical Mechanics: Theory and Experiment – volume 2014 – P08013. 2014
- Opinion Dynamics and Linguistic Competitions. Marco Alberto Javarone. Social Physics (No.5), Beijing: Science Press, 2014, 82-92
- Competitive dynamics of lexical innovations in multi-layer networks. Marco Alberto Javarone. International Journal of Modern Physics C. DOI: 10.1142/S012918311450048X
- Emergence of acronyms in a community of language users. Marco Alberto Javarone and Giuliano Armano. European Physical Journal – B. 86:474 2013
- Perception of similarity: a model for social networks dynamics. Marco Alberto Javarone and Giuliano Armano. Journal of Physics A: Mathematical and Theoretical. 46-455102 2013
- Quantum-classical transitions in complex networks. Marco Alberto Javarone and Giuliano Armano. Journal of Statistical Mechanics: Theory and Experiment. P04019 2013
- Clustering Datasets by complex networks analysis. Giuliano Armano and Marco Alberto Javarone. Complex Adaptive Systems Modeling. 1:5 2013

Atti Conferenze:

- From Bitcoin to Bitcoin Cash: a Network Analysis. Marco Alberto Javarone and Craig S. Wright, ACM MobiSys, CryBlock2018 Munich Germany, 2018

- Modeling Evolutionary Dynamics of Lurking in Social Networks. Marco Alberto Javarone, Roberto Interdonato, Andrea Tagarelli, CompleNet16 Springer-Verlag Studies in Computational Intelligence 2016
- Modeling Socio-Psychological Behaviors in the Era of the WWW: a Brief Overview. Marco Alberto Javarone. (KDWEB15, CEUR-WS on-line proceedings series), 2015
- Emergence of Cooperation in the Prisoner's Dilemma Driven by Conformity. Marco Alberto Javarone, Antonio Emanuele Atzeni, Serge Galam. Application of Evolutionary Computation. Lecture Notes in Computer Science, 9028 EvoApp2015 (Copenhagen, Denmark).
- Emergence of Cooperation in Competitive Environments. Marco Alberto Javarone and Antonio Emanuele Atzeni. Signal-Image Technology and Internet-Based Systems (SITIS) 2014 IEEE – Complex Networks 2014 (Marrakech – Morocco)
- SEDNAM -Socio-Economic Dynamics: Networks and Agent-based Models – Introduction. Serge Galam, Marco Alberto Javarone and Tiziano Squartini. SEDNAM – SociInfo2014 – Barcelona Springer Lecture Notes in Computer Science, 8852 (2015)
- Emergence of Extreme Opinions in Social Networks. Marco Alberto Javarone and Serge Galam. CrimeNet – SociInfo2014 – Barcelona Springer Lecture Notes in Computer Science, 8852 (2015)
- The Role of the Shannon Entropy in the identification of acronyms. Marco Alberto Javarone. Studies in Computational Intelligence Volume 549. CompleNet14 Bologna March (Springer)
- Phase Transitions in Fermionic Networks. Marco Alberto Javarone and Giuliano Armano. 11th International Conference on Adaptive and Natural Computing Algorithms (ICANNGA13), LNCS Springer 2013
- A Fitness Model for Epidemic Dynamics in Complex Networks. Marco Alberto Javarone and Giuliano Armano. The 8th International Conference on Signal Image Technology and Internet Based Systems (SITIS2012) - IEEE Workshop on Complex Networks and Their Applications, 2012

Libri

- Statistical Physics and Computational Methods for Evolutionary Game Theory. Marco Alberto Javarone, Springer January 2018

Capitoli

- Poker Cash Game: a Thermodynamic Description. Marco Alberto Javarone. Theory and Applications in Mathematical Physics. World Scientific, 2015
- Complex Networks and Epidemiology. Marco Alberto Javarone and Giuliano Armano. Complex Networks and Their Applications – Chapter 8. Cambridge Scholars Publishing. 2014
- Clustering. Davide Eynard, Marco Alberto Javarone and Matteo Matteucci. Encyclopedia of Social Network Analysis and Mining - ESNAM. Springer 2014

Tesi di Dottorato

- Matematica e Informatica: Statistical Physics of Evolutionary Game Theory and its Applications. Marco Alberto Javarone. Tutor: Prof. Salvatore Mignemi e Prof. Adriano Barra
- Ingegneria Informatica: Models and Frameworks for Studying Social Behaviors. Marco Alberto Javarone. Cagliari, 2013 Tutor: Prof.Giuliano Armano http://veprints.unica.it/860/1/Javarone_PhD_Thesis.pdf

Presentazioni (T) Poster (P) Tutorial (TL) Seminari (S)

- **(S) Invited seminar.** Modelling Complexity. Evolutionary Game Theory beyond Cooperation. Physics of Living Matter Group, University of Luxemburg, Virtual (22/07/2021)
- **(T) Invited-talk** Cooperative behaviours and sources of noise. Marco Alberto Javarone. SMB-EVOP, Virtual/UK, (13 - 17 June 2021), 2021
- (T) Emerging Patterns in the Bitcoin Network. Marco Alberto Javarone and Craig Wright. BlockNet2018, Paris, June 2018
- (T) From Bitcoin to Bitcoin Cash: a Network analysis. Marco Alberto Javarone and Craig Wright. CryBlock2018, Munich, June 2018
- (P) Uncovering the Dynamics of Consciousness on Multiplex Networks: a preliminary analysis. Marco Alberto Javarone and Srivas Chennu. Network Neuroscience, Paris, June 2018
- (T) Investigating consciousness and its disorders by network analysis. Marco Alberto Javarone. Data Natives, London 2018
- **(S) Invited seminar.** Evolutionary Game Theory: a brief introduction. Marco Alberto Javarone. International Summer School: Mediterranean School of Complex Networks. Salina, Sicily (Italy), 06/09/2017.
- (TL) Evolutionary Game Theory: Models and Applications. Marco Alberto Javarone. European Conference on Artificial Life 2017, Lyon (France), 07/09/2017
- (T) An Evolutionary Game for Modeling the Emergence of Innovation in Social Systems. Marco Alberto Javarone. Dubrovnik (Croatia), 2017
- (P) Poker Games on Complex Networks. Marco Alberto Javarone. International Workshop on Complex Systems and their Applications. Milano, 2016
- (T) The Public Goods Game as Heuristic for Solving Optimization Tasks. Marco Alberto Javarone. CCS16, Amsterdam, Sept. 2016
- (T) Conformity-driven agents support ordered phases in the spatial public goods game. Marco Alberto Javarone, Alberto Antonioni, Francesco Caravelli. CCS16, Amsterdam, Sept. 2016
- (T) Skill games versus gambling: from Poker to financial markets. An old debate faced by Statistical Physics. Marco Alberto Javarone. Satellite co-located at CCS16 Computational Social Science: Social Contagion, Collective Behaviour, and Networks Sept. 2016, Amsterdam, Netherlands
- ***(TL) Invited tutorial.*** Social Behaviors through Networks: Models and Applications. Marco Alberto Javarone. International Workshop on Knowledge Discovery on the Web - KDWeb2016. 8-10 Sept. 2016, Cagliari, Italia

- (T) Statistical Physics of Evolutionary Games: from the emergence of cooperation to optimization problems. Marco Alberto Javarone. STATPHYS26, July 2016, Lion France
- (T) A mean field approach to the emergence of cooperation in evolutionary games. Marco Alberto Javarone. Econophysics Colloquium 15, Prague, September 2015
- (P) Modeling Socio-Psychological Behaviors in the Era of the WWW: a Brief Overview. Marco Alberto Javarone. KDWEB15, Cagliari, September 2015
- (T) Is Poker a skill game? Marco Alberto Javarone. IC2S2 – International Conference on Computational Social Science, Helsinki, June 2015
- (T) Modeling Group Polarization in Terrorism Dynamics. Marco Alberto Javarone and Serge Galam. IC2S2 – International Conference on Computational Social Science, Helsinki, June 2015
- **(T)** ***Keynote Speaker*** Opinion Dynamics in Criminal Contexts. Marco Alberto Javarone. NetCrime 2015, co-located at NetSci 2015, Saragoza (Spain), June 2015
- **(T)** ***Invited-talk*** Poker Challenges: a sociophysical perspective. Marco Alberto Javarone. Workshop on Sociophysics. 30-31 March 2015 (Paris - France)
- (T) Emergence of Cooperation in Competitive Environments. Marco Alberto Javarone and Antonio Emanuele Atzeni. Signal-Image Technology and Internet-Based Systems (SITIS) 2014 IEEE – Complex Networks 2014 (Marrakech – Morocco)
- (T) Emergence of Extreme Opinions in Social Networks. Marco Alberto Javarone and Serge Galam. CrimeNet – SociInfo2014 – Barcelona
- (T) Poker as a Skill Game: Rational vs Irrational Behaviors. Marco Alberto Javarone. ECCS14, Lucca, Italia
- (P) Conformism-driven phase transition on heterogeneous networks: the q-voter model case. Marco Alberto Javarone and Tiziano Squartini. ECCS14, Lucca, Italia
- (P) The Role of the Shannon Entropy in the identification of acronyms. Marco Alberto Javarone. CompleNet14, 2014 Bologna, Italia
- (T) The Acronyms Game, Marco Alberto Javarone and Giuliano Armano, ECCS13 - Satellite 'CSS: from Social Contagion to Collective Behavior', 2013, Barcelona Spain
- (T) Phase Transitions in Fermionic Networks, Marco Alberto Javarone and Giuliano Armano, 11th International Conference on Adaptive and Natural Computing Algorithms (ICANNGA13) 2013, Lausanne, Switzerland
- (T) A Fitness Model for Epidemic Dynamics in Complex Networks, Marco Alberto Javarone and Giuliano Armano, The 8th International Conference on Signal Image Technology and Internet Based Systems (SITIS2012) - IEEE Workshop on Complex Networks and Their Applications, 2012, Sorrento, Italia
- (P) A. Liberati, M.A. Javarone, G. Frigo, A. Salvago, G. S. Doneddu, R. Fadda, T. Striano and A. Chessa. Lèvy Flights Search Patterns In Children with ASDs Exploring Social Stimuli. International Meeting for Autism Research (IMFAR), May 12-14, 2011

Autorizzo il trattamento dei miei dati personali presenti nel curriculum vitae ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 e del GDPR (Regolamento UE 2016/679)

Roma, 27/10/2021 Marco Alberto Javarone

Andrew Kels

International School for Advanced Studies (SISSA)
Via Bonomea 265
34136 Trieste, Italy

Research Interests

My research is in the area of mathematical physics and integrable systems, including lattice models of statistical mechanics, nonlinear difference and differential equations, dynamical maps, special functions, and applications to quantum field theories.

Education

2009-2013 The Australian National University
Ph.D. in Theoretical Physics
Thesis: *Analytic and numerical investigation of lattice models*
Supervisor: Professor Vladimir Bazhanov

2005-2008 The University of Queensland
Bachelor of Science in Mathematics, Honours Class I, University Medal
Thesis: *Conformal Field Theory*
Supervisor: Associate Professor Yao-Zhong Zhang

Employment

12/2018-Present International School for Advanced Studies (SISSA), Italy
SISSA Mathematical Postdoctoral Fellowship

11/2016-11/2018 The University of Tokyo, Japan
JSPS International Postdoctoral Fellowship

10/2014-10/2016 Career break: parental leave/independent research

06/2013-09/2014 Technical University of Berlin, Germany
Postdoctoral researcher in the group "B02 Discrete Multidimensional Integrable Systems" under the project "Discretization in Geometry and Dynamics SFB Transregio 109" financed by the Deutschen Forschungsgemeinschaft

Competitive Research Funding Awarded

2018 International School for Advanced Studies (SISSA) Mathematical Fellowship
Project: *Multivariate hypergeometric integrals and integrable systems*
Value: 153 544 EUR over 4 years

2016 Japan Society for the Promotion of Science (JSPS) International Postdoctoral Fellowship
Project: *Elliptic hypergeometric integrals and quantum integrable systems*
Value: 76 000 EUR over 2 years (approximate amount converted from JPY)

Publications

Refereed Journal Articles

[1] G. Gubbiotti, **A.P. Kels**, *"Algebraic entropy for face-centered quad equations"*, J. Phys. A: Math. Theor., 54, 455201, October 2021

[2] **A.P. Kels**, *"Lax matrices for lattice equations which satisfy consistency-around-a-face-centered-cube"*, 2021 Nonlinearity 34 7064 September 2021

[3] T. Grava, **A.P. Kels**, E. Tonni, *"Entanglement of Two Disjoint Intervals in Conformal Field Theory and the 2D Coulomb Gas on a Lattice"*, Phys. Rev. Lett. 127, 141605 September 2021

[4] **A.P. Kels**, *"Interaction-round-a-face and consistency-around-a-face-centered-cube"*, J. Math. Phys. 62(3):033509 March 2021

[5] **A.P. Kels**, M. Yamazaki, *"Lens generalisation of τ-functions for the elliptic discrete Painlevé equation"*, Int. Math. Res. Not. 1, 110-151 January 2021

[6] **A.P. Kels**, *"Integrable quad equations derived from the quantum Yang-Baxter equation"*, Lett. Math. Phys. 110, 1477-1557, January 2020

[7] **A.P. Kels**, *"Extended Z-invariance for integrable vector and face models and multi-component integrable quad equations"*, J. Stat. Phys. 176, 1375–1408, July 2019

[8] **A.P. Kels**, M. Yamazaki, *"Elliptic hypergeometric sum/integral transformations and supersymmetric lens index"*, SIGMA 14, 013, February 2018

[9] **A.P. Kels**, M. Yamazaki, *"Lens elliptic gamma function solution of the Yang-Baxter equation at roots of unity"*, J. Stat. Mech., 023108, February 2018

[10] **A.P. Kels**, *"Exactly solved models on planar graphs with vertices in $\mathbb{Z}^3$"*, J. Phys. A: Math. Theor., 50, 495202, November 2017

[11] I. Gahramanov, **A.P. Kels**, *"The star-triangle relation, lens partition function, and hypergeometric sum/integrals"*, J. High Energ. Phys., 2017:40, February 2017

[12] V.V. Bazhanov, **A.P. Kels**, S.M. Sergeev, *"Quasi-classical expansion of the star-triangle relation and integrable systems on quad-graphs"*, J. Phys. A: Math. Theor., 49 464001, October 2016

[13] **A.P. Kels**, *"New solutions of the star-triangle relation with discrete and continuous spin variables"*, J. Phys. A: Math. Theor., 48 435201, October 2015

[14] **A.P. Kels**, *"A new solution of the star-triangle relation"*, J. Phys. A: Math. Theor., 47, 055203, January 2014

[15] V.V. Bazhanov, **A.P. Kels**, S.M. Sergeev, *"Comment on star-star relations in statistical mechanics and elliptic gamma-function identities"*, J. Phys. A: Math. Theor., 46, 152001, February 2013

[16] T. Murphy, T. Mauch, A. Green, R.W. Hunstead, B. Piestrzynska, **A.P. Kels**, P. Sztajer, *"The Molonglo galactic plane survey (MGPS-2): compact source catalogue"*, Mon. Not. Roy. Astron. Soc: 382, 382-392, November 2007

Preprints

[17] **A.P. Kels**, *"Two-component Yang-Baxter maps associated to integrable quad equations"*, arXiv:1910.03562, October 2019 (submitted)

Invited International Conference and Workshop talks

2022 Dynamics of SCFTs and Special Functions, Simons Center, USA
TBA

2021 65th Annual Meeting of the Australian Mathematical Society (Integrable Systems and Mathematical Physics Special Section), The University of Newcastle, Australia
TBA

2020 Integrable Systems Workshop 2020, The University of Sydney, Australia
New discrete integrable equations from Lagrangian functions

Baxter 2020: Frontiers in Integrability, The Australian National University
New developments for integrability and the star-triangle relations

2019 The 9th International Congress on Industrial and Applied Mathematics (ICIAM), Valencia, Spain
A generalisation of tau-functions for the elliptic difference Painlevé equation of type E_8

2018 Asymptotic, Algebraic and Geometric Aspects of Integrable Systems Workshop, Tsinghua Sanya International Mathematics Forum, China
Yang-Baxter/3D-consistency correspondence

Invited International Seminars

2021 Probability and Mathematical Physics Seminar, University of Warwick, UK
The star-triangle relation, integrable models, and hypergeometric integrals

2020 Integrable Systems Seminar, The University of Leeds, UK
Discrete integrable equations from Lagrangian functions

2017 Physics and Mathematics Seminar, Aoyama Gakuin University, Japan
Yang-Baxter equation, elliptic hypergeometric integrals, and ABS equations

Institute of Mathematics for Industry Seminar, Kyushu University, Japan
Yang-Baxter equation, elliptic hypergeometric integrals, and ABS equations

2016 Mathematics and String Theory Seminar, Institute for the Physics and Mathematics of the Universe (IPMU), Tokyo, Japan
Introduction to the star-triangle relation form of the Yang-Baxter equation and modern applications

2014 Integrable Systems Seminar, The University of Leeds, UK
Quasi-classical expansion of the star-triangle relation and discrete integrable systems

International Conference and Workshop talks

2020 Australia and New Zealand Association of Mathematical Physics (ANZAMP) meeting, Kiama, Australia
Yang-Baxter maps associated to discrete soliton equations and hypergeometric functions

2019 Elliptic Integrable Systems, Special Functions and Quantum Field Theory, Nordita, Sweden
Discrete integrability from hypergeometric integrals

2018 The 13th Symmetries and Integrability of Difference Equations Conference, Fukuoka, Japan
Hypergeometric integrals, Yang-Baxter equations, and 3D-consistent equations

2017 Workshop on Elliptic Hypergeometric Functions in Combinatorics, Integrable Systems and Physics
Elliptic hypergeometric sum/integrals (Poster)

Australia and New Zealand Association of Mathematical Physics (ANZAMP) meeting, Kiama, Australia
The star-triangle relation, lens partition function, and hypergeometric sum/integrals

2015 Baxter 2015: Exactly Solved Models and Beyond, Palm Cove, Australia
New solutions of the star-triangle relation with discrete and continuous spin variables

2013 Australia and New Zealand Association of Mathematical Physics (ANZAMP) meeting, Lorne, Australia
Quasi-classical expansion of the star-triangle relation

Teaching Experience

2020-2021 International School for Advanced Studies (SISSA), Italy
Lecturer of the PhD course "Discrete Integrable Systems" for the PhD program in Mathematics (Geometry and Mathematical Physics)

2009-2012 The Australian National University
Tutor: 3rd year course – Scientific Computing
2nd year course – ODE's & Advanced Vector Calculus
1st year course – Mathematics & Applications
1st year course – Introduction to Advanced Physics

2006-2008 The University of Queensland, Australia
Tutor: 2nd year course – Applied Mathematical Analysis
2nd year course – Calculus & Linear Algebra II
1st year course – Multivariate Calculus & ODE's
1st year course – Electromagnetism, Optics, & Quantum Physics
1st year course – Physical Basis of Biological Systems

Alessandro Manacorda

Department of Physics and Materials Science
University of Luxembourg
162a avenue de la Faïencerie

Aree di ricerca: meccanica statistica di non equilibrio; sistemi granulari; materia attiva; sistemi complessi; sistemi disordinati e vetrosi; dynamical mean-field theory; modelli su reticolo; simulazioni numeriche.

Attività di ricerca Il mio percorso scientifico è cominciato con lo studio dei sistemi granulari e di materia attiva sotto la guida del mio relatore di dottorato, dr. Andrea Puglisi, dal 2013 al 2017 all'Università di Roma *Sapienza*. Nel corso di questo progetto ho sviluppato due diversi modelli su reticolo per studiare l'idrodinamica fluttuante di una catena di particelle granulari o di un sistema bidimensionale di particelle attive. I modelli sviluppati hanno permesso di analizzare la stabilità del comportamento collettivo fuori dall'equilibrio e di predire con successo le fluttuazioni di correnti e dissipazione nel sistema. Allo stesso tempo, è stato possibile derivare il comportamento a taglie finite del sistema superando l'approssimazione di caos molecolare, ottenendo nuovi risultati sul *cooling* granulare e sulle fluttuazioni di energia. I risultati ottenuti hanno confermato la possibilità di una descrizione unificata della materia attiva e granulare, dovuta alla condivisione di meccanismi di iniezione/dissipazione di energia a livello della singola unità, e le differenze tra i due comportamenti collettivi. La tesi di dottorato è stata nominata eccezionale dall'Università di Roma *Sapienza* e pubblicata all'interno della collana *Springer Theses*.
Dal 2018 al 2021 sono stato ricercatore postdoc presso il *Laboratoire de l'École Normale Supérieure* di Parigi, all'interno del progetto ERC *GlassUniversality* diretto dal dr. Francesco Zamponi. In questo progetto, ho sviluppato la soluzione numerica della *dynamical mean-field theory* per sistemi di particelle in dimensioni infinite. La soluzione ottenuta per sistemi di sfere all'equilibrio ha confermato le previsioni ottenute dalla termodinamica attraverso il metodo delle repliche, e aggiunto nuovi risultati sul comportamento a tempi intermedi e sul comportamento critico in prossimità della transizione dinamica. I metodi sviluppati sono stati successivamente applicati a sistemi fuori dall'equilibrio: *(i)* per lo studio di particelle attive, dove la dinamica è stata studiata analiticamente nel limite diluito e confrontata con successo con i risultati ottenuti in parallelo dalla teoria cinetica; *(ii)* per lo studio della transizione di jamming in sistemi di particelle in dimensioni infinite, i cui risultati sono in via di pubblicazione.
Da settembre 2021 sono ricercatore postdoc nel gruppo di Fisica della materia attiva diretto dal prof. Étienne Fodor, presso l'Università del Lussemburgo. Questo progetto è dedicato allo sviluppo di una nuova classe di modelli di materia attiva, in cui l'attività è data dalla capacità di variare autonomamente dei gradi di libertà interna delle particelle piuttosto che dall'iniezione di energia cinetica. Scopo della ricerca è

la comprensione qualitativa di comportamenti collettivi osservati in sistemi biologici, come le oscillazioni della dimensione di tessuti cellulari densi e la propagazione di onde di compressione, e l'esplorazione di nuovi tipi di comportamento collettivo.

Attività di insegnamento Durante il dottorato di ricerca sono stato tutor di matematica per gli studenti del primo anno presso i Dipartimenti di Chimica e Fisica dell'Università di Roma *Sapienza*. Ho conseguito l'abilitazione all'insegnamento secondario di Matematica e Fisica - classe di concorso A027 - nel 2015 tramite Tirocinio Formativo Attivo (TFA) presso l'Università di Napoli *Federico II*. Nel 2017-2018, sono stato docente di ruolo in Matematica e Fisica presso l'I.I.S.S. *Charles Darwin* di Roma. Durante questo anno ho partecipato al programma Erasmus+, comprendente attività di scambio e formazione a livello europeo riguardo all'insegnamento di Matematica, Tecnologie Informatiche e Inglese.

Posizione attuale

2021-oggi Ricercatore postdoc presso il Department of Physics and Materials Science, Università del Lussemburgo, Lussemburgo

Posizioni precedenti

2018-2021 Ricercatore postdoc presso il Laboratoire de Physique de l'École Normale Supérieure, Parigi, Francia

2017-2018 Professore di matematica e fisica presso l'I.I.S.S. Charles Darwin, Roma

Formazione

2017 Dottorato in Fisica, Università degli studi di Roma *Sapienza* — ottimo con lode

2015 Tirocinio Formativo Attivo per l'insegnamento superiore in Matematica e Fisica, Università degli studi di Napoli *Federico II* — 98/100

2012 Laurea magistrale in Fisica, Università degli studi di Roma *Sapienza* — 110/110 con lode

2010 Laurea in Fisica, Università degli studi di Roma *Sapienza* — 110/110 con lode

Pubblicazioni

Articoli

2021 Thibaut Arnoulx de Pirey, Alessandro Manacorda, Frédéric van Wijland and Francesco Zamponi. Active matter in infinite dimensions: Fokker-Planck equation and dynamical mean-field theory at low density. `arXiv:2108.02407`. Accettato per la pubblicazione in *J. Chem. Phys.*

2020 Alessandro Manacorda, Grégory Schehr and Francesco Zamponi. Numerical solution of the dynamical mean field theory of infinite-dimensional equilibrium liquids.

J. Chem. Phys. **152**, 164506 (2020).

2017 Alessandro Manacorda and Andrea Puglisi. Lattice model to derive the fluctuating hydrodynamics of active particles with inertia. *Phys. Rev. Lett.* **119**, 208003 (2017).

2016 Carlos A. Plata, Alessandro Manacorda, Antonio Lasanta, Andrea Puglisi, and Antonio Prados. Lattice models for granular-like velocity fields: finite-size effects. *J. Stat. Mech.* (2016) 093203.

Alessandro Manacorda, Carlos A. Plata, Antonio Lasanta, Andrea Puglisi, and Antonio Prados. Lattice models for granular-like velocity fields: Hydrodynamic description. *J. Stat. Phys.* **164**, 810 (2016).

2015 Antonio Lasanta, Alessandro Manacorda, Antonio Prados, and Andrea Puglisi. Fluctuating hydrodynamics and mesoscopic effects of spatial correlations in dissipative systems with conserved momentum. *New J. Phys.* **17**, 083039 (2015).

2014 Alessandro Manacorda, Andrea Puglisi, and Alessandro Sarracino. Coulomb friction driving Brownian motors. *Commun. Theor. Phys.* **62**, 505 (2014).

Monografie

2018 Alessandro Manacorda. *Lattice Models for Fluctuating Hydrodynamics in Granular and Active Matter*. Springer, 2018

Premi e riconoscimenti

2018 Tesi di dottorato nominata come eccezionale dall'Università di Roma *Sapienza* e pubblicata all'interno della collana *Springer Theses*.

Seminari tenuti

2020 Active Matter and Dynamical Mean-Field Theory. 26 novembre, Ecole Normale Supérieure, Parigi (online).

A numerical solution for the infinite-dimensional dynamics of particles. 13 marzo Université de Paris, Laboratoire Matière et Systèmes Complexes.

Solving the dynamics of particle systems in infinite dimensions. 23 gennaio, Università della Campania *Luigi Vanvitelli*, Caserta.

2019 Numerical methods for the $d = \infty$ solution of the equilibrium dynamics. 4 giugno. Workshop *Algorithms for dynamical mean-field equations*, École Normale Supérieure, Parigi

The $d = \infty$ solution of the equilibrium dynamics of particle systems: a numerical approach. April 25, Universität Konstanz

Equilibrium dynamics of $d = \infty$ particle systems: a numerical solution. 10 marzo,

CrackTheGlass Meeting, Columbia University, New York

2018 Lattice models for fluctuating hydrodynamics in granular and active matter. 4 ottobre, École Normale Supérieure, Parigi

2017 Fluctuating Hydrodynamics of Granular and Active Particles on a Lattice. 17 maggio, Università di Roma *Sapienza*

2015 Granular-like hydrodynamics on a 1d Lattice Model with momentum Conservation. 3 dicembre, Universidad de Sevilla

Kinetic Models of Granular and Active Matter: Hydrodynamics and Fluctuations. 4 febbraio, Università di Roma *Sapienza*

Coorganizzazione di eventi scientifici

2021 Summer School *Glassy Systems and Inter-Disciplinary Applications*, 28 giugno - 7 luglio, Institut d'Études Scientifiques de Cargèse

2020 Webinars della *Simons Collaboration on Cracking the Glass Problem* (online)

2019 Workshop *Algorithms for dynamical mean-field equations*, 4 giugno, École Normale Supérieure, Parigi.

2018 Workshop *Dynamical equations for dense liquids*, 11-12 dicembre, École Normale Supérieure, Parigi.

2018-20 Seminari settimanali della Simons Collaboration on *Cracking the Glass Problem* presso l'École Normale Supérieure, Parigi.

Presentazione di poster a scuole e conferenze

2021 *Recent advances on the Glass problem*, 6-8 gennaio, CECAM-HQ-EPFL (online)

2020 *Yearly collaboration meeting of the Simons Collaboration on Cracking the Glass Problem*, 1-3 dicembre (online)

2019 *Beg Rohu Summer School on Glasses, Jamming and Slow Dynamics*, 24 giugno - 6 luglio Beg Rohu

Simons Collaboration on Cracking the Glass Problem Annual Meeting, 7-8 marzo, New York

2016 *2nd course on Multiscale Integration in Biological Systems*, 2-9 novembre, Parigi

6th Warsaw School of Statistical Physics, 25 giugno - 2 luglio, Sandomierz

2015 *Luxembourg out of Equilibrium*, 12-15 gennaio, Lussemburgo

Insegnamento

2017-18 Docente di Matematica e Fisica presso l'I.I.S.S. *Charles Darwin*, Roma

2016 Tutor di matematica presso il Dipartimento di Fisica dell'Università degli studi di Roma *Sapienza*

2015 Tirocinio per l'insegnamento di Matematica e Fisica presso il L.C.S. *Vittorio Emanuele II*, Napoli

2014 Tutor di matematica presso il Dipartimento di Chimica dell'Università degli studi di Roma *Sapienza*

Esperienze professionali

2015 Visiting student presso il Dipartimento di Fisica dell'Università di Siviglia

2010-12 Borsista di ricerca presso il Dipartimento di Fisica dell'Università degli studi di Roma *Sapienza*, impiegato nel Museo di Fisica (2010) e nei Laboratori *Bruno Pontecorvo* (2012)

2011 Tirocinio presso il LPNHE, Parigi, all'interno del progetto di ricerca H.E.S.S.

Studente Erasmus presso l'Université Pierre et Marie Curie di Parigi

Animatore scientifico presso il Festival della Scienza di Roma

Competenze informatiche

Sistemi operativi Windows, iOS, Linux

Software Microsoft Office, Adobe Photoshop, Gnuplot, Origin, Gimp, GLE

Linguaggi C, Python, LaTeX, Perl, Bash, Mathematica, MATLAB, Octave

Competenze linguistiche

Italiano: madre lingua

Francese: padronanza - diploma DALF C2 (giugno 2012)

Inglese: avanzato - diploma IELTS C1, punteggio 7.0 (marzo 2016)

Spagnolo: intermedio

Giovanna Marcelli

Curriculum Vitae

Current position

16 April 2020 – **Postdoc at Scuola Internazionale Superiore di Studi Avanzati (SISSA)**, **Trieste, Italy** (Assegno di ricerca conferito ai sensi dell'art. 22 della Legge n. 240/2010).
Supervisor: Prof. Dr. Marcello Porta

Past position

01 April 2018 – 31 March 2020 **Postdoc at Eberhard Karls Universität Tübingen**, **Germany** (Borsa post-dottorato in Atenei stranieri).
Supervisor: Prof. Dr. Stefan Teufel

Education

Nov. 2014 – Oct. 2017 **Ph.D. in Mathematics**, University of Rome, "La Sapienza".
Thesis defence: February 27th, 2018.
Title: "A mathematical analysis of spin and charge transport in topological insulators".
Supervisor: Prof. Dr. Gianluca Panati (University of Rome, "La Sapienza").
Referees: Prof. Dr. Eric Cancès (Ecole des Ponts ParisTech, INRIA Paris) and Prof. Dr. Benjamin Schlein (Universität Zürich).
Committee: Prof. Eric Cancès (Ecole des Ponts ParisTech, INRIA Paris), Prof. Dr. Domenico Finco (Università Telematica Internazionale Uninettuno) and Prof. Dr. Alessandro Teta (University of Rome, "La Sapienza").

Oct. 2016 – Mar. 2017 **Erasmus + (Ph.D. level)**, Host Institution: Eberhard Karls Universität Tübingen.
Title of the project: "Adiabatic theorems and application to quantum spin Hall effect".
Supervisor at the mobility destination: Prof. Dr. Stefan Teufel.

Oct. 2012 – Oct. 2014 **Master Degree in Mathematics**, University of Rome, "La Sapienza".
Title: "Metodi di Bloch–Floquet per il Laplaciano ergodico".
Supervisors: Prof. Dr. Gianluca Panati and Prof. Dr. Adriano Pisante (University of Rome, "La Sapienza").
Final mark: 110/110 cum laude.

April 2015 **Certificate of Excellent Graduate at the Faculty of Mathematical, Physical and Natural Sciences**, *Academic year 2013-2014*, University of Rome, "La Sapienza".

Oct. 2009 – Oct. 2012 **Bachelor Degree in Mathematics**, University of Rome, "La Sapienza".
Title: "Analogie fra la Meccanica classica e l'Ottica geometrica".
Supervisor: Prof. Dr. Gianluca Panati (University of Rome, "La Sapienza").
Final mark: 110/110 cum laude.

✉ *giovanna.marcelli@sissa.it* *giovanna.marcelli.mat@gmail.com*
homepage

Oct. 2010 – Oct. 2012 **Certificate of completion of study programme at the University School of Excellence**, *administrated by "Fondazione Tullio Levi–Civita" and "International Research Center for Mathematics & Mechanics of Complex System" of University of L'Aquila*, in Cisterna di Latina (Latina), Italy.
Coordinator: Prof. Dr. Alberto Maria Bersani (University of Rome, "La Sapienza").
Final mark: Excellent.

Sept. 2004 – July 2009 **High School Degree**, *Liceo Scientifico (Piano Nazionale Informatica (PNI)), "Guglielmo Marconi"*, Colleferro (Rome), Italy.
Final mark: 100/100 cum laude.

August 2008 **University orientation course**, *one-week course*, (participation reserved to the two most proficient students in each high school), Scuola Normale Superiore di Pisa, Italy.

Teaching

Oct. 2019 – Feb. 2020 **Exercise Classes for "Mathematical Quantum Theory"**, *Master in Mathematical Physics Program*, Eberhard Karls Universität Tübingen.
Duration(*): 30 hours.

October 2019 **Preparatory Course for the Master in Mathematical Physics Program**, Eberhard Karls Universität Tübingen.
Duration(*): 60 hours.

Apr. 2019 – July 2019 **Exercise Classes for "Linear Algebra"**, *Bachelor of Science*, Eberhard Karls Universität Tübingen.
Duration(*): 60 hours.

Oct. 2018 – Feb. 2019 **Exercise Classes for "Geometry in Physics"**, *Master in Mathematical Physics Program*, Eberhard Karls Universität Tübingen.
Duration(*): 30 hours.

October 2018 **Preparatory Course for the Master in Mathematical Physics Program**, Eberhard Karls Universität Tübingen.
Duration(*): 30 hours.

Apr. 2018 – July 2018 **Exercise Classes for "Non-Linear Dispersive Partial Differential Equations"**, *Master in Mathematical Physics Program*, Eberhard Karls Universität Tübingen.
Duration(*): 30 hours.

May 2016 **Istituzioni di Fisica Matematica**, *Master in Mathematics*, University of Rome, "La Sapienza".
Two two-hour lectures to conclude the course taught by Prof. Dr. Mario Pulvirenti. Duration: 4 hours.

September 2015 **Preparatory Course in Mathematics**, *Faculty of Information Engineering, Informatics, and Statistics*, University of Rome, "La Sapienza".
Duration: 24 hours.

(*) This duration does not include the time used both for grading the solutions written weekly by each student and the office hours.

Grants

February 2021– July 2022 — **Progetto Giovani GNFM 2020**: "Correnti di spin in presenza di interazioni spin-orbita e campi magnetici", jointly with Domenico Monaco, funded by: INdAM–GNFM.

2016 August — **Start-up research funds** for the project: "Adiabatic theorems and application to quantum spin Hall effect", University of Rome, "La Sapienza".

2016 March — **Erasmus + mobility fellowship (Ph.D. level)** for the project: "Adiabatic theorems and application to quantum spin Hall effect", University of Rome, "La Sapienza". Mobility destination: Eberhard Karls Universität Tübingen, Germany and supervisor at the mobility destination: Prof. Dr. Stefan Teufel.

2014 October — **Ph.D. fellowship**, University of Rome, "La Sapienza".

Oct. 2010 – Oct. 2012 — **Fellowship** at University school of excellence, administrated by "Fondazione Tullio Levi–Civita" and "International Research Center for Mathematics & Mechanics of Complex System" of University of L'Aquila (Coordinator: Prof. Dr. Alberto Maria Bersani (University of Rome, "La Sapienza")).

2010 January — **"Anna Norvano" fellowship**, reserved to the most proficient students in the scientific high school "Guglielmo Marconi", awarded by Comune di Colleferro (Rome).

Research

Research field — **Mathematical physics** — *I am interested in mathematical problems arising from condensed matter physics, specially related to charge and spin (topological) transport in quantum systems. In particular: analysis of the transport properties with universality feature for a class of models, which are relevant for condensed matter physics.*

Research experience — **Mathematical physics** — *During my Ph.D. and first postdoc I have consolidated my competencies in mathematical methods of one-body quantum mechanics. In the current second postdoc I have been enhancing my knowledge and competencies in mathematical methods of many-body quantum mechanics and renormalization group.*

Publications

- **A new approach to transport coefficients in the quantum spin Hall effect** (with Gianluca Panati and Stefan Teufel). Ann. Henri Poincaré (2021). https://doi.org/10.1007/s00023-020-00974-6.
- **Spin conductance and spin conductivity in topological insulators: analysis of Kubo-like terms** (with Gianluca Panati and Clément Tauber). Ann. Henri Poincaré (2019). https://doi.org/10.1007/s00023-019-00784-5.
- **The Haldane model and its localization dichotomy** (with Domenico Monaco, Massimo Moscolari and Gianluca Panati). *Rend. Mat. Appl.* **39**, Issue 2 (2018), 307–327. http://www1.mat.uniroma1.it/ricerca/rendiconti/ARCHIVIO/2018(2)/307-327.pdf. Extended preprint at arXiv:1909.03298.

Preprints

- **Localization implies Chern triviality in non-periodic insulators** (with Massimo Moscolari and Gianluca Panati). Preprint available at `arXiv:2012.14407` (2020). *Submitted*.
- **Improved energy estimates for a class of time-dependent perturbed Hamiltonians**. Preprint available at `arXiv:1904.11300` (Revised in 2021). *Submitted*.

Papers in preparation (soon on `arXiv`)

- **Purely linear response of the quantum Hall current to space-adiabatic perturbations** (with Domenico Monaco).

Scientific communications

Invited talks

25–27 August 2021 — **Solid Math 2021: Mathematical and numerical methods for solid-state physics**, Écoles des Ponts, Marne la Vallée.
Title of the talk: *A new approach to transport coefficients in the quantum (spin) Hall effect*.

9–13 August 2021 — **Learning from insulators: new trends in the study of conduction properties of metals**, *Leiden University*, Lorentz Center, Oort.
Title of the talk: *A new approach to transport coefficients in the quantum (spin) Hall effect*.

25–28 July 2021 — **Topological phases of matter**, *ETH Zürich*, Institute for Theoretical Physics, Leysin.
Title of the talk: *A new approach to transport coefficients in the quantum (spin) Hall effect*.

11 May 2021 — **SISSA for schools**, *SISSA*, online.
Participation in "SISSA for schools", which aims to promote SISSA high quality research and lively international status to the younger generation.

17–28 May 2021 — **Conference on Mathematical Aspects of Materials Science**, *SIAM*, Basque center for applied mathematics, online.
Title of the talk: *A new approach to transport coefficients in the quantum spin Hall effect*.

5 March 2021 — **Cossa xe...? Seminar**, *SISSA*, Mathematics Area.
Title of the talk: *The integer quantum Hall effect and the Kubo formula*.

23 February 2021 — **Analysis and Mathematical physics seminars 2020-2021**, *SISSA*, Mathematics Area.
Title of the talk: *A new approach to transport coefficients in the quantum spin Hall effect*.

3-4 February 2020 — **Noncommutative Geometry, Analysis, and Topological Insulators**, *Leiden University*, Mathematisch Instituut.
Title of the talk: *A new approach to transport coefficients in the quantum (spin) Hall effect*.

4-5 July 2019 — **Tübingen-Zürich Meeting in Mathematical Physics**, *Eberhard Karls Universität Tübingen*, Department of Mathematics.
Title of the talk: *Non-equilibrium almost-stationary states and linear response for gapped non-interacting quantum systems*.

15 April 2019 — **Stuttgart-Tübingen GRK-Seminar**, *Universität Stuttgart*, Department of Mathematics.
Title of the talk: *Improved energy estimates for a class of perturbed Hamiltonian*.

3-6 Sept. 2018 — **Recent progress in mathematics of topological insulators**, *ETH Zürich*.
Title of the talk: *Quantum (spin) Hall conductivity: Kubo-like formula (and beyond)*.

1-3 August 2018 **SOLID MATH 2018**, *McGill University*, Montréal (Canada).
Title of the talk: *Derivation of a Kubo-like formula for charge and spin transport*.

8-10 July 2015 **Trails in Quantum Mechanics and Surroundings 2015**, *Università dell'Insubria*, Como (Italy).
Title of the talk: *The analogies between prototypes of periodic Schrödinger operators via Bloch-Floquet methods and the ergodic Laplacian*.

Contributed talks

2-7 August 2021 **XX International Congress on Mathematical Physics**, Geneva (Switzerland).
Title of the talk: *A new approach to transport coefficients in the quantum (spin) Hall effect*.

16-20 Sept. 2019 **Quantum Transport and Universality, From Topological Materials to Quantum Hydrodynamics**, *Università degli Studi Roma Tre*, Dipartimento di Matematica e Fisica.
Title of the talk: *Non-equilibrium almost-stationary states and linear response for gapped non-interacting quantum systems*.

12-16 August 2019 **QMath14: Mathematical Results in Quantum Physics**, *Aarhus University*, Department of Mathematics.
Title of the talk: *Non-equilibrium almost-stationary states and linear response for gapped non-interacting quantum systems*.

23-28 July 2019 **XIX International Congress on Mathematical Physics**, *Centre Mont Royal*, Montréal (Canada).
Title of the talk: *Spin conductance and spin conductivity in topological insulators: analysis of Kubo-like terms*.

20-21 July 2019 **Young Researchers Symposium**, *McGill University*, Montréal (Canada).
Title of the talk: *Spin conductance and spin conductivity in topological insulators: analysis of Kubo-like terms*.

21-27 April 2019 **Mathematical Methods in Quantum Molecular Dynamics**, *MFO, Oberwolfach Research Institute for Mathematics*, (Germany).
Title of the talk: *Quantum (spin) Hall conductivity: Kubo-like formula (and beyond)*.

Service to the scientific community and professional affiliations

Reviewer — Journal of Mathematical Physics, Reviews in Mathematical Physics.

2015 – — Affiliation: Gruppo Nazionale per la Fisica Matematica, Istituto Nazionale di Alta Matematica (GNFM–INdAM).

Spoken languages

Italian **Mother tongue**

English **Fluent**

French **Basic**

German **Basic**

Place and date: Trieste, October 27, 2021

Curriculum Vitae

by Stefano Pasquali

Ai fini della pubblicazione

Current and former positions

- August 2020 - present: Researcher at "Lunds Universitet" (Lund, Sweden), within the ERC project "3DWATERWAVES".
  Principal investigator of the project: Prof. Erik Wahlén

- 27 January 2020 - 13 June 2020: High-School teaching.
  Mathematics and Physics teaching at "I.I.S. Einstein", Piove di Sacco (Padua, Italy)

- December 2018 - November 2019: Post-doc researcher at the "Universitat Politécnica de Catalunya" (Barcelona, Spain). Fellowship funded through the Maria de Maeztu Unit of Excellence Award and the Barcelona Graduate School of Mathematics.
  Supervisor: Prof. Marcel Guardia

- October 2017 - September 2018: Post-doc researcher at the "Università degli Studi Roma Tre" (Rome, Italy), within the ERC project "HamPDEs".
  Principal investigator of the project: Prof. Michela Procesi

Education

- January 2014 - 20^{th} April 2017: PhD in Mathematical Sciences at the "Università degli Studi di Milano" (Milan, Italy).
  Advisor: Prof. Dario Bambusi
  Thesis: *Long time dynamics of the Klein-Gordon equation in the non-relativistic limit*

- 27^{th} September 2013: M.Sc. degree ("Laurea Magistrale") in Mathematics with the grade 108/110, at the "Università degli Studi di Padova" (Padua, Italy).
  Advisors: Prof. Giancarlo Benettin and A. Ponno
  Thesis: *Covariant Lyapunov Vectors for the FPU model*

- 2008: I took a oriented science-school diploma ("Diploma di Liceo Scientifico"), at the "Liceo Scientifico Rogazionisti" in Padua.

List of publications

- F. Giuliani, M. Guardia, P. Martin and S. Pasquali, *Chaotic resonant dynamics and exchanges of energy in Hamiltonian PDEs*, Rend. Lincei Mat. Appl. 32 (2021), 149-166, DOI 10.4171/RLM/931
(equivalent preprint on arXiv:2011.12793)

- F. Giuliani, M. Guardia, P. Martin and S. Pasquali, *Chaotic-like transfers of energy in Hamiltonian PDEs*, Commun. Math. Phys.,
https://doi.org/10.1007/s00220-021-03956-9
(equivalent preprint on arXiv:2006.09309)

- M. Gallone and S. Pasquali, *Metastability phenomena in two-dimensional rectangular lattices with nearest-neighbour interaction*, Nonlinearity, vol. 34, 4983
https://doi.org/10.1088/1361-6544/ac0483
(equivalent preprint on arXiv:1911.12648)

- S. Pasquali, *Dynamics of the nonlinear Klein-Gordon equation in the nonrelativistic limit*, Annali di Mat. Pura ed Applicata (1923 -) 198(3), 903-972, https://doi.org/10.1007/s10231-018-0805-1 (preprint on arXiv:1703.01609 and arXiv:1712.03768)

- R. Feola, F. Giuliani and S. Pasquali, *On the integrability of Degasperis-Procesi equation: control of the Sobolev norms and Birkhoff resonances*, J. Diff. Eq. 266 (6), 3390-3437, https://doi.org/10.1016/j.jde.2018.09.003 (equivalent preprint on arXiv:1802.00035)

- G. Benettin, S. Pasquali and A. Ponno, *The Fermi-Pasta-Ulam problem and its underlying integrable dynamics: an approach through Lyapunov Exponents*, J. Stat. Phys. 171 (4), 521-542, https://doi.org/10.1007/s10955-018-2017-x (equivalent preprint on arXiv:1801.05199)

- S. Pasquali, *A Nekhoroshev type theorem for the nonlinear Klein-Gordon equation with potential*, Discr. Cont. Dyn. Sys. B 23 (9), 3573-3594, doi: 10.3934/dcdsb.2017215 (equivalent preprint on arXiv:1705.03105)

- S. Pasquali, *Almost global existence for the nonlinear Klein-Gordon equation in the nonrelativistic limit*, J. Math. Phys. 59, 011502,
https://doi.org/10.1063/1.4994969 (equivalent preprint on arXiv:1703.01618)

Teaching activity

- "Distribution Theory", 36 hours, 27/01/2021 - 26/05/2021, Centre for Mathematical Sciences, Lund University;

- "Complex Analysis 1" ("Analisi Complessa 1"), held by Prof. Melo, 12 hours, 01/03/2018 - 31/05/2018, Department of Mathematics, Università degli Studi Roma Tre;

- "Calculus and Elements of Geometry" ("Analisi Matematica 1 e Geometria"), held by prof. Di Cristo, 48 hours, 01/10/2016 - 31/01/2017, Politecnico di Milano;

- "Introductory Mathematics" ("Precorsi di Matematica"), 29 hours, 19/09/2016 - 27/09/2016, Department of Biology, Università degli Studi di Milano;
- "Calculus and Elements of Geometry" ("Analisi Matematica 1 e Geometria"), held by prof. Di Cristo, 48 hours, 01/10/2015 - 31/01/2016, Politecnico di Milano;
- "Introductory Mathematics" ("Precorsi di Matematica"), 24 hours, 15/09/2015 - 25/09/2015, Department of Chemistry, Università degli Studi di Milano

Talks

- 30^{th} Jul. 2021: Contributed talk, "Chaotic-like transfers of energy in Hamiltonian PDEs", Young Researchers Symposium (YRS), International Congress of Mathematical Physics 2021 (ICMP 2021), University of Geneva, Switzerland
- 17^{th} Dec. 2020: Seminar, "Chaotic-like transfers of energy in Hamiltonian PDEs", Online North East PDE and Analysis Seminar (ONEPAS), co-organized by Carnegie Mellon University - Department of Mathematical Sciences, University of Toronto - Math Department and Brown University - Department of Mathematics
- 22^{nd} Sept. 2020: Seminar, "Transfer of energy in nonlinear Hamiltonian PDEs", Seminar on Analysis, Geometry, and PDEs, Lund, Sweden
- 4^{th} Jul. 2019: Seminar, "Stability and instability phenomena in Hamiltonian lattices and in Hamiltonian PDEs", Jornada de recerca del Departament de Matemátiques de la UPC, Barcelona, Spain
- 13^{th} Feb. 2019: Seminar, "Birkhoff Normal Form results for singular limits of nonlinear Hamiltonian PDEs", Seminari De Sistemes Dinàmics UB-UPC, Barcelona, Spain
- $04^{th} - 09^{th}$ Jun. 2018: Contributed talk, "Dynamics of the nonlinear Klein-Gordon equation in the nonrelativistic limit", Conference "Symmetry and Perturbation Theory 2018", S.ta Margherita di Pula (Sardinia, Italy)
- $19^{th} - 24^{th}$ Feb. 2018: Contributed talk, "Dynamics of the nonlinear Klein-Gordon equation in the nonrelativistic limit", Workshop "Mathematical Challenges in Quantum Mechanics", La Sapienza, Rome
- 6^{th} Dec. 2017: Analysis Seminar, "Dynamics of the nonlinear Klein-Gordon equation in the nonrelativistic limit", Department of Mathematics, Università degli Studi Roma Tre, Rome
- 13^{th} Jun. 2016: Seminar, "Non-relativistic limit of the nonlinear Klein-Gordon equation" ("Limite non-relativistico dell'equazione di Klein-Gordon non lineare"), PhD Day 2016 - Department of Mathematics, Università degli Studi di Milano, Milan
- 22^{th}-24^{th} Oct. 2015: Contributed talk, "Long-time dynamics of the KG Equation in the Non-relativistic limit", Workshop "IperGSSI2015", Gran Sasso Science Institute, L'Aquila

Administrative activity

- 2021: qualification for the "Maître de conférences" title, France, under section 26 - Mathématiques appliquées et applications des mathématiques (event: campagne 2021, date: 10/02/2021, qualification number: 21226358337)
- October 2020-present: co-organizer of the "Seminar on Analysis, Geometry, and PDEs" weekly seminar activity, Lund
- 2020: review of a grant proposal for the National Science Center, Poland

Schools and Meetings

- 29^{th} Jul.-7^{th} Aug. 2021: Conferences "Young Researchers Symposium" and "International Congress of Mathematical Physics" (ICMP 2021), Geneva (Switzerland)
- 5^{th} – 9^{th} Oct. 2020: Workshop on Free Surface Hydrodynamics, Fields Institute, Toronto (Canada)
- 5^{th} – 9^{th} Oct. 2020: Workshop on Free Surface Hydrodynamics, Fields Institute, Toronto (Canada)
- 1^{st} – 2^{nd} Oct. 2020: Mini-school on Free Surface Hydrodynamics, Fields Institute, Toronto (Canada)
- 8^{th} – 11^{th} Sep. 2020: Summer School on Mathematical Hydrodynamics, Fields Institute, Toronto (Canada)
- 22^{th} – 26^{th} Jul. 2019: Summer School "Multiscale Phenomena in Geometry and Dynamics", Technical University of Munich, Munich (Germany)
- 26^{th} – 28^{th} Jun. 2019: Conference "BMS-BGSMath Junior Meeting 2019", Technical University of Berlin, Berlin (Germany)
- 17^{th} – 21^{th} Jun. 2019: 17^{th} School on Interactions between dynamical Systems and Partial Differential Equations (JISD2019), Centre de Recerca Matemática, Bellaterra (Catalunya, Spain)
- 20^{th} – 24^{th} May 2019: Conference "LEANING TORI: An Hamiltonian Event under the Tower", Centro di RIcerca Matematica Ennio De Giorgi, Pisa
- 25^{th} – 29^{th} Jun. 2018: 16^{th} School on Interactions between dynamical Systems and Partial Differential Equations (JISD2018), Centre de Recerca Matemática, Bellaterra (Catalunya, Spain)
- 18^{th} – 22^{th} Jun. 2018: Conference "Perspectives in Hamiltonian Dynamics", Università degli Studi di Padova, Venezia
- 04^{th} – 09^{th} Jun. 2018: Conference "Symmetry and Perturbation Theory 2018", S.ta Margherita di Pula (Sardinia, Italy)

- 12^{th} – 14^{th} Apr. 2018: Workshop, The Fermi-Pasta-Ulam problem: state of the art and perspectives, Department of Mathematics, Università degli Studi di Padova, Padua
- 19^{th} – 24^{th} Feb. 2018: School and workshop, Mathematical Challenges in Quantum Mechanics, Department of Mathematics, Università La Sapienza, Rome
- 4^{th}-11^{th} Sept. 2016: Summer School and Workshop, Hamiltonian Dynamics PDEs and Waves on the Amalfi coast, Department of Mathematics, Università degli Studi di Napoli, Maiori
- 4^{th}-5^{th} Jan. 2016: Winter School, St. Etienne de Tinee 2016, Université de Nice Sophia Antipolis, Nice (France)
- 16^{th}-18^{th} Dec. 2015: Workshop, Localization and Reducibility in Hamiltonian PDEs and Quantum Mechanics, Department of Mathematics, Università degli Studi di Milano, Milan
- 22^{nd}-24^{th} Oct. 2015: Workshop, Sixteenth Italian Meeting on Hyperbolic Equations IperGSSI2015, Gran Sasso Science Institute (GSSI), L'Aquila (Italy)
- 22^{th} Jun.- 7^{th} Jul. 2015: Summer School, Normal Forms and Large Time behavior for Nonlinear PDEs, Department of Mathematics, University of Nantes, Nantes (France)
- 26^{th}-30^{th} Jan. 2015: Winter School, Complex Patterns in Nonlinear Phenomena, Department of Mathematics, Università degli Studi di Torino, Turin
- 4^{th}-5^{th} Dec. 2014: Winter School, KAM and dispersive methods in Hamiltonian PDEs, Department of Mathematics, Università degli Studi di Milano, Milan
- 1^{st}-3^{rd} Dec. 2014: Workshop, KAM and dispersive methods in Hamiltonian PDES, Department of Mathematics, Università degli Studi di Milano, Milan
- 1^{st}-11^{th} Sept. 2014: Summer School, Roman Summer School and Workshop "KAM Theory and Dispersive PDEs", Department of Mathematics "G. Castelnuovo", Università La Sapienza, Rome
- 22^{nd}-23^{th} May 2014: Workshop, Recent Problems in the Theory of Dynamical Systems (Problemi Attuali in Teoria dei Sistemi Dinamici), Department of Mathematics and Applications, Università di Milano Bicocca, Milan

Languages

- Italian: first language

- English:
  I studied English as foreign language in junior secondary school (3 years) and secondary school (5 years).
  Grade 7 (CFE B2 equivalent) of Trinity College Examination in 2006;
  Grade 8 (CFE B2.2 equivalent) of Trinity College Examination in 2007;
  Grade 10 (CFER C1.1 equivalent) of Trinity College Examination in 2008.
- German:
  I studied German as foreign language in junior secondary school (2 years).
  Start Deutsch 2 (CFE A2 equivalent) of Goethe Institut in 2015.
  Goethe-Zertifikat B1 (CFE B1 equivalent) of Goethe Institut in 2015.
  Goethe-Zertifikat B2 (CFE B2 equivalent) of Goethe Institut in 2016.
- Spanish
- Swedish:
  SFU 1 (CFE A1 equivalent) of Swedish for university staff at Lund University in 2021.

Informatic Knowledge

Familiarity with the following programming languages and suites:

- LaTeX;
- Metapost;
- C;
- Fortran;
- GNU Octave;
- MATLAB;
- Wolfram Mathematica.

Robin Reuvers

Research summary

My published research has focused on three themes.

1. **Statistical mechanics of the dilute Bose gas** (*thesis and publications 3-5,8*)
   My PhD thesis studies the BEC-critical temperature of a translation-invariant, interacting Bose gas in the dilute limit. The work uses a variational model that is obtained by restricting the minimization to quasi-free states, and focuses on 2 and 3 dimensions.
   Ongoing work will provide exact results about the ground state energy of the 1D gas—also in the dilute case, though quasi-free states do not give an accurate description there.

2. **The antisymmetric structure of fermionic states** (*publications 2,6,7,10*)
   1- and 2-body reduced density matrices of fermionic states have long been studied in mathematical physics. Using representation theory, the mathematician Klyachko recently obtained new information about the set of 1-body reduced density matrices derived from pure fermionic states, and claimed this might lead to new physical insights. It is an interesting, but challenging ***open problem*** to rigorously study these suggestions in a concrete physical model. My publications have sought to pave the way for this, while presenting results about entanglement that are of independent interest, such as an algorithm that was recently used by condensed matter physicists.

3. **The role of perturbations in symmetry breaking** (*publications 1,9*)
   Spontaneous symmetry breaking occurs only in the thermodynamic limit, but its presence induces a sensitivity to perturbations that causes *explicit* symmetry breaking in finite-size systems. In my work, collaborators and I have investigated specific examples of this, relying on a sensitivity to perturbations of Schrödinger operators in the semi-classical limit that was first observed by Jona-Lasinio, Martinelli and Scoppola.

Appointments

2021-	**Università Roma Tre** Assegnista di ricerca	
2020	**University of Copenhagen** Postdoctoral visitor	
2017-2020	**Darwin College, Cambridge** Research fellow	
2017-2019	**University of Cambridge** Royal Society Newton International Fellow	
2017	**California Institute of Technology** Visitor in theoretical physics	

Education

2013-2016	**University of Copenhagen** PhD in Mathematical Physics	| PhD prize 2017
2016	**Princeton University** Visiting Student Research Collaborator	
2012-2013	**University of Cambridge** MASt in Mathematics (Part III)	| With Distinction
2009-2012	**Radboud University Nijmegen** BSc in Mathematics, BSc in Physics	| Summa Cum Laude

Grants and awards

- Mittag-Leffler Institute, Stockholm
  - **Postdoctoral grant (€1,000, 2019)**
- University of Copenhagen, Faculty of Science
  - **PhD prize 2017 (kr.25,000)**
- Royal Society
  - **Newton International Fellowship (£89,000, 2016)**
- Prins Bernhard Cultuurfonds
  - **Cultuurfondsbeurs (€15,000, 2016)**
- Pembroke College, Cambridge
  - **Atiyah Prize (2013)**
  - **Foundation Scholarship (2013)**
- Hendrik Mullerfonds
  - **Study grant (€4,000, 2012)**
- Radboud University Nijmegen
  - **Honours student (2010-2012)**

Teaching

2017-2020	**Darwin College, Cambridge** Contact fellow in mathematics: point of contact for students Member of the Education and Research Committee (2018-2020)
2017-2018	Informal role in supervision C.J.F. van de Ven (MSc, Nijmegen)
2016	**Princeton University** 4 hours of replacement lectures for Advanced analysis, E.H. Lieb
2013-2015	**University of Copenhagen** *Training course:* Introduction to University Pedagogy Teaching assistant for Mathematical modeling Differential operators and function spaces 5 hours of replacement lectures for the latter course, J.P. Solovej
2011-2012	**Radboud University Nijmegen** Teaching assistant for Classical mechanics Complex analysis
2008-2012	High school tutor in physics, mathematics and chemistry

Publications

10. R. Reuvers. Generalized Pauli constraints in large systems: the Pauli principle dominates. *Journal of Mathematical Physics* 62(3): 032204, 2021.

9. C.J.F. van de Ven, G.C. Groenenboom, R. Reuvers and N.P. Landsman. Quantum spin systems versus Schrödinger operators: A case study in spontaneous symmetry breaking. *SciPost Physics* 8(2): 022, 2020.

8. S. Fournais, M. Napiórkowski, R. Reuvers and J.P. Solovej. Ground state energy of a dilute two-dimensional Bose gas from the Bogoliubov free energy functional. *Journal of Mathematical Physics* 60: 071903, 2019.

7. R. Reuvers. Lower bound on entanglement in subspaces defined by Young diagrams. *Journal of Mathematical Physics* 60(1): 012201, 2019.

6. R. Reuvers. An algorithm to explore entanglement in small systems. *Proceedings of the Royal Society* A 474(2214): 20180023, 2018.

5. M. Napiórkowski, R. Reuvers and J.P. Solovej. Calculation of the critical temperature of a dilute Bose gas in the Bogoliubov approximation. *Europhysics Letters* 121(1): 10007, 2018.

4. M. Napiórkowski, R. Reuvers and J.P. Solovej. The Bogoliubov free energy functional II. The dilute limit. *Communications in Mathematical Physics* 36(1): 347–403, 2018.

3. M. Napiórkowski, R. Reuvers and J.P. Solovej. The Bogoliubov free energy functional I. Existence of minimizers and phase diagram. *Archive for Rational Mechanics and Analysis* 229(3): 1037–1090, 2018.

2. E.A. Carlen, E.H. Lieb and R. Reuvers. Entropy and entanglement bounds for reduced density matrices of fermionic states. *Communications in Mathematical Physics* 344(3): 655–671, 2016.

1. N.P. Landsman and R. Reuvers. A Flea on Schrödinger's Cat. *Foundations of Physics* 43(3): 373–407, 2013.

Books and theses

2. Enigmas (Darwin College Lectures). E.J. Ward and R. Reuvers, Eds. Cambridge University Press, to appear in 2022.

1. R. Reuvers. Analysis of the Bogoliubov free energy functional: a variational description of a weakly-interacting Bose gas. PhD thesis. Department of Mathematical Sciences, Faculty of Science, University of Copenhagen, 2016.

Selected talks

- (contributed) Lower bound on entanglement in subspaces defined by Young diagrams *International Congress of Mathematical Physics*, 2018.
- (invited) Lower bound on entanglement in subspaces defined by Young diagrams *International Colloquium on Group Theoretical Methods in Physics*, 2018.
- (contributed) Extremal properties of Slaters determinants and the Yang state *Workshop on Representation Theory in Quantum Information*, 2016.
- (contributed) Bogoliubov theory at positive temperature *International Congress of Mathematical Physics*, 2015.

Invited seminar talks at Amsterdam (2019), Cambridge (2017-2019), Copenhagen (2015-2021), UC Davis (2017), Delft (2019-2021), Hannover (2013), Imperial College (2016), Mittag-Leffler Institute (2019), Princeton (2016), TU Munich (2019), Warwick (2020), Zurich (2021).

Selected workshops and schools

- Mathematics of Quantum Information Theory, Lorentz center Leiden, 2019
- Spectral Methods in Mathematical Physics, IML Stockholm, 2019
- Entanglement in Quantum Systems, GGI Florence, 2018
- Quantum Information Processing, Delft, 2018
- Foundations of quantum mechanics, Royal Society of London, 2017
- Many-Body Quantum Systems and Effective Theories, Oberwolfach, 2016
- Summer school on Current Topics in Mathematical Physics, Valparaíso, 2015
- Quantum Many-body Systems, Random Matrices and Disorder, Vienna, 2015
- Tensor networks summer school, Ghent, 2015
- Scaling limits and effective theories in classical and quantum mechanics, Vienna, 2014
- Many-body Quantum Systems, Warwick, 2014
- Summer school on Current Topics in Mathematical Physics, CIRM-Luminy, 2013
- Randomness: classical and quantum, Copenhagen, 2013

Events organized

- Darwin College Lecture Series, Cambridge, 2020
- Summer school on Quantum Mathematics, Copenhagen, 2015

Extended research visits

- Mittag-Leffler Institute, April 2019
- IQIM Caltech, February–March 2017
- Princeton University, February–April & September–December 2016
- Erwin Schrödinger Institute Vienna, March–May 2014

Professional memberships

- International Association of Mathematical Physics

Reviewing activity

- Journal of Mathematical Physics
- Journal of Physics A
- Journal of Statistical Physics

Royal Society training courses

- Leadership effectiveness (3 days, 2019)
- Introduction to public engagement (1 day, 2019)
- Science policy (3 days, 2018)
- Science in context (2 days, 2018)
- Writing and media skills (2 days, 2017)

Referees

Prof. Jan Philip Solovej
University of Copenhagen
solovej@math.ku.dk

Prof. Nilanjana Datta
University of Cambridge
n.datta@damtp.cam.ac.uk

Prof. Elliott Lieb
Princeton University
lieb@princeton.edu

Prof. Matthias Christandl
University of Copenhagen
christandl@math.ku.dk

Prof. Klaas Landsman
Radboud University Nijmegen
landsman@math.ru.nl

Matteo Rosati

Esperienza accademica di ricerca, didattica e divulgazione

2020–oggi **Marie Skłodowska Curie (MSC) Fellow - Universitat Autònoma de Barcelona**,
Supervisore: Prof. A. J. Winter, ICREA.

- Progetto MSC ""Apprendimento dell'Informazione Quantistica" per la realizzazione di ricevitori quantistici complessi con l'aiuto dell'intelligenza artificiale.
- Assistente per il corso di Meccanica Quantistica della Laurea Triennale in Fisica.
- Membro di commissione per tesi di Laurea Triennale in Fisica e Matematica.
- Supervisore: 1 tesi di Master in Ingegneria Quantistica (UPC). Co-supervisore: 2 tesi di PhD in Fisica, 2 tesi di Laurea Triennale in Fisica.
- Campi di ricerca: Algoritmi di Decodifica Quantistici, Inferenza Statistica Quantistica, Machine Learning Quantistico, Teoria dell'Informazione e della Comunicazione Quantistica.
- 6 pubblicazioni (+1 preprint): 2 articoli, 4 atti di conferenze IEEE. 13 collaboratori da Barcelona, Pisa, Monaco, Ulm, Milano, Dresda: professori, post-doc e studenti di PhD/laurea. 14 conferenze scientifiche e visite di ricerca.
- Revisore per riviste scientifiche internazionali di alto livello: Phys. Rev. Lett., Phys. Rev. X Quantum, Phys. Rev. Res., Phys. Rev. A, IEEE J. Sel. Areas Commun.: special issue Quant. Inf. Science, J. Phys. A, New J. Phys., Phil. Trans. A., Ann. Phys., Eur. J. Phys.
- Realizzazione di uno Science Comic sull'Informatica Quantistica con il fumettista Martoz (in corso), nell'ambito della MSC Fellowship.

2017–2019 **Ricercatore post-dottorato - Universitat Autònoma de Barcelona**,
Con: Prof. A. J. Winter, ICREA; Prof. J. C. Calsamiglia, Universitat Autònoma de Barcelona.

- Assistente per il corso di Meccanica Quantistica della Laurea Triennale in Fisica.
- Membro di commissione per tesi di Laurea Triennale in Fisica e Matematica.
- Co-supervisore: 2 tesi di PhD in Fisica, 1 tesi di Laurea Triennale in Fisica.
- Campi di ricerca: Teorie delle Risorse Quantistiche, Machine Learning Quantistico, Inferenza Statistica Quantistica, Teoria dell'Informazione e della Comunicazione Quantistica.
- 4 articoli. 8 collaboratori da Barcelona, Pisa, Ulm, Sidney: professori, post-doc e studenti di PhD/laurea triennale. 5 conferenze scientifiche e visite di ricerca.
- Revisore per riviste scientifiche internazionali di alto livello: Phys. Rev. A, IEEE J. Sel. Areas Commun.: special issue Quant. Inf. Science, J. Phys. A, New J. Phys., Phil. Trans. A., Ann. Phys., Eur. J. Phys.
- Organizzazione e partecipazione a progetti di divulgazione in fisica quantistica mirati a studenti di Scuola Superiore e Università.

Educazione

2014–2017 **Ph.D. in Fisica cum laude**,
Supervisore: Prof. V. Giovannetti, Scuola Normale Superiore, Pisa, Italia,
Tesi Finale: "Protocolli di Decodifica per Comunicazione Classica su Canali Quantistici".

- Campi di ricerca: Teoria Quantistica di Shannon e Comunicazione Quantistica, Discriminazione di Stati e Metrologia Quantistiche, Algoritmi di Decodifica Quantistici, Sistemi Quantistici Infinito-Dimensionali, Ottica Quantistica.
- 5 articoli. 3 collaboratori: professori, post-doc. 14 conferenze scientifiche, scuole e visite di ricerca. 3 corsi di PhD.
- Tutor per il corso di Meccanica Classica della Lauree Triennali in Matematica, Fisica e Biologia.
- Corsi di Cinese e ottenimento certificazione di lingua officiale.

2012–2014 **Laurea Magistrale in Fisica Teorica cum laude**,
Supervisore: Prof. G. Parisi, Università "La Sapienza", Roma, Italia,
Tesi Finale: "Studio di un modello realistico di Vetro Strutturale in Campo Medio".

- Campi di specializzazione: Vetri di Spin e Strutturali, Meccanica Statistica dei Sistemi Disordinati, Materia Condensata e Informazione Quantistica. Relizzazione di simulazioni Monte-Carlo (C/C++). Corso di C++.
- Partecipazione a un esperimento di Tomografia Quantistica.
- Riconoscimento "Laureato Eccellente".

2009–2012 **Laurea Triennale in Fisica cum laude**,
Supervisore: Prof. G. Parisi, Università "La Sapienza", Roma, Italia,
Tesi Finale:"Connessione Preferenziale nelle Reti Complesse".

- Campi di specializzazione: Reti Complessi. Simulazioni numeriche dell'evoluzione di reti, considerazione di questioni di ottimizzazione (C).
- Riconoscimento "Laureato Eccellente".

2004–2009 **Diploma di Maturità Scientifica cum laude**, *Liceo Scientifico "Farnesina", Roma, Italia*.

- Piano Nazionale Scientifico con corsi aggiuntivi di Matematica e Fisica.
- Partecipazione a oltre 10 conferenze di Simulazione delle Nazioni Unite all'estero in qualità di: delegato, chairman, segretario generale e organizzatore.
- Programmi di scambio culturale: Pechino e New York.

Finanziamenti e riconoscimenti accademici

2022-2024 **Quantum Information Campaign - Agenzia Spaziale Europea (ESA)**,
90.000 € (+50% co-finanziamento),
Ruolo: beneficiario, ricercatore e primo PI. Co-PI: A. Winter, J. Calsamiglia.

2020-2022 **Marie Skłodowska-Curie Fellowship - Commissione Europea**, *160.932,48 €*,
Progetto n. 845255-QUAIL, "Quantum Information Learning", Ruolo: beneficiario e ricercatore.
PI: A. Winter.

2020-2022 **Finanziamenti di gruppo - Ministerio de Ciencia, Innovacion y Universidades, Spain**, *129.470 €*,
Progetto PID2019-107609GB-I00, Ruolo: ricercatore e responsabile di un pacchetto di lavoro.
PI: R. Munoz, J. Calsamiglia.

2017-2021 **Finanziamenti di gruppo - MINECO, Spain**, *185.130 € + 211.750 €*,
Progetti FIS2016-80681, FIS2013-40627-P, Ruolo: ricercatore.
PI's: R. Munoz, J. Calsamiglia, A. Sanpera, A. Winter.

2014-2017 **Borsa di Perfezionamento (PhD) - Scuola Normale Superiore di Pisa**.

Abilitazione all'insegnamento accademico

2021 **Abilitazione Scientifica Nazionale SC 01/A4 SSD MAT/07**, *Fisica Matematica II Fascia*, Ministero dell'Università e della Ricerca, Italia.

2021 **Professore Lettore**, Agenzia per la Qualità del Sistema Universitario della Catalogna, Spagna.

Altre esperienze lavorative

2010–2017 **Lezioni private**, insegnamento Fisica, Matematica e Chimica a studenti di Scuola Superiore..

2009–2013 **Conference manager**, *RIMUN*, organizzazione di 5 conferenze di Simulazione delle Nazioni Unite; gestione delle attività durante cinque giorni, della sistemazione di centinaia di studenti e docenti presso famiglie locali, del budget, della ricerca di sponsor, della selezioni degli argomenti e pianificazione degli eventi; co-realizzazione di un programma in LaTeX per la formattazione di risoluzioni; fondazione dell'associazione Magistri Vitae per il supporto del progetto nell'ambito dell'Alternanza Scuola-Lavoro (http://www.magistrivitae.org/).

Lingue

Italiano: madre lingua. Inglese: avanzato C1 (Cambridge CAE). Tedesco: intermedio B2 (Goethe Zertifikat). Spagnolo: intermedio B2. Francese: base A2. Cinese: base A1 (HSK2).

Abilità informatiche

Livello intermedio di C (corsi di Laurea Triennale), C++ (corso presso Cineca), Wolfram Mathematica, LaTeX, Microsoft Office, Keynote. Conoscenza base di python. Conoscenza al livello lavorativo dei sistemi operativi Microsoft Windows, Apple OS X and Unix.

Interessi personali e altre informazioni

Ammesso con borsa ai seguenti progetti di PhD (2014): "Reti Complesse" presso IMT Lucca (Supervisore Prof. G. Cardarelli) e "Peripheral nerve decoding algorithms for bioelectronic medicines" presso Imperial College, London (Supervisore Dr. S. Schultz). (rifiutati a favore della borsa in SNS Pisa)

Apprendimento lingue; coltivazione bonsai; pratica di salsa e walzer.

Referenze

Prof. Andreas Winter, *andreas.winter@uab.cat*.
ICREA & Física Teòrica: Informació i Fenòmens Quàntics, Departament de Física, Universitat Autònoma de Barcelona, ES-08193 Bellaterra (Barcelona), Spain.

Prof. John Calsamiglia, *john.calsamiglia@uab.cat*.
Física Teòrica: Informació i Fenòmens Quàntics, Departament de Física, Universitat Autònoma de Barcelona, ES-08193 Bellaterra (Barcelona), Spain.

Prof. Vittorio Giovannetti, *vittorio.giovannetti@sns.it*.
NEST, Scuola Normale Superiore and Istituto Nanoscienze-CNR, I-56126 Pisa, Italy.

Prof. Giorgio Parisi (Premio Nobel in Fisica 2021), *giorgio.parisi@roma1.infn.it*.
Accademia dei Lincei; Dipartimento di Fisica, Università degli Studi di Roma "La Sapienza", I-00185, Roma, Italy.

Prof. Fabio Sciarrino, *fabio.sciarrino@uniroma1.it*.
Dipartimento di Fisica, Università degli Studi di Roma "La Sapienza", I-00185, Roma, Italy.

Lista delle pubblicazioni e preprint

1. **Reinforcement-learning calibration of coherent-state receivers on variable-loss optical channels**.
   M. Bilkis, M. Rosati, J. Calsamiglia, 2021 IEEE ITW.

2. **Compound Channel Capacities under Energy Constraints and Application**.
   A. Cacioppo, J. Nötzel and M. Rosati, Proc. 2021 IEEE ISIT, 640 (2021).

3. **Performance of coherent frequency-shifted keying for classical communication on quantum channels**.
   M. Rosati, Proc. 2021 IEEE ISIT, 902 (2021).

4. **Classical capacity of quantum Gaussian codes without a phase reference: when squeezing helps**.
   M. Fanizza, M. Rosati, M. Skotiniotis, J. Calsamiglia, V. Giovannetti (2020). Preprint arXiv:2006.06522.

5. **Performance of Gaussian encodings for classical communication on correlated quantum phase-noise channels**.
   M. Fanizza, M. Rosati, M. Skotiniotis, J. Calsamiglia, V. Giovannetti, Proc. 2020 IEEE ISIT, 1830 (2020).

6. **Real-time calibration of coherent-state receivers: learning by trial and error**.
   M. Bilkis, M. Rosati, R. Morral Yepes, J. Calsamiglia, Phys. Rev. Res. **2**, 033295 (2020).

7. **Beyond the swap test: optimal estimation of quantum state overlap**.
   M. Fanizza, M. Rosati, M. Skotiniotis, J. Calsamiglia, V. Giovannetti, Phys. Rev. Lett. **124**, 060503 (2020).

8. **Accessible coherence in open quantum system dynamics**.
   M. G. Díaz, B. Desef, M. Rosati, D. Egloff, J. Calsamiglia, A. Smirne, M. Skotiniotis, S. F. Huelga, Quantum **4**, 249 (2020).

9. **Using and reusing coherence to realize quantum processes**.
   M. G. Díaz, K. Fang, X. Wang, M. Rosati, M. Skotiniotis, J. Calsamiglia, A. Winter, Quantum **2**, 100 (2018).

10. **Narrow Bounds for the Quantum Capacity of Thermal Attenuators**.
    M. Rosati, A. Mari and V. Giovannetti, Nat. Comm. **9**, 4339 (2018).

11. **Asymmetric information capacities of reciprocal pairs of quantum channels**.
    M. Rosati and V. Giovannetti, Phys. Rev. A **97**, 052318 (2018).

12. **Capacity of coherent-state adaptive decoders with interferometry and single-mode detectors**.
    M. Rosati, A. Mari and V. Giovannetti, Phys. Rev. A **96**, 012317 (2017).

13. **Optimal quantum state discrimination via nested binary measurements**.
    M. Rosati, G. De Palma, A. Mari and V. Giovannetti, Phys. Rev. A **95**, 042307 (2017).

14. **Multi-Phase Hadamard receivers for classical communication on lossy bosonic channels**.
    M. Rosati, A. Mari and V. Giovannetti, Phys. Rev. A **94**, 062325 (2016).

15. **Coherent-state discrimination via non-heralded probabilistic amplification**.
    M. Rosati, A. Mari and V. Giovannetti, Phys. Rev. A **93**, 062315 (2016).

16. **Achieving the Holevo bound via a bisection decoding protocol**.
    M. Rosati and V. Giovannetti, J. Math. Phys. **57**, 062204 (2016).

Attività di relatore in seminari e visite di ricerca, conferenze, workshop e scuole scientifiche internazionali

2021

invited talks, research visit — **Quantum Information Theory with bosonic Gaussian systems and beyond; Squeezing-enhanced communication without a phase reference**, Lehrstuhl für Theoretische Informationstechnik, Technische Universität, Munich (online).

contrib. talk — **Reinforcement-learning calibration of coherent-state receivers on variable-loss optical channels**, IEEE Information Theory Workshop, Kanazawa, Japan (online).

contrib. talk — **Squeezing-enhanced communication without a phase reference**, Deutsche Physikalische Gesellschaft (DPG) Meeting, Technical University Kaiserslautern, Germany (online).

contrib. talk — **Classical capacity of quantum Gaussian codes: when squeezing helps**, Quantum Optics X, University of Warsaw, Torun, Poland (hybrid).

contrib. talk by co-author — **Compound Channel Capacities under Energy Constraints and Application**, IEEE International Symposium on Information Theory, Sidney (online).

contrib. talk **Performance of coherent frequency-shifted keying for classical communication on quantum channels**, IEEE International Symposium on Information Theory, Sidney (online).

invited talk **High-rate classical communication on quantum channels**, Quantum Communication and Cryptography Group, Technische Universität, Berlin (online).

invited talk **Achieving high-data-rate communication on optical quantum channels**, Workshop on Entanglement Assisted Communication Networks, Technische Universität, Munich (online).

contrib. talk **Real-time calibration of coherent-state receivers: learning by trial and error**, Machine Learning for Quantum, Heriot-Watt University, Edinburgh (online).

contrib. talk **Beyond the swap test: optimal estimation of quantum state overlap**, Quantum Information Days, Center for Theoretical Physics, Warsaw (online).

2020

invited talk **Achieving high-data-rate communication on optical quantum channels**, Lehrstuhl für Theoretische Informationstechnik, Technische Universität, Munich (online).

contrib. talk **Classical capacity of quantum Gaussian codes: when squeezing helps**, Q-Turn: changing paradigms in quantum science (online).

lightning talk by co-author **Classical capacity of quantum Gaussian codes without a phase reference: when squeezing helps**, Beyond IID in Information Theory 8, Stanford (online).

contrib. talk by co-author **Beyond the swap test: optimal estimation of quantum state overlap**, 15th Conference on the Theory of Quantum Computation, Communication and Cryptography, Latvia (online).

contrib. talk **Performance of Gaussian encodings for classical communication on correlated quantum phase-noise channels**, IEEE International Symposium on Information Theory, Los Angeles (online).

invited talk **Real-time calibration of coherent-state receivers: learning by trial and error**, Centre for Quantum Optical Technologies, Warsaw (online).

invited talk, research visit **Using and reusing coherence to realize quantum processes**, Scuola Normale Superiore, Pisa.

2019

invited talk, research visit **Using and reusing coherence to realize quantum processes**, Quantum Information and Computation Initiative, Hong Kong University.

contrib. talk **Using and reusing coherence to realize quantum processes**, 5th Conference on Quantum Information in Spain, Barcelona.

2018

invited talk **Narrow bounds for the quantum capacity of thermal attenuators**, New Quantum Horizons: from Foundations to Biology, INFN Frascati.

poster **The capacity of coherent-state adaptive decoders with interferometry and single-mode detectors**, Quantum Controlled Ultrafast Multimode Entanglement and Measurement, Oxford.

poster **Using and reusing coherence to realize quantum processes**, 4th Seefeld workshop on Quantum Information, Austria.

2017

contrib. talk **Optimal quantum state discrimination via nested binary measurements**, 10th Italian Quantum Information Science Conference, Florence.

poster **The capacity of coherent-state adaptive decoders with interferometry and single-mode detectors**, Beyond I.I.D. in Information Theory, Singapore.

invited talk, research visit **Decoding protocols for classical communication on quantum channels**, Quantum Information group, Universitat Autònoma de Barcelona.

poster **The capacity of coherent-state adaptive decoders with interferometry and single-mode detectors**, 24th Central European Workshop on Quantum Optics, DTU Lyngby, Denmark.

poster **The capacity of coherent-state adaptive decoders with interferometry and single-mode detectors**, Solstice of Foundations, ETH Zurich.

poster **The capacity of coherent-state adaptive decoders with interferometry and single-mode detectors**, Theory of Quantum Computation, Communication and Cryptography, Paris.

invited talk, research visit **Decoding protocols for classical communication on quantum channels**, Quantum Information group, Max-Planck-Institut für Quantenoptik, Garching.

2016

poster **Coherent-state discrimination via non-heralded probabilistic amplification**, International Conference on Quantum Communication, Measurement and Computing (QCMC), Singapore.

poster **Coherent-state discrimination via non-heralded probabilistic amplification**, 23rd Central European Workshop on Quantum Optics (CEWQO), Kolymbari, Crete.

poster **Coherent-state discrimination via non-heralded probabilistic amplification**, 619. Wilhelm und Else Heraeus-Seminar: Quantum Speed Limits, Bad Honnef, Germany.

2015

contrib. talk **Achieving the Holevo bound via a bisection decoding protocol**, Non-Markovian Quantum Dynamics Workshop, Cortona, Italy.

poster **Achieving the Holevo bound via a bisection decoding protocol**, Quantum Key Distribution Summer School, IQC, Waterloo, Canada.

poster **Achieving the Holevo bound via a bisection decoding protocol**, Scientific School in Integrated Quantum Photonics Applications: from Simulation to Sensing, Rome, Italy.

poster **Achieving the Holevo bound via a bisection decoding protocol**, 12th Central European Quantum Information Processing Workshop (CEQIP), Telc, Czech Republic.

Le dichiarazioni rese nel presente curriculum sono da ritenersi rilasciate ai sensi degli artt. 46 e 47 del D.P.R. 445/2000. Roma, 21/10/2021. Firma:

CURRICULUM VITAE

FRANCESCO G. RUSSO

1. Posizioni attualmente rivestite

Senior Lecturer dal primo di luglio del 2014
presso Department of Mathematics and Applied Mathematics
di University of Cape Town, Cape Town, Sud Africa.
e
External Professor da Aprile 2020
presso Department of Mathematics and Applied Mathematics
di University of the Western Cape, Bellville, Sud Africa.

2. Ruoli di natura accademica

Direttore del gruppo di ricerca "Topology, Algebra and Dynamical Systems"
https://sites.google.com/site/topolalgeb/
presso Department of Mathematics and Applied Mathematics
di University of Cape Town, Cape Town, Sud Africa.

Membro dell' "Internationalization Committee"
presso Department of Mathematics and Applied Mathematics
di University of Cape Town, Cape Town, Sud Africa.

Membro del "Network of Italian Researchers of the western Cape" (NIRC)
Italian Consulate of Cape Town, Cape Town, Sud Africa.
https://conscapetown.esteri.it/consolato_capetown/en/la_comunicazione/dal-consolato/network-ricercatori.html

Editore della rivista scientifica "Transactions on Combinatorics" [Special Issue, in progress].
https://toc.ui.ac.ir/

Editore della rivista scientifica "Topology and Its Applications" [Two Special Issues: 2017 and 2021 (in progress)].
https://www.sciencedirect.com/journal/topology-and-its-applications/special-issues

Editore della rivista scientifica "Quaestiones Mathematicae"
https://www.tandfonline.com/action/journalInformation?show=editorialBoard&journalCode=tqma20

Editore della rivista scientifica "Acta Mathematica Spalatensia"
https://amas.pmfst.unist.hr/ams/about.php

3. Progetti scientifici ottenuti, seminari e organizzazione di attivita' di ricerca

1. Principal investigator (P.I., ovvero responsabile) del progetto "Diversity in Topology" dal 2020, sponsorizzato da National Research Foundation of South Africa negli anni 2019, 2021, 2021, 2022. Questo progetto di ricerca ha carattere internazionale ed é stato scelto tramite un processo di selezione tra pari su modello delle ERC grants con un panel di referees esterni. Tratta vari aspetti della Topologia e ha consentito di supportare 5 studenti tra MSc e PhD e permesso di finanziare meetings, visite di esperti internazionali e conferenze tra il 2019 e il 2021, come illustrato nella pagina web del gruppo di ricerca "Topology, Algebra and Dynamical Systems". Alcune delle principali iniziative, supportate da questo progetto, sono indicate appresso

   https://sites.google.com/site/topolalgeb/home/conferences/mwta-2019

   https://sites.google.com/site/topolalgeb/home/conferences/wgttg2020

   https://sites.google.com/site/topolalgeb/home/activities

   e gli studenti coinvolti sono quelli elencati al link di sotto negli anni 2019–2021

   https://sites.google.com/site/topolalgeb/home/members

con rispettivo link alle relative tesi di MSc e PhD.

2. Coordinatore di ErasmusPlus tra University of Cape Town (Sud Africa) and Universita' di Spalato (Croazia) per il quinquennio 2020–2025.

3. P.I. del progetto scientifico "Spectral Graph Theory" di ISARP 2018-2020, sponsorizzato da National Research Foundation of South Africa negli anni 2018–2021. Questo progetto e' stato supportato dal Ministero degli Esteri e della Cooperazione Internazionale (MAECI) dell' Italia e ha carattere internazionale, essendo stato scelto tramite un processo di selezione tra pari su modello delle ERC grants con un panel di referees esterni. Ha coinvolto esperti italiani e sudafricani che lavorano nel settore della teoria spettrale dei grafi e della topologia. Abbiamo organizzato con la controparte italiana (P.I.: F. Belardo, Universita' di Napoli Federico II) un meeting in Italia e uno virtuale in Sud Africa su argomenti di Graph Theory, Combinatorics e Topology. In aggiunta, in periodo pre-covid, e' stato possibile promuovere uno schema di mobilita' aggiuntivo per colleghi, laureandi e dottorandi delle rispettive unita' di ricerca in Cape Town e Napoli, offrendo opportunita' di seminari, periodi intensivi di studio e corsi specialistici. Si vedano i seguenti links

   https://sites.google.com/site/topolalgeb/home/conferences/wgttg2020

   http://www.dma.unina.it/ocsuser/ocs/index.php/WAGTCN/2018

   https://drive.google.com/file/d/15SoJRL4TaLCdhd_7h0_mXUvn825m15R0/view

4. P.I. del progetto scientifico "Rhythms of growth for topological invariants", sponsorizzato dal National Research Foundation of South Africa negli anni 2015 - 2017. Questo progetto ha visto insieme esperti internazionali tra Sud Africa, Brasile, Germania, Iran, Italia, Francia e Lituania lavorare su temi di gruppi topologici e analisi funzionale. Si pone come progetto a carattere internazionale, ssendo stato scelto tramite un processo di selezione tra pari su modello delle ERC grants con un panel di referees esterni. Alcune iniziative sono elencate nei links sottostanti

   https://sites.google.com/site/topolalgeb/home/conferences/wttg-2017

   https://sites.google.com/site/topolalgeb/home/conferences/wclt2017-1

5. Collaboratore del progetto "Topology for Tomorrow" il cui P.I. é Prof. David Holgate (University of the Western Cape, Bellville, Sud Africa), supportato da NRF negli anni 2021 – 2025 che prevede meetings di carattere scientifico e supporto a postdocs e PhD students su temi di topologia; si tratta di un progetto di rilevanza internazionale con competizione tra pari e processo di selezione tramite external referees su modello di selezione delle ERC grants; dal 01-09-2021 a oggi.

6. Collaboratore del progetto FAPESP 2021/05256-0 in geometria differenziale e analisi il cui P.I. é Prof. Stefano Nardulli (Universidade Federal do ABC, Santo André, Brasile) di rilevanza internazionale con competizione tra pari e processo di selezione tramite external referees su modello di selezione delle ERC grants; coinvolge ricercatori da USA, Brasile, Italia e Sud Africa; dal 01-09-2021 a oggi.

7. Organizzatore dei seminari (a carattere internazionale) elencati al seguente link:

   https://sites.google.com/site/topolalgeb/home/activities

   tramite fondi del National Research Foundation of South Africa e tramite fondi di altri enti di ricerca internazionali, usati da alcuni degli speakers che hanno visitato il gruppo di ricerca "Topology, Algebra and Dynamical Systems" in Cape Town in periodo pre-covid.

8. P.I. di 4 progetti scientifici a carattere locale su fondi di ateneo, ottenuti negli anni tra il 2014 e il 2018.

9. Supporto finanziario per partecipare (su invito) ai seguenti meetings in MFO (Oberwolfach, Germania) :

   http://www.mfo.de/occasion/1124a/www_view ; http://www.mfo.de/occasion/1150.

10. Membro del GNFM dell' Indam (Firenze, Italia) dal 2017 con supporto scientifico per missioni o visite a carattere scientifico.

4. Qualifiche di natura accademica

ASN in MAT/07 (Fisica Matematica) con SSD 01/A4
Rilasciata dal MIUR in Italia, valida dal 31/05/2021 al 31/05/2030.

Fellowship di Eccellenza
congiuntamente tra Instituto de Matemática Pura e Aplicada (Rio de Janeiro, Brasile)
e Universidade Federal do Rio de Janeiro (Rio de Janeiro, Brasile) in 2013 e 2014.

Postdoc
presso Universitá degli Studi di Palermo (Palermo, Italia) nel 2013.

Postdoc
presso Universitá degli Studi di Palermo (Palermo, Italia) nel 2011.

Phd in Matematica
presso Universitá degli Studi di Napoli Federico II (Napoli, Italia) ottenuta il 10/02/2009.

SSIS in A047 (Abilitazione per insegnamento in Matematica per scuole superiori)
presso Universitá degli Studi di Napoli Federico II (Napoli, Italia) il 21/04/2009.

SSIS in A049 (Abilitazione per insegnamento in Matematica e Fisica per scuole superiori)
presso Universitá degli Studi di Napoli Federico II (Napoli, Italia) il 23/04/2009.

Laurea in Matematica (V.O.)
presso Universitá degli Studi di Napoli Federico II (Napoli, Italia) il 16/07/2003.

Diploma di Pianoforte Principale (V.O.)
presso Conservatorio Statale di Musica N. Sala (Benevento, Italia) in data 11/07/2002.

5. Insegnamento a carattere accademico

Presso University of Cape Town (Cape Town, Sud Africa) sono stato (e sono) titolare dei seguenti corsi dal 2014:

MAM 2000W, 2RA, Real Analysis, 30 ore, Faculty of Science. Questo corso e' omologato ai corsi europei (e in particolare italiani) di Analisi I per studenti delle facolta' scientifiche, in base alla normativa vigente.

MAM 2000W, 2AC, Advanced Calculus, 30 ore, Faculty of Science. Questo corso e' omologato ai corsi europei (e in particolare italiani) di Analisi II per studenti delle facolta' scientifiche, in base alla normativa vigente.

MAM 1021F, Mathematics 1B for Engineers, 30 ore, Faculty of Engineering. Questo corso e' omologato ai corsi europei (e in particolare italiani) di Analisi I per studenti delle facolta' di Ingegneria, in base alla normativa vigente.

Algebra 2, Honours course at MAM, 30 ore, Faculty of Science. Questo corso e' omologato ai corsi europei (e in particolare italiani) di Algebra Superiore per studenti dei corsi di laurea in matematica e fisica degli ultimi anni (in base alla normativa vigente).

Algebraic Topology, Honours course at MAM, 30 ore, Faculty of Science. Questo corso e' omologato ai corsi europei (e in particolare italiani) di Topologia Algebrica per studenti dei corsi di laurea in matematica e fisica degli ultimi anni (in base alla normativa vigente).

Topology, Honours course at MAM, 30 ore, Faculty of Science. Questo corso e' omologato ai corsi europei (e in particolare italiani) di Topologia per studenti dei corsi di laurea in matematica e fisica degli ultimi anni (in base alla normativa vigente).

Metric Spaces, Honours course at MAM, 30 ore, Faculty of Science. Questo corso e' omologato ai corsi europei (e in particolare italiani) di Spazi Metrici per studenti dei corsi di laurea in matematica e fisica degli ultimi anni (in base alla normativa vigente).

Presso Universitá degli Studi di Palermo (Palermo, Italia) tra 2010 and 2012 sono stato titolare dei corsi di:

Geometria e Algebra, 60 ore, Ingegneria dell'Energia, Facolta' di Ingegneria;

Geometria e Algebra, 60 ore, Ingegneria Meccanica, Facolta' di Ingegneria.

6. Selezione di pubblicazioni

La lista completa e aggiornata si trova qui:

https://zbmath.org/authors —> Russo, Francesco G.

http://www.ams.org/mathscinet/ —> Authors —> Russo, Francesco G.

https://www.researchgate.net/profile/Francesco_G_Russo

https://www.scopus.com/freelookup/form/author.uri —> Russo, Francesco G.

Una selezione e' la seguente:

1. W.Herfort, K.H. Hofmann and F.G. Russo, Periodic Locally Compact Groups, de Gruyter, Berlin, 2018.
2. W. Herfort, K.H. Hofmann and F.G. Russo, Locally Compact Groups with Permutable Subgroups, Adv. Math. (2021), accepted.
3. K.H. Hofmann and F.G. Russo, The probability that x and y commute in a compact group, Math. Proc. Cambridge Phil. Soc. 153 (2012), 557-571.
4. F.Bagarello and F.G. Russo, A description of pseudo-bosons in terms of nilpotent Lie algebras, J. Geom. Physics 125 (2018), 1–11.
5. F. Bagarello, Y. Bavuma and F.G. Russo, Topological decompositions of the Pauli group and their influence on dynamical systems, Math. Phys. Anal. Geom. 24 (2021) , Article No: 16
6. F. Bagarello and F.G. Russo, Realization of Lie algebras of high dimension via pseudo-bosonic operators, J. Lie Theory 30 (2020), 925-938
7. F. Bagarello and F.G. Russo, On the presence of families of pseudo-bosons in nilpotent Lie algebras of arbitrary corank. J. Geom. Physics 137 (2019), 124-131.
8. P. Niroomand, M. Parvizi and F.G. Russo, Some criteria for detecting capable Lie algebras, J. Algebra 384 (2013), 36-64.
9. P. Niroomand and F.G. Russo, A note on the Schur multiplier of nilpotent Lie algebras, Comm. Algebra 39 (2011), 1293–1297.
10. D. Dikranjan, A. Giordano Bruno and F.G.Russo, Finiteness of topological entropy for locally compact abelian groups, Glasgow Math. J. (2020), doi: 10.1017/S0017089520000038

7. Supervisione di studenti

(1) MSc supervisor di Stephen Dzaka presso African Institute of Mathematical Science con MSc thesis intitolata *Dynamical Systems on Geometric Structures* disponibile qui

https://docs.google.com/viewer?a=v&pid=s ites&
srcid=YWltcy5hYy56YXxhcmNoaXZlfGd4O jRiMTlhYjNkZTBmOTQwMjQ

dal 01-12-2016 al 30-06-2017.

(2) PhD supervisor di Eniola Kazeem presso University of Cape Town con PhD thesis disponibile al link:

https://open.uct.ac.za/handle/11427/30383.

dal 01-01-2017 al 01-12-2019.

(3) Postdoc supervisor di Dr. Eniola Kazeem (University of Cape Town) su temi di interazione tra topologia e random walks discussi nella sua tesi di PhD nel 2019 dal 01-06-2020 a oggi.

(4) MSc supervisor di Yanga Bavuma presso University of Cape Town con tesi in topologia disponibile qui:

https://open.uct.ac.za/handle/11427/29763.

dal 01-04-2017 al 31-12-2018.

(5) PhD supervisor dal 2018 al 2021 di Yanga Bavuma presso University of Cape Town, con tesi intitolata *The relevance of the Pauli group in dynamical systems with pseudo-fermions.* Tesi discussa in Ottobre 2021.

(6) PhD supervisor di Seid Kassaw Muhie dal 01-05-2018 al 13-05-2020 presso University of Cape Town e Woldia University in Etiopia con tesi intitolata *A probabilistic approach to a result of Ore.* Tesi discussa in Dicembre 2020.

(7) MSc supervisor di Mr. Olwethu Waka (University of Cape Town) su temi di entropia in strutture geometriche nel periodo 2019-2021. Tesi discussa in Ottobre 2021, intitolata *Topics of Entropy in Locally Compact Abelian Groups.*

(8) MSc supervisor di Mr. Mita Ramabulana (University of Cape Town) su gruppi topologici. Tesi discussa in Ottobre 2021, intitolata *Topics of Nonabelian Tensor Products of Topological groups.*

8. Ulteriore servizio di natura accademica

Referee per progetti della National Research Foundation (of South Africa) dal 2015.

Membro di commissione per esami di
Teoria degli Operatori (Honours in matematica, ultimo anno),
Analisi Funzionale (Honours in matematica, ultimo anno),
Topologia (Honours in matematica, ultimo anno).
Anni accademici 2015 e 2016, presso University of Cape Town, Cape Town, Sud Africa.

Membro di commissione esterno per esami di
Teoria delle Categorie (Honours in matematica, ultimo anno),
Teoria degli Insiemi e Logica (Honours in matematica, ultimo anno),
Anno accademico 2014, presso Stellenbosch University, Stellenbosch, Sud Africa.

Membro di commissione per 3 MSc theses in Topology
presso University of the Witswatersrand (Johannesburg, Sud Africa) in 2017, 2018, 2019.

Membro di commissione per PhD di Luiz Tarrega presso Universitat Jaume I in Castellon (Spagna) in 2017.
La sua tesi sta qui:

https://www.tdx.cat/bitstream/handle/10803/460830/2017_Tesis_Tarrega%20Ruiz_Luis.pdf?sequence=1

Reviewer per Mathscinet and Zentralblatt dal 2007

Referee varie riviste di carattere scientifico nel ramo della Topologia e delle sue applicazioni.

Appartenenza ai seguenti organi professionali:
Network of Italian Researchers of the Western Cape (NIRC, Italian Consulate of Cape Town);
Deutsch Mathematiker Vereinigung;
Istituto italiano Di Alta Matematica;
Unione Matematica Italiana;
American Mathematical Society;
South African Mathematical Society

Sincerely yours,

Francesco G. Russo.

Cape Town, South Africa, October 21, 2021.

Curriculum Vitae

Place: Zurigo
Date: 19/10/2021

General Information

Full Name	Michele Schiavina
Date of Birth	
Place of Birth	
Citizenship	Italian
Permanent Address	
Mobile Phone Number	
E-mail	
Spoken Languages	

Education

Type	Year	Institution	Notes (Degree, Experience,…)
Bachelor of Science (Laurea triennale)	2009	University of Bologna	Physics 110/110 CL
Master of Science (Laurea Magistrale)	2011	University of Bologna	Theoretical Physics 110/110
PhD	2016	University of Zurich	Mathematics

Appointments

Start	End	Institution	Position
01/10/2021	30/08/2022	ETH Zurich, Department of Mathematics and Institute for Theoretical Physics (joint)	Oberassistent (Senior Postdoctoral Researcher)
01/02/2019	30/09/2021	ETH Zurich, Department of Mathematics and Institute for Theoretical Physics (joint)	Postoctoral Fellow
01/08/2018	31/01/2019	Department of Mathematics, University of California, Berkeley	Postdoctoral fellow
01/02/2018	31/07/2018	Department of Mathematics, University of California, Berkeley	Visiting Scholar
01/03/2018	31/07/2018	Max Planck Institute for Mathematics, Bonn	Guest Researcher
01/08/2016	31/01/2018	Department of Mathematics, University of California, Berkeley	Postdoctoral fellow
01/05/2016	31/07/2016	Department of Mathematics, University of Zurich	Postdoc

Teaching experience

Year	Institution	Lecture/Course
2012-2016	University of Zurich	Teaching assistant for Various Graduate and Undergraduate Courses
2016	University of Zurich	General Relativity for Mathematicians
2019	ETH Zurich	Field theory with symmetries and the Batalin—Vilkovisky formalism
2021	ETH Zurich	Mathematical Aspects of Classical and Quantum Field theory
2017	University of Zurich	Master Thesis supervision - 1 student
2019-2021	ETH Zurich	Master Thesis supervision - 3 students
2019-2021	ETH Zurich	Bachelor Theses supervision - 4 students

Funding Information [grants as PI-principal investigator or I-investigator]

Year	Title	Program	Grant value
2016-2018	Bulk-boundary problems in mathematical physics and geometric quantum information theory	Swiss National Science foundation “Early Postdoc Mobility” Grant	USD 70’650
2018-2020	Bulk-boundary problems in mathematical physics and geometric quantum information theory	Swiss National Science foundation “Advanced Postdoc Mobility” Grant (Interrupted in 2019)	USD 77’433
2019-2020	Generalized Order Parameter Description of Symmetry-Breaking Phase Transitions	Molecular Foundry “User Proposal” of the Lawrence Berkeley National Laboratory	Access to Facilities and Expertise
2013-2014	Doctoral Research Grant	Forschungskredit of the University of Zurich	CHF 55'200

List of other titles relevant for the Evaluation

#	Year	Title / Description / Attached file
1	Since 2021	Abilitazione scientifica Nazionale - Professore II fascia - Mat/07 Attached file: “Titolo3_ASN.pdf”
2	2020	Participation to Doctoral Committee - University of Zurich Attached file: “Titolo4_CommissionePhD.pdf”
3	Since 2021	Editor For the European Physical Journal Plus Attached file: “Titolo5_Editor_EPJP_Schiavina.pdf”
4	2016-2018	Peer reviewed Postdoctoral grant “Early Mobility Postdoc grant” of the Swiss National Science Foundation Attached file: “Titolo6_Berkeley_SNF_Fellowship_2016.pdf”
5	2018-2020	Peer reviewed Postdoctoral grant “Advanced Mobility Postdoc grant” of the Swiss National Science Foundation Attached file: “Titolo7_Berkeley_SNF_Fellowship_2018.pdf”

6	2019-2020	Peer Reviewed Scientific project “Molecular Foundry user proposal” of the Lawrence Berkeley Laboratory. Attached file: “Titolo8_Foundry_User_2020.pdf”
7	2019-2021	Participation to Research network: “Swiss-MAP, Swiss Mathematical Physics network”.
8	2016	Journal of Mathematical physics “Editor’s pick” for publication: Contreras I., Ercolessi E., Schiavina M. Journal of Mathematical Physics 57(6), 062209 (2016) *On the geometry of mixed states and the Fisher information tensor.* Attached file: “Titolo9_JMPPICK.pdf”
9	2017-2021	Supervision of Master theses Attached file: “Titolo10_MasterTheses.pdf”
10	2016-2021	Teaching experience (UZH and ETH) Attached file: “Titolo11_Teaching_Dossier.pdf”
11	2018	Invitation to Max Planck Institute for Mathematics, Bonn, as Guest Researcher Attached file: “Titolo12_Bonn.pdf”

Awards and Memberships

Since 2021	Member of International Association of Mathematical Physics
Since 2012	Member of Alumni Collegio Superiore di Bologna
2006-2011	Excellence Studentship of “Collegio di studi superiori”, Università di Bologna

Scientific Duty:

Referee for
1. Communications in Mathematical Physics
2. Letters in Mathematical Physics
3. Journal of Mathematical Physics
4. Mathematical Physics, Analysis and Geometry
5. Sigma
6. Scipost

Reviewer for American Mathematical Society

Invited conference talks, posters and participation to workshops

1. Workshop on Supergeometry and Bracket Structures in Mathematics and Physics,
   Fields institute, Canada [Invited Conference Talk] - Prospective, postponed to 2022.

2. A gauge summer with BV,
   Italy, September ‘21 [Invited Conference Talk]

3. Geometry for Higher Spin Gravity: Conformal Structures, PDEs, and Q-manifolds, Erwin Schroedinger Institute, Austria, August ‘21 [Invited Conference Talk]

4. International Congress on Mathematical Physics, Switzerland, August ‘21 [Contributed Conference talk]

5. SwissMap general meeting poster session, Switzerland, August ‘20 [Contributed Poster]

6. A gauge summer with BV “teaser”, Online, June ‘20 [Invited Conference Talk]

7. Field Theories and Higher Structures in Mathematics and Physics,
   Banff center for Mathematical Research, Oaxaca, ME - June ‘17 [Invitation to Workshop]

8. Quantum Field Theory on Manifolds with Boundary and the BV Formalism, Perimeter Institute,
   Waterloo, CA - May ‘17 [Invited Conference Talk]

9. Lichnerovicz Memorial Conference,
   IHP, Paris, FR - Dec ‘15 [Contributed Poster]

10. Algébres L∞, Homotopie rationnelle, opérades et super géométrie, Rabat, MO - Jun ‘15 [Invited Conference Talk]

11. Perspectives in Physical Mathematics,
    University of Bologna, IT - Dec ‘14 [Invited Conference Talk]

Invited research talks

1. Department of mathematics, Lyon University 1, Lyon, October `21
   BV-BFV approach to General Relativity

2. Department of mathematics, University of Padua, Italy, April ‘21
   Ruelle zeta function from field theory. [online]

3. Department of mathematics, ETH Zu¨rich, Switzerland, April ‘21
   Ruelle zeta function from field theory. [online]

4. Department of Mathematics, University of California, Davis, November ‘20
   Ruelle zeta function from field theory. [online]

5. Department of Mathematics, University of Zurich, November ‘20
   Ruelle zeta function from field theory. [online]

6. Department of physics, ETH Zurich, Switzerland, March ‘19
   Field theory on manifolds with boundary.

7. Department of mathematics, ETH Zurich, Switzerland, February ‘19
   Towards Holography in the BV-BFV formalism.

8. Perimeter Institute, Canada, November ‘18
   Quantum Gravity Group Meeting: On the BV-BFV Formalism.

9. Northwestern University, USA, November ‘18
   Equivalence of gauge theories in the presence of boundaries: insights from General Relativity - Part 1.

10. Northwestern University, USA, November ‘18
    Equivalence of gauge theories in the presence of boundaries: insights from General Relativity - Part 2.

11. University of Freiburg, Germany, June ‘18
    Equivalence of field theories in the BV-BFV formalism. Insights from General Relativity.

12. Max Planck Institute for Mathematics, Bonn, Germany, Mar ‘18
    Equivalence of field theories in the BV-BFV formalism. The example of (three dimensional) General Relativity.

13. Univeristy of Bologna, Italy - June ‘17
    Equivalence of theories in the BV-BFV formalims, the case of GR.

14. Perimeter Institute, Waterloo, Canada - May ‘17
    Equivalence of theories in the presence of boundaries: the example of General Relativity.

15. Northwestern University, Evanston, USA - May ‘17
    BV-BFV formalism and General Relativity.

16. University of Illinois at Urbana Champaign, USA - May ‘17
    A geometrical perspective on the quantum Fisher information index.

17. University of California at Davis, USA - Apr ‘17
    BV-BFV formalism and General Relativity.

18. University of California at Berkeley, USA - Mar ‘17
    BV-BFV formalism and General Relativity.

19. University of California at Davis, USA - Feb ‘17
    A geometrical perspective on the quantum Fisher information index.

20. UFR de mathématiques de l’université Paris Diderot, Paris, Fr - Dec ‘15
    BV-BFV approach to General Relativity.

21. Max Planck Institute for Mathematics, Bonn, De - Nov ‘15
    Semiclassical BV-BFV approach to General Relativity.

22. Perimeter Institute for Theoretical Physics, Waterloo, Ontario, Ca - Oct ‘15
    BV-BFV approach to General Relativity.

23. University of California, Berkeley, USA - Feb ‘15
    Gauge theories on manifolds with boundaries.

24. University of Bologna, It - Feb ‘14
    Classical and quantum gauge theories on manifolds with boundaries.

25. ETH Zurich, Ch - Apr ‘13
    What is... a BV-BFV theory.

26. University of Lille, Fr - Jan ‘13
    Coadjoint orbits of classical Lie groups.

Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Papers [international]	14	Scopus	2012	2021

Total Citations	88
Average Citations per Product	6
Hirsch (H) index	7

Normalized H index*	0.5

*H index divided by the academic seniority (intended as the number of total publications).

List of Publications selected for Evaluation by Committee
(Authors in Alphabetical Order, journal impact factor referred to year of publication or closest data available **Source: Scijournal**)

1. Canepa G., Schiavina M.,
   Accepted for Publication in Advances in Theoretical and Mathematical Physics (2021) - Journal IF(2020) 2.712
   Fully extended BV-BFV description of General Relativity in three dimensions.

2. Canepa G., Cattaneo A. S., Schiavina M.,
   Communications in Mathematical Physics, 385, 1571-1614 (2021). DOI: 10.1007/s00220-021-04127-6 - Journal IF(2020) 4.347
   General Relativity and the AKSZ construction.

3. Rejzner, K., Schiavina M.,
   Communications in Mathematical Physics, 385, 1083-1132 (2021). DOI: 10.1007/s00220-021-04061-7 - Journal IF(2020) 4.347
   Asymptotic symmetries in the BV-BFV formalism.

4. Canepa G., Cattaneo A. S., Schiavina M.,
   To appear in Advances in Theoretical and Mathematical Physics 25 (2) (2021) - Journal IF(2020) 2.712
   Boundary structure of General Relativity in tetrad variables.

5. Contreras I., Schiavina M.,
   Manuscripta Mathematica (2021) DOI: 10.1007/s00229-021-01311-9 - Journal IF(2020) 1.261
   Kahler fibrations in quantum information theory.

6. Hadfield C., Kandel S., Schiavina M.,
   Annales Henri Poincaré, 21 (12), 3835-3867 (2020) - Journal IF(2020) 2.886
   Ruelle zeta function from field theory.

7. Cattaneo A. S., Schiavina M.,
   Advances in Theoretical and Mathematical Physics, 23 (8) (2019), - Journal IF(2019) 2.432
   BV-BFV approach to General Relativity: Palatini–Cartan–Holst action.

8. Mnev P., Wernli K., Schiavina M.,
   Annales Henri Poincaré, 21 (3), 993-1044 (2020) - Journal IF(2020) 2.886
   Towards Holography in the BV-BFV setting.

9. Cattaneo A. S., Schiavina M.,
   Annales Henri Poincaré, 20 (2), 445-480 (2019) - Journal IF(2019) 1.594
   The reduced phase space of Palatini–Cartan–Holst theory.

10. Cattaneo A. S., Schiavina M., Selliah I.,
    Letters in Mathematical Physics, 108 (8), 1873–1884 (2018) - Journal IF(2018) 1.206
    BV equivalence between triadic gravity and BF theory in three dimensions.

11. Cattaneo A.S., Schiavina M.,
    Letters in Mathematical Physics, 107(2), 375-408, (2017) - Journal IF(2017) 1.308
    On time.

12. Cattaneo A. S., Schiavina M.,
Journal of Mathematical Physics 57(2), 023515 (2016) - Journal IF(2016) 1.054
BV-BFV approach to General Relativity: Einsten Hilbert action.

13. *TESI DI DOTTORATO - BV-BFV Approach to General Relativity, University of Zurich, 2016*

OTHER PUBLICATIONS not for evaluation purposes
Preprints (authors in alphabetical order)

with F. M. C. Simao and A. S. Cattaneo, Preprint arXiv:2109.05268 [math-ph]
BV equivalence with boundary

with S. Martinoli, Preprint arXiv:2106.02983 [math-ph]
BV analysis of Polyakov and Nambu-Goto theories with boundary

with S. M. Griffin, Preprint arXiv:2008.08066 [cond-mat.mtrl-sci]
Generalized spontaneous symmetry breaking

Published and accepted papers

with Contreras I., and Ercolessi E., Journal of Mathematical Physics 57(6), 062209 (2016)
On the geometry of mixed states and the Fisher information tensor. **Editor's pick**

with Micheli G., Advances in Mathematics of Communications 8 (3), 343-358 (2014)
A general construction for monoid-based knapsack protocols.

with Ercolessi E., Physics Letters A 377 (34-36), 1996-2002 (2013)
Symmetric logarithmic derivative for general n-level systems and the quantum Fisher information tensor for three-level systems.

with Ercolessi E., Journal of Physics A 45 365303 (2012)
Geometry of mixed states for a q-bit and the quantum Fisher information tensor.

Curriculum vitae — October 25 2021

Positions

Sep 2021 -	*Lecturer* at Princeton University
Jan 2020 - Aug 2021	*SNSF Postdoctoral Fellow* at Princeton University, mentor: Michael Aizenman
Oct 2018 - Dec 2019	*Postdoctoral Fellow* at Columbia University, mentor: Michael I. Weinstein

Education

2018	*Ph.D. in Mathematical Physics* at ETH Zürich, advisor: Gian Michele Graf *"Topology and Localization: Mathematical Aspects of Electrons in Strongly Disordered Media"*
2015	*M.Sc. in Physics* at ETH Zürich, with distinction
2007	*B.Sc. in Physics and Psychology* at the Hebrew University of Jerusalem

Research Interests

I use *mathematical analysis* to study problems originating from statistical mechanics and quantum physics. I mainly use methods from functional analysis, algebraic topology and probability.

Topics I have worked on recently include:

- Classical spin systems
- Continuum Schrödinger operators and PDEs
- Random Schrödinger operators
- Topological insulators and Fredholm theory
- Random matrices

Fellowships and Awards

- Swiss National Science Foundation: Early Postdoc.Mobility Fellowship, 2020-2021
- Columbia Mathematics Department REU funding, Summer of 2019

TALKS

Conference talks

Solid Math Conference, Paris, France, August 2021

Topological phases of matter ICMP satellite conference, Leysin Switzerland, July 2021

Mathematics of topological insulators, online workshop, December 2020

Abel Klein's 75th Birthday Conference, Cergy, France, July 2020 *postponed*

Conference on Random Schroedinger Operators, Florence, Italy, February 2020

JMM (joint Mathematics Meeting) *Spectral and Transport Properties of Disordered Systems, II*, Denver, Colorado, USA, January 2020

IPAM Conference on Mathematics of 2D Materials at UCLA, Los Angeles, California, USA in January 2020

SIAM Sectional meeting on 2D Materials in La Quinta, California, USA in December 2019

AMS Sectional Meeting, Special Session on Recent Trends in Geometrical PDEs and Mathematical Physics, III, at Binghamton University, NY USA, in October 2019

Mathematical Physics Days in Cergy, France in September 2019

Quantissima in the Serenissima III in Venice, Italy in August 2019

QMATH14 in Aarhus University, Denmark in August 2019

Great Lakes Mathematical Physics Meeting, Oberlin, Ohio, USA in June 2019

Workshop on Spectral Theory of Quasi-periodic and Random Operators, in Montreal, Canada, November 2018

AMS Sectional Meeting AMS Special Session on Ergodic and Topological Quantum Systems, IV in University of Michigan, Ann Arbor, MI USA in October 2018

Recent progress in mathematics of topological insulators, Zurich, Switzerland, September 2018

YRS of the 19th International Congress of Mathematical Physics (ICMP) in Montreal, Canada, July 2018

Swiss Physical Society Joint Annual Meeting in Geneva, Switzerland in August 2017

Summer school on Current Topics in Mathematical Physics, in Zurich Switzerland in July 2017

Winter School in Mathematical Physics, Les Diablerets, Switzerland January 2017

Seminar talks

One World Probability Seminar January 2022 (to be confirmed)

German Austrian Swiss Seminar on Analysis and PDE November 2021

Princeton University Math Department November 2021

Tel-Aviv University Math Department October 2021

Hebrew University of Jerusalem Math Department October 2021

Technion Quantum Information Seminar June 2021

Rome Mathematical Physics Seminar June 2021

MSU Mathematical Physics and Geometry Seminar March 2021

ETH Zurich Mathematical Physics Seminar March 2021

Online North East PDE and Analysis Seminar (ONEPAS), March 2021

SISSA Trieste Analysis and Mathematical Physics Seminar, March 2021

Technion PDE Seminar, December 2020

University of Kentucky PDE/Analysis Seminar, November 2020

Columbia University Waves Seminar, October 2020

Harvard University Random Matrix Theory Seminar, April 2020 *postponed*

Binghamton Mathematical Physics Seminar, April 2020 *postponed*

Virginia Tech Mathematical Physics and Analysis Seminar, April 2018

Columbia Waves Seminar, March 2019

Princeton Mathematical Physics Seminar, December 2018

Erlangen University Mathematical Physics Seminar, May 2018

LMU Mathematical Physics Seminar, April 2018

Harvard Mathematical Physics Seminar, February 2018

Hebrew University Analysis Seminar, January 2018

Technion Haifa Mathematical Physics Seminar, January 2018

Princeton University Mathematical Physics Seminar, December 2017

IST Austria Mathematical Physics Seminar, November 2017

Institute for Theoretical Physics PhD Seminar in ETH Zurich, April 2017

Zurich Topological Insulators Seminar, March 2017

Talks for non-specialists

Columbia Mathematics Society invited talk, March 2019

Extended Research Visits

Research visit to Prof. Ron Peled in Tel-Aviv University, Israel in June-July 2021.

Research visit to Prof. Vojkan Jaksic at Cergy, France in September 2019 (invited for a semester)

Research visit to Prof. Joseph Avron at Technion Haifa, Israel in January 2018

Teaching Experience

At Princeton University

PHY103 *General Physics 1*, fall 2021.

PHY521 MAT597 substitute for *Mathematical Physics*.

Instructor at Columbia University

Math S4062Q *Intro to Modern Analysis II*, summer term 2020 *invited*

Math UN1101 *Calculus I*, spring term 2019

Teaching assistant at ETH Zürich

General Relativity, fall 2017

Mechanics of Continua, spring 2016

Analytical Mechanics, fall 2016

Quantum Field Theory 2, spring 2016

Topological Aspects of Condensed Matter Physic, fall 2015

Analysis II, spring 2015

Analysis I, fall 2014

Advising and mentoring

At Princeton University

Jonathan Kutasov 2020: Co-advising a numerical project together with Prof. Michael Aizenman.

Eli Fonseca 2020: Ongoing summer project on Fredholm theory, held online.

At Columbia University

Eli Fonseca, Ahmed Sheta, Angela Wang, Koh Yamakawa 2019: Directed a summer REU (research undergraduate experience) project on *Topological Insulators and the Bulk-Edge Correspondence using Fredholm theory* in the mathematics department which resulted in paper

At ETH Zürich

Anton Eder 2018: Proseminar on *The DC conductivity via Kubo, path integrals, and introduction to super-Gaussian integrals*

Jeremy Mann 2018: Proseminar on *The Saddle-Point Approximation for the DC Conductivity and arrival at a NLSM*

Tim Fleischmann 2018: Proseminar on *The calculation of the first quantum corrections to the Drude formula using the NLSM formalism*

Service Activities

Referee service

Referee service for Communications in Mathematical Physics, Annales Henri Poincaré, Journal of Mathematical Physics, Journal of Statistical Physics, Journal of High Energy Physics, SIAM Journal on Scientific Computing, Multiscale Modeling and Simulation.

Conferences, Workshops, and Summer Schools

(Not including the ones already listed above)

International Congress on Mathematical Physics
Geneva Switzerland August 2021

Random Physical Systems
conference in Patagonia, Chile, in December 2018

19th International Congress of Mathematical Physics
conference in Montreal, Canada, July 2018

119th Statistical Mechanics Conference
conference in Rutgers, NJ USA in May 2018

Transport and localization in random media: theory and applications
conference at Columbia University in May 2018

A random event in honour of Ilya Goldsheid's 70th birthday
conference in London, UK in December 2017

Current Topics in Mathematical Physics
conference in Zürich, Switzerland in July 2017

Mathematical Aspects of Disordered Systems
conference in Zürich, Switzerland in May 2017

Mathematical Physics Winter School
winter school in Freudenstadt, Germany in February 2017

Mathematical Physics Winter School
shool held in Les Diablerets, Switzerland January 2017

Summer school in Honor of Barry Simon's 70th Birthday
school held in Toronto, Canada in August 2016

Conference in Honor of Barry Simon's 70th Birthday
conference held in Montreal, Canada, in August 2016

Topological Insulators Conference
conference and school in Munich, Germany, September 2015

SwissMAP Annual Meeting
meeting held in Engelberg, Switzerland in September 2015

International Congress on Mathematical Physics
conference held in Santiago, Chile in July 2015

Memberships

International association of mathematical physics (IAMP)

American Mathematical Soceity (AMS)

Languages

Hebrew: mother tongue

English: fluent

German: intermediate (B2)

Curriculum Vitae

RESEARCH INTERESTS

Ergodic theory, stochastic analysis of dynamical systems, systems coupled on networks, random dynamical systems, applications to biology.

CURRENT POSITION

2020-present
New York, USA

Courant Institute of Mathematical Sicences (New York University)
Marie Skłodowska-Curie Global Fellow. Project "Ergodic Theory of Complex Systems" no. 843880 (with LPSM-CNRS-Sorbonne Université and Université de Paris)

PREVIOUS POSITIONS

2019-2020
New York, USA

Courant Institute of Mathematical Sicences (New York University)
Courant Instructor (Assistant Professor)

2017-2019
Victoria, CA

University of Victoria
Postdoctoral Fellow

EDUCATION

2013- 2017
London, UK

Imperial College London
PhD in Mathematics
Thesis Title: "*Heterogeneously Coupled Maps. From High to Low Dimension through Ergodic Theory*"
Supervisors: *Prof. Sebastian van Strien and Prof. Tiago Pereira*
Examiners: *Prof. Carlangelo Liverani and Prof. Dimitry Turaev*
Awarded: 01/08/2017

2008 - 2013
Pisa, IT

Scuola Normale Superiore
Licenza in Physics.
Assessment: *70/70 cum laude*

2011 - 2013
Pisa, IT

University of Pisa
Master of Science in Theoretical Physics.
Thesis title: "*Denoising and Parameter Estimation for Deterministic Dynamical Systems*"
Advisors: *Prof. Stefano Marmi (Scuola Normale Superiore), Doct. Sylvain Arlot (Ecole Normale Superieure)*
Assessment: *110/110 cum laude*, defended: 25/09/2013

2008 - 2011
Pisa, IT

University of Pisa
Bachelor degree in Physics.
Thesis title: "*Sistemi Hamiltoniani: teoria canonica delle perturbazioni*"
Advisors: *Prof. Stefano Marmi (Scuola Normale Superiore), Doct. David Sauzin (Centre National de la Recherche Scientifique, Laboratorio Fibonacci)*
Assessment: *110/110 cum laude*, defended: 12/07/2011

INVITED TALKS IN CONFERENCES AND SEMINARS

14/10/2021 Colloquim at the Citiy College of New York (New York, USA)
16/09/2021 *Dynamical Systems Seminar* KTH, (Stockholm, Sweden)
08/06/2021 CMS 75th Anniversary Meeting, session: "Ergodic theory, Dynamical Systems, Fractals and Applications" (Ottawa, CA).

04/06/2021	*DinAmici Seminar* held virtually.
01/07/2020	*CDSNS colloquium*, held virtually, Georgiatech (Atlanta, GE).
26/06/2020	Symposium *Virtual Session on Probability in Dynamical Systems of Physical Origin*, former AMS Symposium (Tufts) held virtually.
16/11/2019	*Second Northeast Conference on Dynamical Systems at UMass Amherst*, UMass (Amherst, MA, USA)
27/06/2019	*Seminario di Sistemi Dinamici*, Centro di Ricerca Matematica Ennio De Giorgi (Pisa, IT).
25/06/2019	*Seminario di Sistemi Dinamici*, Universitá Roma Tor Vergata (Roma, IT).
07/06/2019	*DINAMICI VI - the sixth workshop of the Italian dynamicists*, Centro di Ricerca Matematica Ennio De Giorgi (Pisa, IT)
12/12/2018	*Dynamical Systems Seminar*, BUTE, (Budapest, HU)
06/09/2018	*Dynamics Days Europe 2018*, University of Loughborough, (Loughborough, UK).
03/05/2018	*Explorative Workshop on Network Inference and Random Dynamics*, Imperial College London, (London, UK).
30/04/2018	*Analysis and Dynamical Seminar*, Department of Mathematics, University of Manchester, (Manchester, UK).
14/02/2018	*Seminario di Sistemi Dinamici*, Centro di Ricerca Matematica Ennio De Giorgi (Pisa, IT).
13/12/2017	*One Day Ergodic Theory Meeting*, School of Mathematical Sciences, Queen Mary University (London, UK).
09/11/2017	*Dynamics Seminar*, Courant Institute of Mathematical Sciences, NYU (New York, USA).
10/11/2017	*Dynamics Seminar*, Courant Institute of Mathematical Sciences, NYU (New York, USA).
19/10/2017	*Dynamics Seminar*, Department of Mathematics and Statistics, University of Victoria (Victoria, CA).
02/11/2017	*Dynamics Seminar*, Department of Mathematics and Statistics, University of Victoria (Victoria, CA).
15/06//2017	*School on Hyperbolic Dynamics*, Centro di Ricerca Matematica Ennio De Giorgi (Pisa, IT).
16/05//2017	*Dynamical Systems Seminar*, University of Loughborough (Loughborough, UK).
10/11/2016	*Dynamics Seminar*, Department of Mathematics, University of Exeter (Exeter, UK)
29/08/2016	*International conference on transport and diffusion in dynamical systems*, USP, (São Carlos, BR).
24/05/2016	*Seminário de Sistemas Dinâmicos e Estocásticos*, Departamento de Matematica, UNICAMP, (Campinas, BR).
19/05/2016	*6th International Conference on Nonlinear Science and Complexity*, Plenary Talk, INPE, (São José dos Campos, BR).
11/05/2016	*Instituto de Ciências Matemáticas e de computacão*, IMCE, USP, (São Carlos, BR).
9/05/2016	*Instituto de Ciências Matemáticas e de computacão*, IMCE, USP, (São Carlos, BR).
19/10/2015	*Stochastics and Dynamics Seminar*, Department Mathematik, University Erlangen-Nuremberg (Erlangen, DE).
22/08/2014	*Student Conference in Complexity Science*, University of Sussex (Brighton, UK).

VISITING PERIODS

05-15/07/21	*Visiting Professor*, Centro di Ricerca Matematica Ennio de Giorgi. (Prof. Stefano Marmi)
15/09/20-15/01/21	*Visiting Professor*, Centro di Ricerca Matematica Ennio de Giorgi. (Prof. Stefano Marmi)
10-13/12/18	Department of Mathematics, Budapest University of Technology and Economy. (Prof. Peter Balínt)
2-7/12/18	Courant Institute of Mathematical Sciences (CIMS), NYU. (Prof. Lai-Sang Young)
21/05-03/06/18	Courant Institute of Mathematical Sciences (CIMS), NYU. (Prof. Lai-Sang Young)
9-12/05/18	Centro di Ricerca Matematica Ennio de Giorgi. (Prof. Stefano Marmi)
19-25/02/18	Centro di Ricerca Matematica Ennio de Giorgi. (Prof. Stefano Marmi)
7-19/12/17	Department of Mathematics and Statistics, Imperial College London. (Prof. Sebastian van Strien)
5-18/11/17	Courant Institute of Mathematical Sciences (CIMS), NYU. (Prof. Lai-Sang Young)
24/08-4/09/16	Instituto de Ciências Matemáticas e de computacão (IMCE), USP. (Prof. Tiago Pereira)
4/05-25/05/16	Instituto de Ciências Matemáticas e de computacão (IMCE), USP. (Prof. Tiago Pereira)

16/11-28/11/15	Department Mathematik, Universität Erlangen-Nürnberg. (Prof. Gerhard Keller)
01/08-31/08/15	Summer Studentship at London Mathematical Laboratory, (Doct. Nick Maloney)
4/08-8/08/14	Courant Institute of Mathematical Sciences (CIMS), NYU. (Prof. Lai-Sang Young)
3/03-28/04/13	Laboratoire INRIA, Paris. (Doct. Sylvain Arlot)

FELLOWSHIPS/AWARDS/GRANTS

2020	Awarded a **Marie Skłodowska-Curie Global Fellowship**, from the European Commission **257k EUR**
2017	2 years **Postdoctoral Fellowship** at University of Victoria.
2017	**SIAM Student Travel Award** to attend the SIAM Conference on Applications of Dynamical Systems.
2016	Awarded **570 GBP** from **BREUDS** to visit USP (São Carlos, BR) 24/08-4/09/16.
2016	Awarded **1349 EUR** from **BREUDS** to visit to USP (São Carlos, BR) 04/05-25/05/2016.
2015	Awarded **1000 GBP** by the London Mathematical Laboratory for a **Summer Studentship** .
2013	Awarded a **full scholarship** from the **Imperial College Scholarship Scheme** (2013-2017), Imperial College London.
2013	Granted by Scuola Normale Superiore a **fully funded visit** at "Laboratoire INRIA" in Paris for two months.
2008	Awarded a **full scholarship** (2008-2013) at the **Scuola Normale Superiore** di Pisa.

ORGANISED EVENTS

2021	Co-organiser of **BioDynamicsDays 2021**, CIMS (New York University) and LMAH (Le-Havre University).
2019-present	Organiser **Courant Dynamical Systems Seminar**.
2017	Co-organiser "*Mathematical analysis of classical and asynchronous network dynamical systems*" minisymposium at the SIAM Conference on Applications of Dynamical Systems, May 21-25 2017.

TEACHING EXPERIENCE

2020/21	*CIMS, New York University* -MATH 328: *Honors Analysis I*. Undergraduate Course
2019/20	*CIMS, New York University* -MATH 121: *Calculus I*. Undergraduate Course -MATH 325: *Analysis I*. Undergraduate Course
2018/19	*University of Victoria* -MATH 493/533: *Ergodic Theory*. Graduate course.
2017/18	*University of Victoria* -MATH 211: *Matrix Algebra I*. Undergraduate course.
2013/17	*Imperial College London* -Demonstrator and marker for: *Real Analysis*, *Differential Equations*, *Geometry I*, *Topology and Metric Spaces*, *Probability and Statistics II*.
2015/16	*Imperial College London* -Full demonstrator for the graduate course: *Dynamical Systems*.
2014/15	*Imperial College London* -Full demonstrator for the graduate course: *Dynamical Systems*.

STUDENTS SUPERVISION and MENTORING

Fall 2021	Supervising Vandan Pokal for a research internship at CIMS.
Summer 2020	Supervised Aolan Ding for a SURE research internship at CIMS.

REFEREE and EDITORIAL APPOINTMENTS

- Member of the Editorial Board of Frontiers in Systems Neuroscience as Review Editor for Neuroscience.

- Referee for Discrete and Continuous Dynamical Systems, and Journal of Computational Dynamics.

OUTREACH

- Participated in the realization of the Italian version of **EquatIO** a Google Education tool for students of math, physics, and chemistry.

LIST OF PUBLICATIONS

1. M.Tanzi, "Heterogeneously Coupled Maps. From high to low dimensional systems through ergodic theory" (2017) PhD Thesis.
2. M. Tanzi, T. Pereira, and S. van Strien "*Robustness of ergodic properties of non-autonomous piecewise expanding maps.*" Ergodic Theory and Dynamical Systems (2017): 1-32.
3. T. Pereira, S. van Strien, and M. Tanzi. "*Heterogeneously Coupled Maps: hub dynamics and emergence across connectivity layers.*" Journal of the European Mathematical Society 22.7 (2020): 2183-2252.
4. D. Eroglu, M. Tanzi, S. van Strien, T. Pereira "*Revealing Dynamics, Communities, and Criticality from Data*". Physical Review X, 10(2), 021047 (2020).
5. M. Tanzi and L.-S. Young. "*Nonuniformly hyperbolic systems arising from coupling of chaotic and gradient-like systems.*" Discrete and Continuous Dynamical Systems 40(10) (2020).
6. F. Sélley and M. Tanzi. "*Linear Response for a Family of Self-Consistent Transfer Operators.*" Communications in Mathematical Physics 382, 1601-1624 (2021).
7. C. Bose, A. Quas, and M. Tanzi. "*Random Composition of LSV Maps Sampled Over Large Parameter Ranges.*" Nonlinearity **34** 3641(2021) https://doi.org/10.1088/1361-6544/abebc7.
8. P. Giulietti, S. Marmi, and M. Tanzi. "*Random-like properties of chaotic forcing*" arxiv.org/abs/2104.06434.
9. M. Tanzi and L.-S. Young. "*Rigorous Results for some Examples of Excitation-Inhibition Networks*" arXiv:2105.03339.
10. F. Selley and M. Tanzi. "*Synchronization for Networks of Globally Coupled Maps in the Thermodynamic Limit*" arXiv:2110.05618

Tutto quanto dichiarato in questo Curriculum corrisponde a verità, ai sensi degli articoli 46 e 47 del D.P.R. 445 del 2000.

MICHELE TRIESTINO
Curriculum Vitae ai fini della pubblicazione

Part II – Education

Type	Year	Institution	Notes (Degree, Experience,…)
University graduation	2010	École Normale Supérieure de Lyon	Master 2 Recherche in Mathematics
PhD	2014	École Normale Supérieure de Lyon	Mathematics. Relatore Etienne Ghys

Part III – Appointments

IIIA – Academic Appointments

Start	End	Institution	Position
2014	2016	Pontificia Universdade Catolica de Rio de Janeiro (Brasile)	**Post-dottorato** presso il Dipartimento di Matematica (referente Lorenzo Diaz) con "Bolsa de pos-dotourado de excelencia financiado pelo IMPA em instituiçoes de pesquisa do Brasil" (borsa di post-dottorato di eccellenza finanziata dall'IMPA in istituti di ricerca del Brasile). Borsa di 2 anni con estensione possibile di 1 anno.
2016	2016	Universidade Federal Fluminense (Brasile)	Contratto di professore assistente (**professor adjunto A**) a tempo indeterminato nel GMA - Dipartimento di Matematica Applicata
2016	presente	Université de Bourgogne (Francia)	Contratto di professore assistente (**Maitre de Conférences Section 25 - Mathématiques**), a tempo indeterminato nel Dipartimento di Matematica
2018	2019	INRIA Lille, Francia	Ricercatore invitato (semestre sabbatico) presso il gruppo di ricerca Mephisto-Post di INRIA Lille, con "**délégation INRIA**" (assegno di ricerca dall'instituto francese di ricerca INRIA). (Nel sistema francese un maitre de conférences deve ricevere un finanziamento esterno per la propria università, per beneficiare della sospensione del servizio didattico)
2019	2019	Université de Lille, Francia	Ricercatore invitato (semestre sabbatico) presso il Laboratoire Paul Painlévé di Lille, con "**délégation**" finanziata dal progetto di ricerca Louis D. "Jeunes Géométres" diretto da François Labourie. (Nel sistema francese un maitre de conférences deve ricevere un

	finanziamento esterno per la propria università, per beneficiare della sospensione del servizio didattico) https://math.unice.fr/~labourie/LouisD/index.html

Part IV – Teaching experience

Year	Institution	Lecture/Course
2010	ICTP, Miramare, Trieste	4,5 ore di esercitazioni per il corso d'introduzione alla geometria iperbolica di Étienne Ghys, durante l'"Advanced School and Workshop on Discrete Groups in Complex Geometry"
2011	Dubna, Russia	5 ore di **minicorso** "Random walks on groups" alla scuola estiva per studenti russi (fine liceo-inizio università) "Contemporary mathematics" http://www.mathnet.ru/php/conference.phtml?confid=658&option_lang=eng
2011	École Normale Supérieure de Lyon, Francia	18 ore di **esercitazioni** per il corso "Groupes, distances et mesures" (teoria geometrica dei gruppi) di M2 (secondo anno magistrale, docenti Etienne Ghys e Romain Tessera)
2012	École Normale Supérieure de Lyon, Francia	22 ore di **esercitazioni** per il corso di Analisi complessa di Licence 3 (ultimo anno triennale, docente Philippe Eyssidieux)
2011-2012	École Normale Supérieure de Lyon, Francia	8 ore di **formazione** di studenti al concorso di "agrégation"
2012	École Normale Supérieure de Lyon, Francia	**Membro del comitato di organizzazione locale** 6 ore di supporto didattico a minicorsi di Laure Saint-Raymond, Kenneth Stephenson, Don Zaigier, durante la scuola estiva internazionale per studenti tra fine liceo e inizio università (International Summer School in Mathematics for Young Students 2012) http://www.issmys.eu/previous-year/lyon-2012
2013	École Normale Supérieure de Lyon, Francia	22 ore di **esercitazioni** per il corso di Analisi complessa di Licence 3 (ultimo anno triennale, docente Philippe Eyssidieux)
2013	Jacobs University, Brema, Germania	6 ore di **supporto didattico** a minicorsi di Nalini Anantharaman, Serge Tabachnikov, Vlad Vicol, durante la scuola estiva internazionale per studenti tra fine liceo e inizio università (Modern Mathematics, International Summer School for Students 2013) http://math.jacobs-university.de/summerschool/2013/
2013	École Normale Supérieure de Lyon, Francia	24 ore di **esercitazioni** per il corso di Algebra 1 (gruppi, anelli e moduli) di Licence 3 (ultimo anno triennale, docente Sandra Rozensztajn)
2013	École Normale Supérieure de Lyon, Francia	24 ore di **esercitazioni** per il corso di Intégration 1 (teoria della misura) di Licence 3 (ultimo anno

		triennale, docente Cyril Houdayer)
2013	École Normale Supérieure de Lyon, Francia	18 ore di **esercitazioni** per il corso “Le problème des trois corps” (meccanica celeste) di M2 (secondo anno magistrale, docente Etienne Ghys)
2014	École Normale Supérieure de Lyon, Francia	**Membro del comitato di organizzazione** Modern Mathematics, International Summer School for Students 2014 http://www.issmys.eu/
2015	Jacobs University, Brema, Germania	**Membro del comitato di organizzazione** Modern Mathematics, International Summer School for Students 2015 http://math.jacobs-university.de/summerschool/2015/index.php
2015	Dubna, Russia	5 ore di **minicorso** “Groups, trees, and ends” alla scuola estiva per studenti russi (fine liceo-inizio università) “Contemporary mathematics” https://www.mccme.ru/dubna/2015/courses/triestino.html
2016	Universidade Federal Fluminense, Brasile	2 **corsi** di 68 ore ognuno di “Metodos Matematicos I” (metodi matematici per l’ingegneria, analisi di Fourier)
2016	Université de Bourgogne, Francia	30 ore di **esercitazioni** per il corso di Maths 11, Analyse (calcolo a una variabile) di Licence 1 (primo anno triennale, docente Jean-Philippe Rolin)
2016	Université de Bourgogne, Francia	36 ore di **esercitazioni** per il corso di Maths 31, Analyse (analisi a una variabile) di Licence 2 (secondo anno triennale, docente Daniele Faenzi)
2016	Université de Bourgogne, Francia	26 ore di **esercitazioni** per il corso di Calcul Intégrale, Analyse (teoria della misura) di Licence 3 (terzo anno triennale, docente Olivier Couture)
2017	Université de Bourgogne, Francia	2 gruppi di 18 ore di **esercitazioni** per il corso di Mathématiques S2 (per la facoltà di economia) di Licence 1 (primo anno triennale, docente Alexandre Cabot)
2017	Université de Bourgogne, Francia	44 ore di **corso** di statistica per Licence 1 della facoltà di psicologia.
2017	Université de Bourgogne, Francia	30 ore di **esercitazioni** per il corso di Maths1A, Analyse (calcolo a una variabile) di Licence 1 (primo anno triennale, docente Jean-Philippe Rolin)
2017	Université de Bourgogne, Francia	34 ore di **esercitazioni** per il corso di Maths 31, Analyse (analisi a una variabile) di Licence 2 (secondo anno triennale, docente Daniele Faenzi)
2017	Université de Bourgogne, Francia	26 ore di **esercitazioni** per il corso di Calcul Intégrale, Analyse (teoria della misura) di Licence 3 (terzo anno triennale, docente Olivier Couture)
2017	Université de Bourgogne, Francia	18 ore di **esercitazioni** per il corso di Mathématiques S1 (per la facoltà di economia) di Licence 1 (primo anno triennale, docente Alexandre Cabot)
2019	Université de Bourgogne, Francia	2 gruppi di 18 ore di **esercitazioni** per il corso di Mathématiques S2 (per la facoltà di economia) di

		Licence 1 (primo anno triennale, docente Alexandre Cabot)
2018	Université de Bourgogne, Francia	20 ore di **esercitazioni** per il corso di statistica per Licence 1 della facoltà di psicologia (docenti Sébastien Leurent, Samuel Herrmann)
2018	Université de Bourgogne, Francia	30 ore di **esercitazioni** per il corso di MaPC2A, (algebra lineare) di Licence 1 (primo anno triennale, docente Emmanuel Wagner)
2018	Université de Bourgogne, Francia	20 ore di **laboratorio di programmazione** in Python per Licence 3
2018	Université de Bourgogne, Francia	Direzione di stage (equivalente tesi di laurea triennale) dello studente Robin Carlier di Licence 3 de l'Ecole Normale Supérieure de Lyon, titolo "Autour de l'espace extérieur"
2019	Université de Bourgogne, Francia	2 gruppi di 18 ore di **esercitazioni** per il corso di Mathématiques S1 (per la facoltà di economia) di Licence 1 (primo anno triennale, docente Alexandre Cabot)
2019	Université de Bourgogne, Francia	18 ore di **esercitazioni** per il corso di Mathématiques S3 (per la facoltà di economia) di Licence 2 (secondo anno triennale, docente Abderrahim Jourani)
2019	Université de Bourgogne, Francia	34 ore di **esercitazioni** per il corso di Math3A, Analyse (analisi a una variabile) di Licence 2 (secondo anno triennale, docente Daniele Faenzi)
2020	Université de Bourgogne, Francia	30 ore di **esercitazioni** per il corso di Math2A, Analyse (analisi a una variabile) di Licence 1 (primo anno triennale, docente José-Luis Jaramillo)
2020	Université de Bourgogne, Francia	33 ore di **esercitazioni** per il corso di Math4C, Géométrie (geometria affine) di Licence 2 (secondo anno triennale, docente Olivier Couture)
2020	Université de Bourgogne, Francia	28 ore di **esercitazioni** per il corso di Géométrie, courbes et surfaces (curve e superfici) di Licence 3 (terzo anno triennale, docente Gwenael Massuyeau)
2020	Université de Bourgogne, Francia	20 ore di **esercitazioni** per il corso di statistica per Licence 1 della facoltà di psicologia (docenti Sébastien Leurent, Samuel Herrmann)
2020	Université de Bourgogne, Francia	2 gruppi di 18 ore di **esercitazioni** per il corso di Mathématiques S1 (per la facoltà di economia) di Licence 1 (primo anno triennale, docente Alexandre Cabot)
2020	Université de Bourgogne, Francia	18 ore di **esercitazioni** per il corso di Mathématiques S3 (per la facoltà di economia) di Licence 2 (secondo anno triennale, docente Abderrahim Jourani)
2020	Université de Bourgogne, Francia	34 ore di **esercitazioni** per il corso di Math3A, Analyse (analisi a una variabile) di Licence 2 (secondo anno triennale, docente Daniele Faenzi)
2020	Université de Bourgogne, Francia	28 ore di **esercitazioni** per il corso di Topologie des espaces métriques(topologia) di Licence 3 (terzo anno triennale, docente Johan Taflin)

2021	Université de Bourgogne, Francia	26 ore di **esercitazioni** per il corso di Géométrie, courbes et surfaces (curve e superfici) di Licence 3 (terzo anno triennale, docente Gwenael Massuyeau)
2021	Université de Bourgogne, Francia	33 ore di **esercitazioni** per il corso di Math4C, Géométrie (geometria affine) di Licence 2 (secondo anno triennale, docente Olivier Couture)
2021	Université de Bourgogne, Francia	22 ore di **corso** di Math4A, Analyse (analisi a una variabile) di Licence 2 (secondo anno triennale)
2019	Université de Bourgogne, Francia	**Codirezione**, insieme a Christian Bonatti, della **tesi di dottorato** di Joao Carnevale (Partecipazione personale al 50%) all'Université de Bourgogne, Francia dal 01-10-2019 a oggi

Part V - Society memberberships, Awards and Honors

Year	Title
2015	**Relatore invitato** al convegno Workshop de Topologia & Dinâmica 2015, tenutosi all'Universidade Federal Fluminense, Niteori, RJ, Brasile. Titolo: About the dynamics of almost every circle diffeomorphism dal 02-02-2015 al 06-02-2015
2015	**Relatore invitato** al convegno Valparaiso's dynamics working days: Groups and low dimensional dynamics, tenutosi alla PUC-Valparaiso, Cile. Titolo: About the ends of groups of circle diffeomorphisms, their dynamics and the algebraic structure. http://ima.ucv.cl/congreso/valparaiso-dynamics/ dal 15-10-2015 al 16-10-2015
2015	**Relatore invitato** al convegno Frontiers in Analysis and Probability. Strasbourg/Zurich meeting, tenutosi all'Università di Zurigo, Svizzera. Titolo: Stationary random metrics on self-similar length spaces. https://www.math.uzh.ch/fap02/ dal 29-10-2015 al 30-10-2015
2016	**Organizzatore** del workshop internazionale "Groups acting on manifolds", Teresopolis, RJ, Brasile (50 partecipanti) http://workshop-2016-teresopolis.wikidot.com/ dal 20-06-2016 al 24-06-2016
2016	**Relatore invitato** al convegno International Conference on Dynamical Systems, organizzato dall'IMPA e tenutosi a Buzios, RJ, Brasile. Titolo: Markov partitions for groups of circle diffeomorphisms. https://impa.br/sobre/memoria/reunioes-cientificas/international-conference-on-dynamical-systems-2/ dal 04-07-2016 al 08-07-2016
2017	**Relatore invitato** al convegno Beyond Uniform Hyperbolicity, tenutosi alla BYU, Provo, UT, USA. Titolo: Are groups of piecewise projective homeomorphisms of the real line smoothable? dal 05-06-2017 al 16-06-2017
2017	**Relatore invitato** al congresso Coloquio Latinoamericano de Algebra, session Group Theory, tenutosi alla PUC-Quito, Ecuador. Titolo: On smooth actions of groups of piecewise-projective homeomorphisms of the real line https://www.puce.edu.ec/claquito2017/ dal 07-08-2017 al 11-08-2017
2017	**Relatore invitato (minicorso)** al convegno Affine and one-dimensional dynamics,

	tenutosi a Aussois, Francia. Titolo: Groups of affine and piecewise affine homeomorphisms. https://webusers.imj-prg.fr/~charles.fougeron/aussois/index.html dal 04-12-2017 al 08-12-2017
2018	**Relatore invitato** al convegno International conference on dynamical systems, tenutosi alla SUSTech, Shenzhen, Cina. Titolo: Smoothening singular group actions on manifolds. https://math.sustech.edu.cn/conference/10835.html?lang=en dal 18-06-2018 al 29-06-2018
2018	**Relatore invitato (minicorso)** al convegno Journée de Géométrie & Topologie Clermont-Fd–Grenoble–Lyon, tenutosi all'Ecole Normale Supérieure de Lyon, Francia. Titolo: Groupes de difféomorphismes analytiques du cercle. dal 30-11-2018 al 01-12-2018
2018	**Relatore invitato** al convegno Journées Nancéiennes de Géométrie, tenutosi all'IECL, Université de Lorraine, Nancy, Francia. Titolo: Lissage d'actions de groupes rigides par difféomorphismes singuliers. http://www.iecl.univ-lorraine.fr/Geometrie/JNG/JNG2018/ dal 10-12-2018 al 11-12-2018
2019	**Relatore invitato** al convegno Ordered Groups and Rigidity in Dynamics and Topology, tenutosi alla Casa Matematica Oaxaca, Messico. Titolo: Ping-pong partitions for virtually free groups. https://www.birs.ca/events/2019/5-day-workshops/19w5044 dal 16-06-2019 al 21-06-2019
2019	**Relatore invitato** al convegno Dubrovnik IX. Topology and dynamical systems, session Geometric Group Theory, tenutosi all'Inter-University Centre Dubrovnik, Croazia. Titolo: Ping-pong lemma: old and new. https://web.math.pmf.unizg.hr/~sonja/DubrovnikIX.html dal 24-06-2019 al 28-06-2019
2019	**Relatore invitato** al convegno KIAS Workshop on low-dimensional topology, tenutosi al KIAS, Seul, Corea del Sud. Titolo: Cantor dynamics and simple left-orderable groups. http://events.kias.re.kr/h/WLDT19/ dal 21-08-2019 al 21-08-2019
2019	**Relatore invitato** al convegno Arbeitsgemeinschaft: Zimmer’s Conjecture, tenutosi al MFO Oberwolfach, Germania. Titolo: Proof of Zimmer’s Cocycle Superrigidity: centralizers and finite dimensional invariant subspaces https://www.mfo.de/occasion/1942/www_view dal 13-10-2019 al 18-10-2019
2019	**Organizzatore** del workshop internazionale “One-dimensional actions of 3-manifold groups”, Université de Bourgogne, Francia (55 partecipanti) http://mtriestino.perso.math.cnrs.fr/3mfd.html dal 04-11-2019 al 08-11-2019
2020	**Relatore invitato** al convegno Dynamics on your screen (a zoom mini-conference). Titolo: Actions of locally moving groups of homeomorphisms of the real line https://people.math.osu.edu/gogolyev.1/DynScreen.html dal 03-08-2020 al 06-08-2020
2020	**Relatore invitato** al convegno Arbre de Noël du GDR Géométrie Non Commutative (on-line). Titolo: Groupes d’homéomorphismes d’une suspention https://lmb.univ-fcomte.fr/IMG/pdf/titres_et_resumes_adn2020.pdf

	dal 02-12-2020 al 04-12-2020
2016	**Valutatore della tesi di dottorato** di Edgar Matias (PUC-Rio, Rio de Janeiro, Brasile), direttore di tesi Lorenzo Diaz, titolo della tesi "Non-hyperbolic Iterated Function Systems: attractors, stationary measures, and step skew products" dal 23-08-2016 al 23-08-2016
2020	**Membro della commissione di recrutamento** per il posto 0483 di Maitre de Conférences Section 25 (Mathématiques) all'Università di Bourgogne, Francia dal 10-04-2020 al 15-06-2020
2020	**Riconoscimento** "Prime d'Encadrement Doctoral et de Recherche" del Ministère de l'enseignement supérieure, de la recherche et de l'innovation (Francia), durata 4 anni (premio di 5400€ annui).

Part VI - Funding Information [grants as PI-principal investigator or I-investigator]

Year	Title	Program	Grant value
2017	Groupes localement discrets de difféomorphismes du cercle	PEPS Jeunes chercheur-e-s CNRS (progetto nazionale francese)	4000€
2019	Questions diverses sur les actions des groupes sur le cercle et la droite	PEPS Jeunes chercheur-e-s CNRS (progetto nazionale francese)	3500€
2019-2022	Actions de groupes sur les variétés	Progetto personale di ricerca regionale francese Accompagnement nouvelle équipe de récherche (ANER), Région Bourgogne-Franche-Comté	26000€
2019-2024	Groups of homeomorphisms of manifolds http://mtriestino.perso.math.cnrs.fr/Gromeov.html	ANR PRC Gromeov ANR-19-CE40-0007 (progetto nazionale francese)	184 060€

Part VII – Research Activities

Keywords	Brief Description
Group actions Orderable groups Geometric group theory Dynamical systems Geometric topology Foliation theory	Since my post-doc in Rio de Janeiro (2014), my main research interest is focused on group actions on manifolds, which is a generalization of classical dynamical systems (that can be seen as actions of the groups Z or R). There are basically two general questions: 1) given a group G (for example, abelian, nilpotent, solvable, amenable, lattices in semi-simple Lie groups…) and a manifold M (typically, a circle, the real line, a surface, a symmetric space…) what can be said about actions of G on M by homeomorphisms, or diffeomorphisms? 2) Conversely, if dynamical properties of the action of G on M are prescribed (such as, an invariant probability measure, an invariant volume form, an invariant fibration, zero topological entropy,…) what can be said on the group-theoretic structure of

G?

The theory is sufficiently rich for groups acting on one-dimensional manifolds. It is a remarkable fact that a countable group acts by homeomorphisms on the real line, if and only if it admits a left-invariant order. This allows to combine tools from dynamical systems and group theory. For instance, the approach from dynamical systems has been fundamental in the works in collaboration with C Rivas (reference 9 below), where it is shown that Higman's group is left-orderable, and with N Matte Bon (reference 10 below), where we construct a large family of groups which are finitely generated, simple and left-orderable (conceptualizing a recent construction by Hyde and Lodha, which solved a long-standing problem in the field).

The situation in higher dimension is much wilder, and very few results are known. References 10 and 12 listed below discuss results on actions on manifolds of arbitrary dimension.

Historically, part of the motivation comes from the study of foliations, which can be studied through the dynamics of their holonomy pseudo-groups (which act on a closed transversal to the foliation). My work in collaboration with several authors (reference 6 below), written when most of us were post-docs in Rio de Janeiro, had this motivation. Indeed, it is a relevant contribution towards the solution of old conjectures by Ghys, Sullivan and Hector in foliation theory (which are still unsolved). As a sample conjecture, let (M,F) be a foliation of a closed manifold of codimension 1, which is transversaly of class C2. Assume that the foliation is minimal, that is, every leaf is dense. Then the foliation is ergodic with respect to the volume, that is, every non-empty subset of M saturated by leaves of the foliation has full volume.

A different motivation comes from the so-called Zimmer's program, which is about "large groups acting on manifolds" and other rigidity problems. As a remarkable example, it has been proved recently by Brown, Fisher and Hurtado that if a lattice in a simple Lie group of real rank n (such as SL(n+1,Z)) acts on a compact manifold of dimension <n, then the action factors through an action of a finite group (note that this is somehow sharp, as SL(n+1,Z) acts on the projective space RP^n, which is of dimension n). Reference 8 below contains lecture notes from a workshop I organized in 2016 near Rio de Janeiro, right after the solution of Zimmer's conjecture by Brown, Fisher, and Hurtado.

Part VIII – Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Papers [international]	9	Scopus, WoS, MathSciNet	2013	2021
Papers [national]				
Books [scientific]	1	MathSciNet	2014	2021
Books [teaching]				

Total Impact factor	11,745
Total Citations	30
Hirsch (H) index	4
Normalized H index*	4/6=0,66

*H index divided by the academic seniority.

Part IX– Selected Publications

List of the publications selected for the evaluation. For each publication report title, authors, reference data, journal IF (if applicable), citations, press/media release (if any).

1. A Navas, M Triestino
On the invariant distributions of C2 circle diffeomorphisms of irrational rotation number,
Math. Z. 274, no. 1 (2013), 315–321
IF: 0,881
Citations: 9

2. M. Triestino
Généricité au sens probabiliste dans les difféomorphismes du cercle,
Ensaios Matemáticos 27, Soc. Brasil. Mat. (2014). Français. (libro)
IF: n/a
Citations: 1

3. M Khristoforov, V Kleptsyn, M Triestino
Stationary random metrics on hierarchical graphs via (min,+)-type recursive distributional equations,
Commun. Math. Phys. 345, no. 1 (2016), 1–76
ISSN: 0010-3616, doi: 10.1007/s00220-016-2650-7
IF: 2,102
Citations: 0

4. C. Bonatti, Y. Lodha, M. Triestino
Hyperbolicity as an obstruction to smoothability for one-dimensional actions.
GEOMETRY & TOPOLOGY, vol. 23, p. 1841-1876,
ISSN: 1364-0380, doi: 10.2140/gt.2019.23.1841
IF: 1,48
Citations: 8

5. Alvarez S, Filimonov D, Kleptsyn V, Malicet D, Menino Coton C, Navas A, Triestino M
Groups with infinitely many ends acting analytically on the circle.
JOURNAL OF TOPOLOGY, vol. 12 (2019), p. 1315-1367,
ISSN: 1753-8416, doi:10.1112/topo.12118
IF: 1,64
Citations: 6

6. Malicet D, Mann K, Rivas C, Triestino M
Ping-pong configurations and circular orders on free groups.
GROUPS, GEOMETRY, AND DYNAMICS, vol. 13 (2019), p. 1195-1218
ISSN: 1661-7207, doi: 10.4171/GGD/519

IF: 0,742
Citations: 1

7. Triestino M (a cura di) Di Brown A.
Entropy, Lyapunov exponents, and rigidity of group actions.
ENSAIOS MATEMÁTICOS, vol. 33 (2019), p. 1-197,
ISBN: 978-85-8337-159-5, ISSN: 2175-0432 (curatela)
IF: n/a
Citations: 0

8. Rivas C, Triestino M
One-dimensional actions of Higman’s group.
DISCRETE ANALYSIS, vol. 20 (2019)
ISSN: 2397-3129, doi: 10.19086/da.11151
IF: 1,18
Citations: 0

9. Lodha Y, Matte Bon N, Triestino M
Property FW, differentiable structures and smoothability of singular actions.
JOURNAL OF TOPOLOGY, vol. 13 (2020), p. 1119-1138
ISSN: 1753-8416, doi: 10.1112/topo.12151
IF: 1,64
Citations: 4

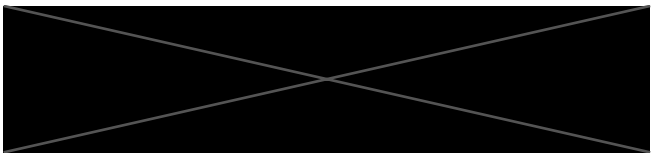
10. Matte Bon N, Triestino M
Groups of piecewise linear homeomorphisms of flows
Compositio Mathematica, vol. 156 (2020), 1595-1622
IF: 1,20
Citations: 1

11. Bonatti, C., Kim, S.-H., Koberda, T., Triestino, M.
Small C1 actions of semidirect products on compact manifolds
Algebraic and Geometric Topology, 2020, 20(6), pp. 3183–3203
IF: 0,876
Citations: 0

12. Triestino M
On James Hyde's example of non-orderable subgroup of Homeo(D,∂D)
L’ENSEIGNEMENT MATHEMATIQUE (2), vol. 66 (2020), no. 3-4, 409-418
IF: n/a
Citations: 0

INFORMAZIONI PERSONALI

Alessio Troiani



FORMAZIONE

Ottobre 2012 — Doctoral degree (PhD) presso l'Università di Leiden (titolo riconosciuto equipollente al titolo di Dottore di Ricerca dell'Ordinamento Universitario Italiano). Titolo della tesi: "Metastability for low-temperature Kawasaki dynamics with two types of particles". Relatori: Prof. Dr. F. den Hollander (Università di Leiden) e Dr. F. R. Nardi (TU Eindhoven).

Ottobre 2007 — Laurea Specialistica *cum laude* in Ingegneria Gestionale
Università degli Studi di Roma "Tor Vergata"
Relatore: Prof. B. Scoppola.

Luglio 2007 – Ottobre 2007 — Visiting Student (Special Focus Year on Discrete Random Systems)
Center for Discrete Mathematics and Theoretical Computer Science (DIMACS) – Rutgers, The State University of New Jersey
Supervisore: Prof. Dr. J. L. Lebowitz.

Ottobre 2004 — Laurea *cum laude* in Ingegneria Gestionale
Università degli Studi di Roma "Tor Vergata"
Relatore: Prof. B. Scoppola.

ATTIVITÀ ACCADEMICA

Ottobre 2020 – Agosto 2021 — Assegnista di ricerca
Dipartimento di Matematica – Università degli Studi di Padova
Tema di ricerca: Statistical Mechanics of Gravitational Systems
Supervisor: Prof.ssa Gabriella Pinzari

Maggio 2018 – Maggio 2020 — Assegnista di ricerca
Dipartimento di Matematica – Università degli Studi di Padova
Tema di ricerca: Statistical Study of Gravitational Systems
Supervisor: Prof.ssa Gabriella Pinzari

Maggio 2017 – Aprile 2018 — Assegnista di ricerca
Dipartimento di Matematica – Università degli Studi di Firenze
Tema di ricerca: Dinamiche stocastiche parallele e applicazioni alla meccanica statistica
Supervisor: Prof.ssa Francesca R. Nardi

Novembre 2015 – Novembre 2016
Assegnista di ricerca
Dipartimento di Matematica – Università degli Studi di Roma "Tor Vergata"
Tema di ricerca: Dinamiche stocastiche parallelle e calcolo su GPU
Supervisor Prof. Benedetto Scoppola

ATTIVITÀ DI INSEGNAMENTO

Febbraio 2020 – Maggio 2020
Docente a contratto
Corso "Statistics" – LUISS Guido Carli

Febbraio 2020 – Giugno 2020
Assistente alla didattica
Corso "Applicazioni della Fisica Matematica" – Dipartimento di Matematica e Fisica – Università degli studi di Roma "Tre"

Febbraio 2019 – Maggio 2019
Docente a contratto
Corso "Statistics" – LUISS Guido Carli

Settembre 2018 – Dicembre 2018
Docente a contratto
Corso "Elementary probability"– LUISS Guido Carli

Febbraio 2018 – Maggio 2018
Docente a contratto
Corso "Statistics" – LUISS Guido Carli

Settembre 2017 – Dicembre 2017
Docente a contratto
Corso "Elementary probability"– LUISS Guido Carli

Settembre 2016 – Dicembre 2016
Assistente alla didattica
Corso "Elementary probability"– LUISS Guido Carli

Marzo 2016 – Giugno 2016
Assistente alla didattica
Corso "Calcolo delle probabilità" – Dipartimento di Matematica – Università degli studi di Roma "Tre"

Gennaio 2011 – Giugno 2011
Assistente alla didattica
Corso "Stochastic Processes" – "Dutch master's degree program in mathematics" – Paesi Bassi.

Settembre 2009 – Gennaio 2012
Assistente alla didattica
Corso "Introductory Statistics" (anni accademci 2009/10 - 2010/11 - 2011/12) – Facoltà di Scienze – Università di Leiden – Paesi Bassi

PUBBLICAZIONI E PREPRINT

Pubblicate:

1. Metastability for Kawasaki dynamics with two types of particles: stable/metastable configurations and communication heights, *Journal of Statistical Physics*, 145, 1423–1457,

2011, https://doi.org/10.1007/s10955-011-0370-0 (with F. den Hollander and F. R. Nardi).

2. Metastability for Kawasaki dynamics at low temperature with two types of particles, *Electronic Journal of Probability*, 17(2), 1–26, 2012, doi:10.1214/EJP.v17-1693 (with F. den Hollander and F. R. Nardi).
3. Metastability for Kawasaki dynamics with two types of particles: critical droplets, *Journal of Statistical Physics*, 149, 1013–1057, 2012,https://doi.org/10.1007/s10955-012-0637-0 (with F. den Hollander and F. R. Nardi).
4. Metastability for Kawasaki dynamics with two types of particles, PhD Thesis, 2012, ISBN 9789461914644, handle: http://hdl.handle.net/1887/20065
5. The blockage problem, *Bulletin of the Institute of Mathematics Academia Sinica (New Series)*, 8(1), 49–72, 2013, ISSN: 2304-7895 [online] (with O. Costin, J. L. Lebowitz and E. R. Speer).
6. Gaussian Mean Fields Lattice gas, *Journal of Statistical Physics* (2018), 170:1161, https://doi.org/10.1007/s10955-018-1984-2, (with B. Scoppola)
7. Criticality of measures on 2-d Ising configurations: from square to hexagonal graphs, *Journal of Statistical Physics* (2019), https://doi.org/10.1007/s10955-012-0637-0 (with V. Apollonio, R. D'Autilia, B. Scoppola and E. Scoppola)
8. Parallel simulation of two–dimensional Ising models using Probabilistic Cellular Automata, (2019), *Journal of Statistical Physics* (2021), 184, 9 https://doi.org/10.1007/s10955-021-02792-4 (with R. D'Autilia and L. Nantenaina Andrianaivo)
9. Lonely Planets and Lightweight Asteroids: A Statistical Mechanics Model for the Planetary Problem. *Annales Henri Poincaré*, 2021, https://doi.org/10.1007/s00023-021-01099-0 (with G. Pinzari and B. Scoppola)

Preprints:

9. Shaken dynamics: an easy way to parallel MCMC (2020), arXiv:1904.06257, (with V. Apollonio, R. D'Autilia, B. Scoppola and E. Scoppola)
10. Tides and dumbbell dynamics arXiv.2101.05637 (with B. Scoppola and M. Veglianti)
11. Metastability for the Ising model on the hexagonal lattice arXiv:2101.11894, (with V. Apollonio, V. Jacquier and F. R. Nardi)
12. Shaken dynamics on the 3-d cubic lattice arXiv:2103/10770 (with B. Scoppola and M. Veglianti)

SELECTED TALKS

Maggio 2021 Applications of Statistical Methods and Machine Learning in the Space Sciences, Space Science Institute, Boulder, (USA)

Ottobre 2020	Series of Seminars on Machine Learning, Optimization and Data Analysis, Unversità di Roma "Tor Vergata" (Italia)
Giugno 2019	Second Italian Meeting on Probability and Mathematical Statistics, Vietri sul Mare (Italia)
Marzo 2019	Mathematical Physics and Related Subjects Seminar, Università di Padova (Italia)
Maggio 2018	Probability Seminar, Università di Leiden (Paesi Bassi).
Marzo 2012	Mark Kac Seminar on Stochastics and Physics, Utrecht (Paesi Bassi).
Luglio 2011	Cornell Probability Summer School, Ithaca (USA).
Maggio 2011	Oberseminar Stochastics, Università di Bonn (Germania).
Maggio 2010	Probability Seminar, Università di Leiden (Paesi Bassi).

ATTIVITÀ NON ACCADEMICA

Settembre 2021 – presente: Docente di ruolo di scuola superiore - Informatica

Dicembre 2014 – Dicembre 2018: Attività di consulenza e formazione su
- Salute e sicurezza nei luoghi di lavoro
- Igiene degli alimenti
- Quality management

Ottobre 2012 – Giugno 2014: Software Engineer
Team di Studi Statistici (dipartimento di revenue management)
Amadeus (Sophia Antipolis - Francia)

Febbraio 2008 – Aprile 2008: Business Analyst
Accenture Italia S.p.a.

COMPETENZE PERSONALI

MADRELINGUA: Italiano

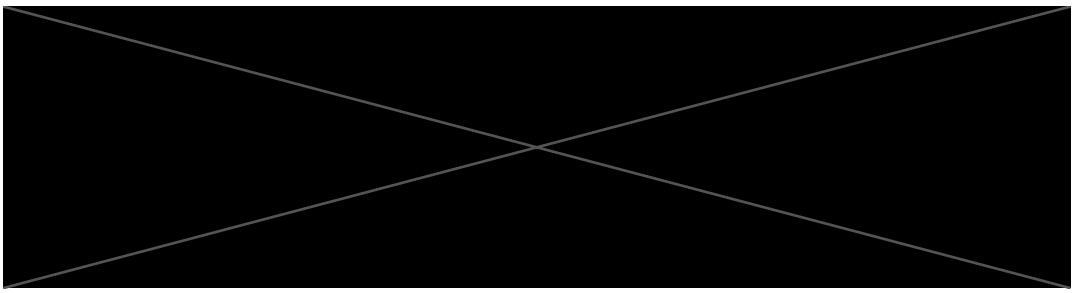
ALTRE LINGUE

	Comprensione		Parlato		Produzione scritta
	Ascolto	Lettura	Interazione	Produzione orale	
Inglese	C2	C2	C2	C2	C2
Francese	B1	C1	B2	B1	B1
Olandese	A2	A2	A2	A2	A2

A1, A2: Utente base; B1, B2: Utente autonomo; C1, C2: Utente avanzato

LINGUAGGI DI PROGRAMMAZIONE Python, Julia, C/C++, Java, Fortran, R, CUDA, SQL, LaTeX

ALTRO



CURRICULUM VITAE DELL'ATTIVITA' SCIENTIFICA E DIDATTICA REDATTO AI SENSI DEGLI ARTT. 46 E 47 DEL D.P.R. 28.12.2000, N. 445 (DICHIARAZIONI SOSTITUTIVE DI CERTIFICAZIONI E DELL'ATTO DI NOTORIETA')*

Il sottoscritto

COGNOME VITI
(per le donne indicare il cognome da nubile)

NOME JACOPO

consapevole che chiunque rilascia dichiarazioni mendaci, forma atti falsi o ne fa uso è punito ai sensi del codice penale e delle leggi speciali in materia,

DICHIARA:

IL SEGUENTE CURRICULUM VITAE

Orcid ID

https://orcid.org/0000-0003-0143-7848

Skype

viti.jacopo

Posizioni accademiche

International Institute of Physics (IIP), Natal, Rio Grande del Nord, Brasile
Dal 2017 fino a ora | Research Leader in Fisica Statistica

Universita` Federale del Rio Grande del Nord (UFRN), Natal, RN, Brazil
Dal 2016 fino a ora | Professore aggiunto (equivalente a RTDb) di Matematica

Max-Planck-Institut für Physik komplexer Systeme, Dresden, Sachsen, Germania
2014-2016 | Postdoc (Postdoc indipendente nel gruppo di R. Moessner)

Laboratoire de physique théorique de l'ENS (LPT-ENS), Paris, Île-de-France, Francia
2012-2014 | Postdoc (Supervisor: D. Bernard)

Educazione

Scuola Internazionale Superiore di Studi Avanzati (SISSA), Trieste, Friuli-Venezia Giulia, IT
2008-2012 | PhD (Fisica Statistica) (Supervisor: G. Delfino)

Universita` di Firenze: Firenze, Italia
2002-2008 | Laurea Specialistica in Fisica (Supervisor: A. Cappelli)

Posizioni su invito

INFN Sezione di Firenze: Sesto Fiorentino, Italia
2020-2021 | Ricercatore a tempo determinato

Informazioni addizionali

Borsista di Produttivita` del CNPQ (Ente Nazionale di Ricerca Brasiliano) dal 2020
Abiltazioni Scientifiche Nazionali Italiane (ASN): II fascia FIS02/A2, II fascia FIS02/B2
Referee per JHEP, JSTAT, JphysA, PRA, PRB, PRL, PRE, PRR, SciPost
Sposato con un figlio

Attivita` di ricerca (parole chiave)

Statistical Field Theory, Low dimensional systems, Conformal Field Theory, Quantum Dynamics and Entanglement, Lattice models

Attivita` didattica e di supervisione di studenti

Livello laurea magistrale (undergraduate): Da Febbraio 2016, insegno i corsi semestrali (uno per semestre) "Vettori e Geometria Analitica", "Algebra Lineare" e "Calcolo I" per studenti del primo e secondo anno della facolta` di Ingegneria della UFRN. Il numero totale di ore di insegnamento e` 120h/semestre, esami inclusi. Il numero totale di studenti che seguno i due corsi e` circa 100/semestre.

Livello laurea specialistica (graduate): – Luglio 2019-Dicembre 2019: Ho insegnato il corso semestrale (60h) "Teoria dei gruppi e Algebre di Lie" al dipartimento di Fisica della UFRN.

– Febbraio 2019-Giugno 2019: Ho insegnato il corso semestrale (60h) "Teoria dei Campi I" al dipartimento di Fisica della UFRN. Il corso introduce le tecniche di calcolo perturbative della teoria dei campi.

– Febbraio 2018-Giugno 2018: Ho insegnato il corso semestrale (60h) "Teoria dei Campi II" al dipartimento di Fisica della UFRN. Il corso introduce le basi della teoria del gruppo di rinormalizzazione.

– Febbraio 2017: Corso "Some aspects of quantum transport", tre lezioni (10h) su invito presso la scuola di dottorato "Statistical Field Theory Lectures" (Galileo Galilei Institute (GGI), Firenze)

Studenti di laurea specialistica – Bruno Henrique Nogueira; (Marzo 2020), "Connettivita` nel modello di Potts bidimensionale"

Progetti per postdocs– Dr. Ivar Lyberg, 2016-2018 (due articoli); 'Monte Carlo study of vertex models'. Adesso impiegato presso la Nordic Investment Bank (Tallin, Estonia).

– Dr. Máté Lencses, 2018-2020 (tre articoli); 'Entanglement in 1+1 QFTs and Truncated Conformal Space

Approach'. Adesso impiegato presso la Universita` di Budapest.

– Dr. Filiberto Ares, 2018-2021 (tre articoli); 'Fluctuations in Quantum Spin Chains'. Adesso impiegato presso la SISSA (Trieste, Italia)

Attivita` di organizzazione

– Aprile 2021 (Rimandata a Settembre 2022, causa Covid-19): Organizzatore insieme a P. Calabrese (SISSA, Italy), O. Castro-Alvaredo (City London, UK), M. Rajapbour (UFF, Brazil) e S. Ryu (Chicago, USA) della conferenza 'Entanglement measures in many-body systems', due settimane, approx. 60 partecipanti. La conferenza e` organizzata dall' IIP.

– Da Febbraio 2020: Organizzatore insieme a P. Calabrese (SISSA, Italy), A. Cappelli (INFN Florence, Italy), J. Dubail (CNRS, France), F. Essler (Oxford, UK), C. Morais-Smith (Utrecht, Netherlands) e A. Trombettoni (Trieste, Italy) della Scuola 'Statistical Field Theory Lectures' al GGI
(Firenze, Italia)

– Maggio 2019: Organizzatore insieme a B. Doyon (Kings College, UK), J. Dubail (CNRS, France), G. Mussardo (SISSA, Italy), M. Rajapbour (UFF, Brazil) della conferenza 'Emergent hydrodynamics in low-dimensional systems', tre settimane, approx. 60 partecipanti.La conferenza e` organizzata dall' IIP.

– Ho anche contribuito all' organizzazione locale e vinto finanziamenti della agenzia nazionale brasiliana CAPES (http://www.capes.gov.br/index.php) per l'organizzazione dei seguenti programmi svolti all' IIP: 'New Trends in Integrable models' (Ago 2016-Nov 2016), 'Finite Systems in Nonequilibrium: From
Quantum Quenches to the Formation of Strong Correlations' (Set 2017), 'Number theory and physics' (Giu 2020).

Seminari in conferenze internazionali (solo come "invited speaker")

Ott 2021: 'Minimal CFTs on Z_3 Riemann surfaces and entanglement negativity', seminario su invito presentato alla conferenza 'Mathematical harmony and the quantum world: celebrating 60 years of Denis Bernard', ENS, Paris, France .

Mag 2021: 'Geometrical correlators in 2d CFTs: an introduction with some open problems', seminario su invito presentato alla conferenza 'Bootstat 2021: conformal bootstrap and statistical models', Institut Pascal, Orsay, France.

Ott 2019: 'Emptiness formation probability and the Painlevé V equation in the Ising spin chain', seminario su invito presentato alla conferenza 'The beauty of theoretical physics, celebrating 60 years of Giuseppe Mussardo', ICTP, Trieste, Italia.

Lug 2019: 'Logarithmic correlations in statistical mechanics', seminario su invito presentato alla conferenza 'Random Geometry and Multifractality in Condensed Matter and Statistical Mechanics', IIP, Natal, Brasile.

Oct 2018: 'Exact logarithmic correlations in critical percolation', seminario su invito presentato alla conferenza 'Exactly Solvable Model', Simon Center for Geometry and Physics, Stony Brook University, USA.

Giu 2018 : 'Exact logarithmic correlations in critical percolation', seminario su invito presentato durante il programma 'Entanglement in Quantum Systems', GGI, Florence, Italy.

Jun 2018: 'Exact logarithmic correlations in critical percolation', seminario su invito presentato durante la conferenza ' Quantum spin chains and integrable models', IIP, Natal, Brasile.

Sep 2017 : 'Analytic solution of the Domain Wall Initial State', seminario su invito presentato durante la conferenza' Finite Systems in Nonequilibrium: From Quantum Quenches to the Formation of Strong Correlations', IIP, Natal, Brasile.

Ago 2016: 'Arctic curves in fermionic systems', seminario su invito presentato alla conferenza 'Boundary degrees of freedom and thermodynamic of integrable models', IIP, Natal, Brasile.

Lug 2016: 'Quantum dynamics after connecting two integrable spin chains', seminario su invito presentato alla conferenza 'Quantum Systems out-of-equilibrium', IIP, Natal, Brasile.

Apr 2016: 'Arctic curves in fermionic systems', seminario su invito presentato alla conferenza 'Statistical Mechanics and Combinatorics', Simon Center for Geometry and Physics, Stony Brook, USA.

Gen 2016: 'Inhomogeneous quenches and arctic curves in fermionic systems', seminario su invito presentato alla conferenza' Mathematical aspects of quantum systems out-of-equilibrium', Isaac Newton
Institute for Mathematics, Cambridge, UK.

Nov 2015: 'Inhomogeneous quenches and arctic curves in fermionic systems', seminario su invito presentato alla conferenza 'Quantum many-body systems out-of-equilibrium', Bad-Honnef, Germania.

Ago 2015: 'Inhomogeneous quenches and arctic curves in fermionic systems', seminario su invito presentato alla conferenza 'Strongly Coupled Field Theory for Condensed Matter', IIP, Natal, Brasile.

Apr 2015: 'Non-equilibrium CFT (with impurities)', seminario su invito presentato alla conferenza 'Statistical physics and low-dimensional systems', Pont-à-Mousson, Francia.

Apr 2013: 'The three-point connectivity in the Q-color Potts model', seminario su invito presentato alla conferenza 'Conformal Invariance in Continuous and Discrete Systems', Simon Center for Geometry and
Physics, Stony Brook, USA.

Seminari su invito presso dipartimenti/istituti

Mar 2021: 'Dynamics of Entanglement in low dimensional systems', seminario online presso il dipartimento di Fisica della Universita` di Genova, Genova, Italia.

Dec 2020 : 'Dynamics of Entanglement in low dimensional systems', seminario online presso il gruppo di
Fisica Statistica della SISSA, Trieste, Italia.

Nov 2020 : 'Dynamics of Entanglement in low dimensional systems', seminario online presso il dipartimento di Matematica della City University, London, UK.

Lug 2020 : 'Entanglement oscillations near a Quantum Critical Point', seminario online presso l' International Institute of Physics (IIP), Natal, Brasile.

Gen 2020: 'Emptiness formation probability and the Painlevé V equation in the Ising spin chain', seminario presso il Racah Institute for Theoretical Physics, Jerusalem, Israele.

Lug 2018: 'Exact logarithmic correlations in critical percolation', seminario presso il dipartimento di Fisica della Universita` di Oxford, Oxford, UK.

Gen 2018: 'Logarithmic correlations in the Ising model', seminario presso il dipartimento di Fisica della Universita` di Firenze, Firenze, Italia.

Dec 2017: 'Analytic solution of the Domain Wall initial state', seminario presso il dipartimento di Fisica della Universita` Fluminense, Niteroi, RJ, Brasile.

Set 2017: 'Logarithmic correlations in the Ising model', seminario presso lo ICTP-SAIFR di São Paulo, Brasile.

Giu 2017: ' Logarithmic correlations in the Ising model', seminario presso la Lorraine University, Nancy, Francia.

Feb 2017: 'Quantum Quenches near a quantum critical point', seminario presso la SISSA, Trieste, Italia.

Feb 2017: 'Arctic curves in fermionic systems', seminario presso il dipartimento di Fisica della Universita` di Firenze, Firenze, Italia.

Apr 2016: 'Dimers on the honeycomb lattice', seminario presso il Simon Center for Geometry and Physics, Stony Brook, USA.

Ago 2015: 'Inhomogeneous quenches and arctic curves in fermionic systems', seminario presso il dipartimento di Fisica della Universita` del Rio Grande del Nord (UFRN), Natal, Brasile

Nov 2014: 'Non-equilibrium steady states in quantum spin chains', seminario presso il dipartimento di Fisica della la Universita` di Dresda, Dresden, Germania.

Mag 2014 'Non-equilibrium steady states in quantum spin chains', seminario presso il dipartimento di Fisica della Universita` di Pisa, Pisa, Italia.

Apr 2014 'Non-equilibrium steady states in quantum spin chains', seminario presso il Max Planck Institute per la Fisica dei Sistemi Complessi (MPIPKS), Dresda, Germania.

Set 2012 ’A Field Theory approach to percolation and phase separation in two dimensions’, seminario presso il LPTMS, Orsay, Francia.

Giu 2012 ’Universal properties of two-dimensional percolation’, seminario presso il LPT-ENS, Paris, Francia.

Curriculum Vitae

Language Skills

Chinese (native), English, Japanese (fluent), currently learning Italian

Education

04/2014 – 03/2017	Ph.D.	**The University of Tokyo**, Tokyo, JAPAN
04/2012 – 03/2014	M.S. Mathematics	**The University of Tokyo**, Tokyo, JAPAN
10/2011 – 03/2012	Research student	**The University of Tokyo**, Tokyo, JAPAN
09/2007 – 07/2011	B.S. Mathematics	**Peking University**, Beijing, CHINA

Professional Experiences

02/2020 – present	**Gran Sasso Science Institute**, L'Aquila, ITALY, postdoctoral fellowship
04/2018 – 01/2020	**CEREMADE**, **Université Paris Dauphine**, Paris, FRANCE postdoctoral fellowship
04/2017 – 03/2018	**Kyushu University**, Fukuoka, JAPAN postdoctoral fellowship

Awards and Fellowships

04/2015 – 03/2017	Research fellowship for young scientists, Japan Society for the Promotion of Science
03/2014	Dean's award, The University of Tokyo
10/2011 – 03/2015	MEXT scholarship, Ministry of Education, Culture, Sports, Science and Technology, Japan
08/2009	ICBS scholarship award, Peking University

Other academic activities

Seminar organisation

03/2021 – present	GSSI math colloquium
10/2017 – 04/2018	Kyushu probability seminar

Date: 22/10/2021

Teaching experience

Gran Sasso Science Institute

11/2020 – 03/2021	Probability and statistical mechanics
	PhD course lecturer
	In charge of basic probability, large deviation theory, introduction of Markov process and introduction of statistical mechanics (16 hours)

The University of Tokyo

10/2016 – 02/2017	Linear algebra (exercise)
	Undergraduate course teaching assistant
10/2015 – 02/2016	Probability and statistics I
	Undergraduate course teaching assistant
10/2014 – 02/2015	Mathematical analysis II
	Undergraduate course teaching assistant
04/2014 – 08/2014	Mathematical analysis I (exercise)
	Undergraduate course teaching assistant

Date: 22/10/2021

Curriculum Vitae et Studiorum

Date Updated

27 October 2021

Personal Data

Last Name:	Zamparo
First Name:	Marco
Work Address:	Department of Physics, University of Bari Aldo Moro, via Amendola 173, I-70126 Bari - Italy
E-mail:	marco.zamparo@uniba.it
ORCIDiD:	0000-0002-1336-0158

Current Position

Fixed-term research assistant (RTDA) at University of Bari Aldo Moro
Sector 02/A2 - Theoretical Physics of Fundamental Interaction
28 December 2020 - 27 December 2023

Research Profile

I graduated in Nuclear Engineering with honours at Polytechnic University of Turin in 2005, where I received a European PhD in Physics in 2009 and I was awarded for the most outstanding doctoral research in 2008. My research interests lie in the fields of Statistical Mechanics and Statistical Physics, Probability Theory, Statistical Inference, and mathematical modelling of biological systems. During the PhD and afterwards, I focused on the modelling of protein folding [1 - 4,9], mechanical protein unfolding [5,6,8,12], and to a smaller extent protein aggregation [10]. In this context, I managed to solve a statistical mechanical model with disorder, computing its quenched free energy [7]. Subsequently, I contributed to the modelling of financial asset dynamics and to Mathematical Finance by developing a stochastic process based on observed scaling symmetries of assets' returns [13 -14] and by using the process to tackle an option pricing problem [16]. I also provided a conclusive solution to a 20-year open problem regarding the apparent multifractality of self-similar Lévy processes [19]. In the framework of Statistics and Bayesian Inference, I proposed an extension of factor analysis to time series with latent Gaussian processes [11] and I contributed to devise a model for prediction of intra-protein residue-residue contacts [15], as well as for identification of interacting proteins in multiprotein systems [18]. In parallel to this, I wrote a review paper on cell signalling with colleagues [17] and I have worked on a stochastic lattice-gas model to describe molecular sorting processes [24]. This work led me to discover that a simple formula exists for the mean time that particles spend in a lattice within stochastic interacting particle systems [20]. I have also been involved in the study of dynamical phase transitions in perturbations of the totally asymmetric simple exclusion process [21,23,25]. Recently, I have established sharp large deviation principles for cumulative rewards in the context of discrete-time Renewal Theory [26] and I have used these results to investigate renewal models of Statistical Mechanics [22], such as models for polymer pinning. In the context of renewal models of Statistical Mechanics, I have also studied precise large deviations for systems at criticality, whereby probability decays are subexponential [27]. I am currently studying large deviations of cumulative rewards with non-lattice waiting time distribution [30] and I am investigating quenched large deviation principles in renewal models and polymer pinning models with disorder [31]. In a different research line, I have probed the transport properties, both quenched and annealed, of the Lévy-Lorentz gas, which basically is a random walk in a long-tailed random environment [28]. Moreover, I have proposed a new method for generation of dependent binary sequences, which relies on a renewal structure [29]. In conclusion, I have authored 25 publications on ISI-indexed international journals, with a total of 366 citations (322 without self-citations) and an h-index of 10. I have been a regular lecturer in Continuum Mechanics and Fluid Dynamics in the International Master of Science programme in Physics of Complex Systems at Polytechnic University of Turin from 2015

to 2017. In 2019 I obtained the Italian National Scientific Qualification as Associated Professor in Mathematical Physics.

Education and Qualifications

- Italian National Scientific Qualification (ASN) as Associated Professor
  Sector 01/A4 - Mathematical Physics
  9 September 2019 - 9 September 2028
- European PhD in Physics
  Polytechnic University of Turin, Department of Physics, 5 February 2009
  Thesis title: *Wako-Saitô-Muñoz-Eaton model: protein folding kinetics and stretching*
  Advisor: Prof. Alessandro Pelizzola
- Master of Science in Nuclear Engineering
  Polytechnic University of Turin, 18 July 2005
  Thesis title: *Metodi meccanico-statistici per il ripiegamento delle proteine*
  Advisor: Prof. Alessandro Pelizzola
  Marks: 110/110 *cum laude*

Awards

2008 Quality Award for the most outstanding doctoral research of the Polytechnic University of Turin

Publications

[1] **M. Zamparo** and A. Pelizzola, *Kinetics of the Wako-Saitô-Muñoz-Eaton model of protein folding*, Phys. Rev. Lett. **97** 068106 (2006)

[2] **M. Zamparo** and A. Pelizzola, *Rigorous results on the local equilibrium kinetics of a protein folding model*, J. Stat. Mech. P 12009 (2006)

[3] P. Bruscolini, A. Pelizzola, and **M. Zamparo**, *Downhill versus two-state protein folding in a statistical mechanical model*, J. Chem. Phys. **126** 215103 (2007)

[4] P. Bruscolini, A. Pelizzola, and **M. Zamparo**, *Rate determining factors in protein model structures*, Phys. Rev. Lett. **99** 038103 (2007)

[5] A. Imparato, A. Pelizzola, and **M. Zamparo**, *Ising-like model for protein mechanical unfolding*, Phys. Rev. Lett. **98** 148102 (2007)

[6] A. Imparato, A. Pelizzola, and **M. Zamparo**, *Protein mechanical unfolding: a model with binary variables*, J. Chem. Phys. **127** 145105 (2007)

[7] **M. Zamparo**, *An exactly solvable model for a β-hairpin with random interactions*, J. Stat. Mech. P 10013 (2008)

[8] A. Imparato, A. Pelizzola, and **M. Zamparo**, *Equilibrium properties and force-driven unfolding pathways of RNA molecules*, Phys. Rev. Lett. **103** 188102 (2009)

[9] **M. Zamparo** and A. Pelizzola, *Nearly symmetrical proteins: folding pathways and transition states*, J. Chem. Phys. **131** 035101 (2009)

[10] **M. Zamparo**, A. Trovato, and A. Maritan, *Simplified exactly solvable model for β-amyloid aggregation*, Phys. Rev. Lett. **105** 108102 (2010)

[11] **M. Zamparo**, S. Stramaglia, J.R. Banavar, and A. Maritan, *Inverse problem for multivariate time series using dynamical latent variables*, Phys. A **391** 3159-3169 (2012)

[12] A. Pelizzola and **M. Zamparo**, *Nonequilibrium dynamics of an exactly solvable Ising-like model and protein translocation*, Europhys. Lett. **102** 10001 (2013)

[13] F. Baldovin, F. Camana, M. Caraglio, A.L. Stella, and **M. Zamparo**, *Aftershock prediction for high-frequency financial markets' dynamics*, in F. Abergel, B.K. Chakrabarti, A. Chakraborti, A. Ghosh, eds., *Econophysics of Systemic Risk and Network Dynamics* (New Economic Windows, Springer 2013), pp. 49-58

[14] **M. Zamparo**, F. Baldovin, M. Caraglio, and A.L. Stella, *Scaling symmetry, renormalization, and time series modeling: The case of financial assets dynamics*, Phys. Rev. E **88** 062808 (2013)

[15] C. Baldassi, **M. Zamparo**, C. Feinauer, A. Procaccini, R. Zecchina, M. Weigt, and A. Pagnani, *Fast and accurate multivariate Gaussian modeling of protein families: Predicting residue contacts and protein-interaction partners*, PLOS ONE **9** e92721 (2014)

[16] F. Baldovin, M. Caporin, M. Caraglio, A.L. Stella, and **M. Zamparo**, *Option pricing with non-Gaussian scaling and infinite-state switching volatility*, J. Econometrics **187** 486-497 (2015)

[17] **M. Zamparo**, F. Chianale, C. Tebaldi, M. Cosentino-Lagomarsino, M. Nicodemi, and A. Gamba, *Dynamic membrane patterning, signal localization and polarity in living cells*, Soft Matter **11** 838-849 (2015)

[18] T. Gueudre, C. Baldassi, **M. Zamparo**, M. Weigt, and A. Pagnani, *Simultaneous identification of specifically interacting paralogs and interprotein contacts by direct coupling analysis*, Proc. Natl. Acad. Sci. U.S.A. **113** 12186-12191 (2016)

[19] **M. Zamparo**, *Apparent multifractality of self-similar Lévy processes*, Nonlinearity **30** 2592-2611 (2017)

[20] **M. Zamparo**, L. Dall'Asta, and A. Gamba, *On the mean residence time in stochastic lattice-gas models*, J. Stat. Phys. **30** 120-134 (2019)

[21] D. Botto, A. Pelizzola, M. Pretti, and **M. Zamparo**, *Dynamical transition in the TASEP with Langmuir kinetics: mean-field theory*, J. Phys. A: Math. Theor. **52** 045001 (2019)

[22] **M. Zamparo**, *Large deviations in renewal models of statistical mechanics*, J. Phys. A: Math. Theor. **52** 495004 (2019)

[23] D. Botto, A. Pelizzola, M. Pretti, and **M. Zamparo**, *Unbalanced Langmuir kinetics affects TASEP dynamical transitions: mean-field theory*, J. Phys. A: Math. Theor. **53** 345001 (2020)

[24] **M. Zamparo**, D. Valdembri, G. Serini, I.V. Kolokolov, V.V. Lebedev, L. Dall'Asta, and A. Gamba, *Optimality in self-organized molecular sorting*, Phys. Rev. Lett. **126** 088101 (2021)

[25] A. Pelizzola, M. Pretti, and **M. Zamparo**, *Simple exclusion processes with local resetting*, Europhys. Lett. **133** 60003 (2021)

[26] **M. Zamparo**, *Large deviations in discrete-time renewal theory*, Stoch. Process. Their Appl. **139** 80-109 (2021)

[27] **M. Zamparo**, *Critical fluctuations in renewal models of Statistical Mechanics*, accepted for publication in J. Math. Phys. (arXiv:2006.09298)

Submitted

[28] **M. Zamparo**, *Large fluctuations and transport properties of the Lévy-Lorentz gas*, under review in Ann. Inst. H. Poincaré Probab. Statist. (arXiv:2010.09083)

[29] **M. Zamparo**, *Renewal model for dependent binary sequences*, under review in J. Stat. Phys. (arXiv:2108.11293)

In Preparation

[30] **M. Zamparo**, *Large deviation principles for renewal-reward processes*

[31] **M. Zamparo** and F. den Hollander, *Quenched large deviations and cocycles in renewal theory*

Major Collaborations

- Carlo Baldassi. Bocconi University, Department of Decision Sciences, 2 joint publications
- Fulvio Baldovin. University of Padua, Department of Physics and Astronomy, 3 joint publications
- Jayanth Banavar. University of Maryland, Department of Physics, 1 joint publication
- Pierpaolo Bruscolini. University of Zaragoza, Department of Theoretical Physics, 2 joint publications
- Massimiliano Caporin. University of Padua, Department of Statistical Sciences, 1 joint publication
- Marco Cosentino-Lagomarsino. Sorbonne University and CNRS, Institut de Biologie Paris-Seine, Laboratory of Computational and Quantitative Biology, 1 joint publication
- Luca Dall'Asta. Polytechnic University of Turin, Department of Applied Science and Technology, 2 joint publications
- Andrea Gamba. Polytechnic University of Turin, Department of Applied Science and Technology, 3 joint publications
- Alberto Imparato. Aarhus University, Department of Physics and Astronomy, 3 joint publications
- Igor V. Kolokolov. Landau Institute for Theoretical Physics, 1 joint publication
- Vladimir V. Lebedev. Landau Institute for Theoretical Physics, 1 joint publication
- Amos Maritan. University of Padua, Department of Physics and Astronomy, 2 joint publications
- Mario Nicodemi. University of Naples Federico II, Department of Physics, 1 joint publication
- Andrea Pagnani. Polytechnic University of Turin, Department of Applied Science and Technology, 2 joint publications
- Alessandro Pelizzola. Polytechnic University of Turin, Department of Applied Science and Technology, 12 joint publications
- Marco Pretti. National Research Council (Italy), Institute for Complex Systems, 3 joint publications
- Attilio Stella. University of Padua, Department of Physics and Astronomy, 3 joint publications
- Guido Serini. University of Turin, Department of Oncology, 1 joint publication
- Sebastiano Stramaglia. University of Bari Aldo Moro, Department of Physics, 1 joint publication
- Antonio Trovato. University of Padua, Department of Physics and Astronomy, 1 joint publication
- Donatella Valdembri. University of Turin, Department of Oncology, 1 joint publication
- Martin Weigt. Sorbonne University and CNRS, Institut de Biologie Paris-Seine, Laboratory of Computational and Quantitative Biology, 2 joint publications
- Riccardo Zecchina. Bocconi University, Department of Decision Sciences, 1 joint publication

Research Fellowships

- Fellow in Statistical Mechanics in the group of Prof. Alessandro Pelizzola. Polytechnic University of Turin, Department of Applied Science and Technology, 16 January 2020 - 27 December 2020
- Postdoc in Mathematical Physics in the group of Prof. Andrea Gamba. Polytechnic University of Turin, Department of Applied Science and Technology, 16 January 2018 - 15 January 2020
- Postdoc in Statistical Inference in the group of Prof. Alfredo Braunstein. Polytechnic University of Turin, Department of Applied Science and Technology, 16 July 2016 - 15 January 2018
- Postdoc in Statistical Physics in the group of Prof. Riccardo Zecchina. Polytechnic University of Turin, Department of Applied Science and Technology, 1 December 2013 - 31 May 2016
- Researcher in Statistical Physics in the group of Prof. Riccardo Zecchina. Human Genetics Foundation - Torino, 1 January 2012 - 30 November 2013
- Postdoc in Econophysics in the group of Prof. Attilio Stella. University of Padua, Department of Physics and Astronomy, 1 May 2010 - 31 December 2011
- Postdoc in Protein Physics in the group of Prof. Amos Maritan. University of Padua, Department of Physics and Astronomy, 1 January 2009 - 30 April 2010
- PhD fellow in Physics. Polytechnic University of Turin, Department of Physics, 1 January 2006 - 31 December 2008
- Fellow in Statistical Mechanics in the group of Prof. Alessandro Pelizzola. Polytechnic University of Turin, Department of Physics, 1 September 2005 - 31 December 2005

Project Participation

- PRIN 2007 - Progetti di Ricerca di Interesse Nazionale "Amiloidi e ripiegamento di proteine: un approccio teorico-sperimentale" (2 years). Coordinator: Prof. Amos Maritan
- Progetto di Eccellenza 2008-2009 Fondazione Cassa di Risparmio di Padova e Rovigo "Anomalous scaling in physics and finance" (2 years). Coordinator: Prof. Attilio Stella
- PRIN 2010-2011 - Progetti di Ricerca di Interesse Nazionale "Statistical mechanics of disordered and complex systems" (3 years). Coordinator: Prof. Giorgio Parisi
- MSCA-RISE-2016 - Marie Skłodowska-Curie Research and Innovation Staff Exchange "New algorithms for inference and optimization of large scale biological data" (4 years). Coordinator: Prof. Andrea Pagnani
- REFIN 2020 - Research for Innovation "Analisi della risposta emodinamica da segnali di risonanza magnetica funzionale per il monitoraggio della capacità cognitiva" (3 years). Coordinator: Prof. Sebastiano Stramaglia

Conferences and Seminars

- University of Paris, UFR de Mathématiques, 19 November 2020. Invited seminar: *Large fluctuations and transport properties of the Lévy-Lorentz gas*
- University of Bologna, Department of Mathematics, 5 November 2020. Invited seminar: *Large fluctuations and transport properties of the Lévy-Lorentz gas*
- Workshop "Interdisciplinary Topics in Statistical Physics: a meeting in honor of Attilio Stella". Padova, 19 - 20 September 2019. Invited talk: *Apparent multifractality of self-similar Lévy processes*
- Italian national conference on Statistical Physics and Complex Systems. Parma, 24 - 26 June 2019
- Workshop "Statistical Physics Approaches to Systems Biology". Havana, 14 - 15 February 2019. Talk: *Large deviation principles in renewal theory*

- Italian national conference on Statistical Physics and Complex Systems. Parma, 20 - 22 June 2018. Invited talk: *On the mean residence time in stochastic lattice-gas models*
- University of Zaragoza, Institute for Biocomputation and Physics of Complex Systems, 4 May 2018. Invited seminar: *Residence time and optimality in self-organized molecular sorting*
- Polytechnic University of Turin, Department of Mathematics, 19 April 2018. Invited seminar: *Large deviation principles in renewal theory*
- University of Padua, Department of Mathematics, 23 March 2018. Invited seminar: *Large deviation principles in renewal theory*
- SM&FT 2017. Bari, 13 - 15 December 2017. Invited talk: *Large deviations in renewal models of statistical mechanics*
- Biophys 2017. Pisa, 25 - 26 September 2017. Talk: *Optimality in self-organizing molecular sorting*
- Assemblea Scientifica GNFM. Montecatini Terme (Pistoia), 4 - 6 May 2017. Talk: *Apparent multifractality of self-similar Lévy processes*
- Italian national conference on Statistical Physics and Complex Systems. Parma, 29 June - 1 July 2015. Invited talk: *A solvable example of non-strictly-convex large deviation principle in statistical mechanics*
- Conference "Regulation and inference in biological systems". Bardonecchia (Turin), 2 - 6 February 2015
- Workshop "Protein physics: structure, dynamics and function". Brixen (Bolzano), 6 - 8 February 2014. Invited talk: *Nonequilibrium dynamics of an exactly solvable Ising-like model and protein translocation*
- Workshop "Statistical modeling, financial data analysis and applications". Venice, 11 - 14 September 2013. Invited talk: *Scaling symmetry and financial time series modeling*
- Italian national conference on Statistical Physics and Complex Systems. Parma, 24 - 26 June 2013
- Italian national conference on Statistical Physics and Complex Systems. Parma, 22 - 24 June 2011
- Workshop "Quantitative finance". Padua, 27 - 28 January 2011
- Workshop "Physics of protein folding and aggregation". Brixen (Bolzano), 11 - 12 February 2010
- Workshop "Interdisciplinary topics in statistical mechanics". Venice, 16 - 18 April 2009
- Biophys 2008. Arcidosso (Grosseto), 10 - 12 September 2008. Talk: *Pathways and transition states in protein folding*
- Italian national conference on Statistical Physics and Complex Systems. Parma, 23 - 25 June 2008. Poster: *Application of spectral coarse-graining to a protein folding model*
- Statphys 23. Genova, 9 - 13 July 2007. Poster: *Wako-Saitô-Muñoz-Eaton Model and protein folding kinetics*
- Italian national conference on Statistical Physics and Complex Systems. Parma, 20 - 21 June 2007. Talk: *Wako-Saitô-Muñoz-Eaton model and protein folding kinetics*

Attended Schools and Training Visits

- International School on Statistical Physics Approaches to Systems Biology. Havana, 4 - 13 February 2019
- 2-month visit in the group of Prof. Roberto Mulet. University of Havana, Department of Theoretical Physics, 18 December 2018 - 18 February 2019
- International School on Multidisciplinary Approaches to Economic and Social Complex Systems. Siena, 27 June - 3 July 2010
- 3-month visit in the group of Prof. Paolo De Los Rios. Ecole Polytechnique Fédérale de Lausanne, Laboratory of Statistical Biophysics, 1 May - 31 July 2007
- International School of Physics "Enrico Fermi" on Protein Folding and Drug Design. Varenna (Lecco), 4 - 14 July 2006
- Séminaire Transalpin de Physique on Non-Equilibrium Statistical Mechanics. Champex-Lac (Entremont District), 5 - 11 March 2006

Institutional Responsibilities

PhD student representative. Polytechnic University of Turin, Department of Physics, January 2006 - December 2008

Positions of Trust

Reviewer for Physical Review E, Europhysics Letters, Journal of Statistical Mechanics: Theory and Experiment, Journal of Physics A: Mathematical and Theoretical, Stochastic Processes and their Applications

Supervision Activity

- Co-Supervisor of Master student Luca Pertile. University of Padua, October 2011 - April 2012. Thesis title: *Calibration of self-similar strongly correlated stochastic processes on the basis of a single time series*
- Co-Supervisor of Master student Stefano Ruzza. University of Turin, January 2015 - October 2015. Thesis title: *Inferenza statistica e criticità*

Teaching

- Lecturer in Mathematical and Numerical Methods for Geophysics in the Master programme in Geological and Geophysical Sciences at University of Bari Aldo Moro. University of Bari Aldo Moro, September 2021 - December 2021
- Regular lecturer in Continuum Mechanics and Fluid Dynamics in the International Master programme in Physics of Complex Systems at Polytechnic University of Turin. Polytechnic University of Turin, May 2015 - May 2017
- Tutor in Classical Mechanics. Polytechnic University of Turin, January 2006 - December 2008

Software Skills

Confident user of Linux, Fortran, Matlab, and Latex

Language Skills

Italian (native) and English (fluent)

CURRICULUM VITAE
Marta Zoppello

Formazione

- **Abilitazione Scientifica Nazionale di II Fascia,** Settore Concorsuale 01/A4 Fisica Matematica valida dal 9/11/2020 al 9/11/2029.
- **Qualification a Maitre de Conferences** ottenuta nel 2018
- **Dottorato in matematica** presso L'università degli studi di Padova con tesi: "Controllability and optimization of deformable bodies in fluids: from biology to robotics". Supervisore: prof. Franco Cardin.
  Titolo ottenuto il 9 Marzo 2016.
- **Laurea Magistrale in Matematica** pressol l'Università degli studi di Padova con punteggio110/110 cum laude con tesi: "Self-propulsion by shape changes, and controllability of biological and artificial systems: some case studies." Supervisori: prof. Antonio De Simone (SISSA) prof. Franco Cardin (Università di Padova).
  Titolo ottenuto il 5 Luglio 2012.
- **Laurea triennale in** presso l'Università degli studi di Padova con tesi: "Ideal and viscous Fluid Dynamics Problems relative to the motion of amphibians: fish and swimmers. " Punteggio: 106/110. Supervisore: prof. Franco Cardin.
  Titolo ottenuto il 22 Luglio 2010.

Interessi scientifici

Modellizzazione e controllo di corpi deformabili in fluidi, nuotatori e micronuotatori. Teoria geometrica del controllo e controllo ottimo. Sistemi con Isteresi e loro controllo. Generazione di traiettorie e motion planning per sistemi meccanici di controllo con simmetria. Modelli semplici per la valvola mitrale ottenuti nell'ambito di corpi elastici
.

Posizioni di ricerca

- Dal 16 Luglio 2020 ad oggi, **Ricercatrice di tipo A** in Fisica

Matematica al Politecnico di Torino.

- 16 Luglio 2019-15 Luglio 2020 **Assegno di ricerca post dottorato** al Politecnico di Torino con tema: “Modelli matematici per la dinamica di sistemi attivi in fluidi: descrizione matematica, controllo e analisi” sotto la supervision del prof. Davide Ambrosi.
- 1 Aprile 2019-15 luglio 2019 **assegno di ricerca post dottorato** all’Università di Verona sul progetto: “Teoria geometrica del controllo e teoria della ricostruzione su fibrati principali per sistemi meccanici di controllo”
- Gennaio 2017-Dicembre 2018: **Assegno di ricerca post dottorato Junior** all’Università degli studi di Padova. Titolo: "Controllability and Optimization Techniques for Mechanical Systems: from Biology to Robotics".
  Supervisori: Franco Cardin e Franco Rampazzo.
- Da Gennaio a Dicembre 2016: **assegno di ricerca post dottorato** all’Università degli studi di Trento all’interno del progetto: "OptHySYS: Optimization techniques for hybrid dynamical systems: from theory to applications".
  Supervisore: Fabio Bagagiolo.
- Agosto-Settembre 2012: **Borsa di studio post lauream** presso la SISSA di Trieste in matematica applicata.
  Supervisore Antonio DeSimone.

Conferenze, scuole estive e collaborazioni di ricerca

- **<u>Seminari su Invito</u>**

- 20-24 Settembre 2021 invited speaker all’INDAM meeting “Active Materials: from Mechanobiology to Smart Devices” con seminario dal titolo: “Kinetic and mean field control of cells through leaders”
- 30 Agosto-03 Settembre 2021invited speaker alla conferenza SIMAI 2020+2021 con seminario all’interno del Minisimposia “Mathematical models for cells migration” dal titolo “Kinetic and mean field control of cells through leaders”
- 09 Luglio 2020 invitata dall’Università di Glasgow a tenere il seminario online “Rods in contact under pressure”
- 06-08 Giugno 2019 Invited speaker al workshop “Math from the Body” Venezia, con seminario: “A model for magnetic microrobots for drug delivery”
- 04-08 Febbraio 2019 invited speaker nella sessione speciale “Estructuras geométricas aplicadas a mecánica clásica,

teoría de control e ingeniería" al *Congreso Bienal de la Real Sociedad Matematica Espanola* con seminario: "Microswimmer robots and their control".

- 25-29 Settembre 2017 Invited speaker alla conferenza "Control of state constrained dynamical systems" Padova con seminario: "Controllability properties of dynamical systems with hysteresis".
- Gennaio 2017 seminario "Controllability properties of dynamical systems with hysteresis" all'interno del workshop "Hybrid dynamical systems: optimization stability and applications"
- 14-17 Settembre 2015 seminario at XXII Congresso - Associazione Italiana di Meccanica Teorica e Applicata (AIMETA) intitolato: "Planar swimming in ideal fluids"

- **Contributed talks**

- 11-13 Dicembre 2019 presentazione del proceeding "Optimal motion of a scallop, some case studies" alla 58th conference on Decision and Control (CDC) Nizza-Francia 2019.
- 17-20 Settembre 2019 seminario "Optimal motion of a scallop, some case studies" alla French German Swiss conference on Optimization Nizza 2019.
- 3-10 Giugno 2018 seminario "Motion Planning via Reconstruction Theory" alla conferenza Symmetry and Perturbation Theory (SPT) 2018 Pula
- 2-6 Luglio 2018 seminario "Motion Planning via Reconstruction Theory" al 12th International ICMAT Summer School on Geometry, Mechanics and Control
- 22-24 Gennaio 2018 seminario "Controllability of the hydro-Chaplygin sleigh" al 12th young researcher workshop on Geometry Mechanics and Control
- 17-21 Settembre 2017 seminario "Design and steering of a magneto-elastic micro-swimmer inspired by the motility of sperm cells" all'interno del workshop "Mathematical Modeling and Self-Organization in Medicine, Biology and Ecology: from Micro to Macro" Giardini di Naxos .
- 9-13 Luglio 2017 partecipazione al 20th World Congress of the International Federation of Automatic Control con presentazione del proceeding: *"Purcell magneto-elastic swimmer controlled by an external magnetic field"*
- Maggio 2017 seminario "Swimming by switching" all'Assemblea Nazionale del Gruppo Nazionale di Fisica

Matematica (GNFM)

- 28-30 Settembre 2015 seminario all'International Workshop Multiscale Models in Mechano and Tumor Biology: Modeling, Homogenization, and Applications intitolato: "Modelization, controllability and optimal strokes for N-link Microswimmer".
- Dicembre 2014 seminario "Planar swimming in ideal fluids" a Trento e Bressanone all'interno del workshop "Current Problems in fluid-dynamics and non-equilibrium thermodynamics".
- Ottobre 2014 seminario "Controllability and Optimal strokes for N-link Microswimmer" all'interno del trimestre di Geometria Sub-Riamanniana, Parigi
- Dicembre 2013 seminario "Locomotion in fluids" alla SISSA Trieste.

- **Scuole estive**

- 02-06 Luglio 2018 partecipazione al12th ICMAT International summer School on Geometry, Mechanics and Control a Santiago di Compostela
- 04-16 Settembre 2017 partecipazione alla XLII "Summer School of Mathematical Physics" in Ravello
- 26-30 Giugno 2017 partecipazione al 11th ICMAT International summer School on Geometry, Mechanics and Control a Madrid
- 4-8 Luglio 2016 partecipazione al 22° CISM-IUTAM International Summer School su "Biological and Bio-inspired Fluid Mechanics"
- Settembre 2012 partecipazione alla "Summer School of Mathematical Physics" a Ravello.
- Settembre 2011 partecipazione alla "Summer School of Mathematical Physics" in Ravello.

- **Posters**

- Poster intitolato "Scalloping with friends" al workshop "Micro-Swimmers and Soft Robotics" Israel 3-5 Febbraio 2020.

- **Organizzazione di workshops**

- 11 Dicembre 2020 organizzazione del workshop online: "Understanding locomotion: Nature-inspired mathematical models".

- 22-24 Gennaio 2018 membro della commissione organizzatrice del 12th young researcher workshop on Geometry Mechanics and Control
- 4 Novembre 2016 organizzazione del workshop “Controllabily and Hysteresis” a Trento

- **<u>collaborazioni di ricerca all’estero</u>**

- Luglio 2013 ospite di F. Alouges all’École Polytechnique a Parigi
- Febbraio 2017 ospite di J.B. Pomet e L. Giraldi all’INRIA Sophia Antipolis a Nizza
- Agosto 2018 ospite per una settimana di Cesare Tronci all’University of Surrey a Guidford.

Progetti:

- Da Marzo 2016 a Marzo 2017 coordinatore del progetto coordinator GNAMPA: “Controllability of ordinary differential systems with hysteresis and application to control of micro-swimmers.”
- Da Novembre 2016 al 2018 membro del progetto CNRS: “Control and Optimality of Magnetic Micro-robot (C.O.M.M.)”
- Da Giugno 2017 a Giugno 2018 coordinatore del progetto giovani GNFM: “Controllo Geometrico e Pianificazione di Traiettorie di Sistemi Dinamici con Simmetria su Fibrati Principali”
- Da Luglio 2019 a Dicembre 2020 membro del progetto giovani GNFM: “Controllability and trajectory generation and nonholonomic mechanics “
- Da Gennaio 2021 a Giugno 2022 membro del progetto giovani GNFM: “Control of tumor growth: mathematical models and geometric aspects”

Esperienza didattica:

- Ottobre2021-Gennaio 2022 Titolare del corso di Probabilità e Statistica del corso di laurea in architettura presso il

Politecnico di Torino
- Marzo 2021 Titolare del corso di dottorato ``Geometric control theory and self-propulsion in fluids'' presso il Politecnico di Torino
- Ottobre 2020-Gennaio 2021 esercitatrice del corso di Probabilità e Statistica del corso di laurea in architettura del Prof Silvio Mercadante Politecnico di Torino
- Ottobre 2019-Gennaio 2020 esercitatrice del corso Istituzioni di Matematiche della prof. Patrizia Semeraro Politecnico di Torino
- Marzo-Giugno 2019 co-titolare del corso diSistemi Dinamici per la laurea triennale all'Università di Verona.
- Da Marzo a Giugno 2019 esercitatrice del corso di *Fisica Matematica* del Prof. Franco Cardin Università di Padova.
- Ottobre 2018-Gennaio 2019 titolare del corso di Analisi I per la laurea triennnale in Informatica all'Università di Verona
- Da Marzo a Giugno 2018 esercitatrice per il corso di*Fisica Matematica* del Prof. Franco Cardin Università di Padova.
- Da Marzo a Giugno 2018 esercitatrice del *Istituzioni di Fisica Matematica* del Prof. Francesco Fassò Università di Padova.
- Novembre 2017 titolare del corso di dottorato ``Geometric control theory and self-propulsion in fluids'' all'Università di Padova
- Da Marzo a Giugno 2017 esercitatrice del corso di *Fisica Matematica* del Prof. Franco Cardin University of Padova.
- Da Marzo a Giugno 2015 esercitatrice del corso di *Fisica Matematica* del Prof. Franco Cardin University of Padova .
- Da Marzo a Giugno 2014 esercitatrice del corso di *Fisica Matematica* del Prof. Franco Cardin University of Padova

Supervisione tesi di Laurea

- 2016 co-supervisione della tesi magistrale di Simone Passerella presso l'Università degli studi di Padova
- 2021 supervisione della tesi triennale di Edoardo Voglino presso il Politecnico di Torino

Lingue Straniere

Buona conoscenza dell'Inglese sia scritta che orale certificate da:
- 2009 certificato di frequenza di un corso di inglese all'EC

Cambridge school a Cambridge.
- Maggio 2007 First Certificate in English (Council of Europe Level B2) rilasciato dalla Cambridge ESOL Examinations, Grade B;
- Giugno 2005 Preliminary English Test (Council of Europe Level B1) rilasciato dalla ESOL Examinations, Pass with Merit;

Conoscenza base del francese.

Competenze informatiche:

Conoscenza dei linguaggi di programmazione C e C++ e conoscenza di base di programmazione ad oggetti in C++. Uso di: Mathematica, Matlab, Latex.

Articoli:

- Ariticoli in rivista

- F. Alouges, A. DeSimone, L. Giraldi, and M. Zoppello. *Self-propulsion of slender micro-swimmers by curvature control: N-link swimmers.* International Journal of Non-Linear Mechanics, 56: 132-141 November (2013).
- L. Giraldi, P. Martinon, M. Zoppello *Optimal Design of the Three-link Purcell Swimmer.* Physical Review E 91, 023012 (2015)
- F. Alouges, A. DeSimone, L. Giraldi, M. Zoppello. *Can magnetic multilayers propel artificial micro-swimmers mimicking sperm cells?* Soft Robotics 2(3): 117-128 (2015)
- F. Bagagiolo, R. Maggistro, M. Zoppello *Swimming by switching* Meccanica (2017) doi:10.1007/s11012-017-0620-6
- D. Bauso, F. Bagagiolo, R. Maggistro, M. Zoppello *Game theoretic decentralized feedback controls in Markov jump Processes* J Optim Theory Appl 173: 704 (2017).
- M. Menci, G. Oliva, M. Papi, R. Setola, M. Zoppello *Distributed Utility Estimation With Heterogeneous Relative Information* IEEE Control Systems Letters 2(2): 248-253 (2018)

- M. Zoppello, A. DeSimone, F. Alouges, L. Giraldi
  Modeling and steering magneto-elastic micro-swimmers inspired by the motility of sperm cells
  Atti dell'Accademia Peloritana dei Pericolanti-Classe di Scienze Fisiche, Matematica e Naturali 96, A12 (2018)
- M. Zoppello, F. Cardin
  Swim-like motion of bodies immersed in an ideal fluid
  ESAIM: COCV 25(16) (2019)
- R. Maggistro, M. Zoppello
  Optimal motion of a scallop: some case studies
  IEEE Control Systems Letters 3(4),8725532, 841-846 (2019)
- F. Bagagiolo, R. Maggistro, M. Zoppello
  A differential game with exit cost
  Dynamic Games and Applications 10(2), pp. 297-327 (2020)
- F. Bagagiolo, R. Maggistro, M. Zoppello
  A hybrid differential game with switching thermostatic-type dynamics and cost
  Minimax Theory and its Applications 5(2), 1-30, (2020)
- F. Bagagiolo, M. Zoppello
  Hysteresis and controllability of driftless affine systems:some case studies
  Mathematical Modelling of Natural Phenomena 15(55) (2020)
- F. Fassò, S. Passarella, M. Zoppello
  Control of locomotion systems and dynamics in relative periodic orbits.
  Journal of Geometric Mechanics 12(3), 395-420, (2020)
- N. Sansonetto, M. Zoppello
  On the trajectory generation of the Hydrodynamic Chapligyn sleigh
  IEEE Control Systems Letters 4(4), 9098917,922-927 (2020)
- S. Turzi, M. Zoppello, D. Ambrosi
  Equilibrium of two rods in contact under pressure
  Quarterly Journal of Mechanics and Applied Mathematics,hbaa016 (2021)
- D. Ambrosi, L. Deorsola, S.S. Turzi, M. Zoppello
  Elementary mechanics of the mitral valve
  Accepted for pubblication in *SIAM Journal on Applied Mathematics* (SIAP)

- <u>Proceedings:</u>

  - L. Giraldi, P. Martinon, M. Zoppello.

Controllability and Optimal Strokes for N-link Microswimmer
52nd IEEE Annual Conference on Decision and Control
Florence (2013)

- F. Alouges, A. DeSimone, L. Giraldi, M. Zoppello
  Purcell Magneto-Elastic Swimmer Controlled by an External Magnetic Field
  20th IFAC Conference Tolosa (2017)

- Capitoli di libri:

  - M. Zoppello, A. DeSimone, F. Alouges, L. Giraldi, P. Martinon
    Optimal control of slender microswimmers
    Book chapter in Gerisch A., Penta R., Lang J. Multiscale Models in Mechano and Tumor Biology: Modeling, Homogenization, and Applications.
    Lecture Notes in Computational Science and Engineering
    Springer Verlag Heidelberg vol 122, chap 8 (2017)

- Preprints:

  - R. Marchello, M. Morandotti, H. Shum, M. Zoppello
    The N-link swimmer in three dimensions: controllability and optimality results
  - H. Gadhela, M. Mrandotti, M. Zoppello
    Scalloping with friends
  - M. Astwood, H. Shum, M. Zoppello, M. Morandotti
    Remote Control of Particles in Microhydrodynamic Suspensions