Elenco delle pubblicazioni

'Corresponding author' marks papers as lead or full co-lead. Citations from NASA ADS, including link to entry.

1) **M. Gatti**, N. Jeffrey, L. Whiteway, …, P. Wiseman (DES collaboration) "Detection of the significant impact of source clustering on higher order statistics with DES Year 3 weak gravitational lensing data" , MNRAS Letters L115-L121 , (2024) **corresponding author**, 1st out of 101, 8 citations
2) **M. Gatti**, B. Jain, C. Chang, …, T.N. Varga (DES collaboration) "Dark Energy Survey Year 3 results: cosmology with moments of weak lensing mass maps" Phys. Rev D 105, 023520 (2022), **corresponding author**, 1st out of 110, 40 citations
3) T.M.C. Abbott, M. Aguena, A. Alarcon, …, J. Zuntz(DES Collaboration), "Dark Energy Survey Year 3 results: Cosmological Constraints from Galaxy Clustering and Weak Lensing", Phys. Rev. D 98, 043526 (2022) (alphabetical order paper, p), 651 citations
4) **M. Gatti**, S. Pandey, E. Baxter, …, Z. Xu (DES and ACT collaborations) "Cross-correlation of DES Year 3 lensing and ACT/Planck Sunyaev Zel'dovich Effect measurements I: measurements, systematics tests, and feedback model constraints", Phys. Rev. D 105, 123525 (2022), **corresponding author**, 1st out of 119 25 citations
5) **M. Gatti**, G. Giannini, G. Bernstein, …, R.D. Wilkinson (DES collaboration) "Dark Energy Survey Year 3 Results: Clustering Redshifts – Calibration of the Weak Lensing Source Redshift Distributions with redMaGiC and BOSS/eBOSS", MNRAS, 510 1223-1247, (2021), **corresponding author**, 1st out of 99, 52 citations
6) N. Jeffrey & **M. Gatti**, C. Chang, …, J.D. Weller (DES collaboration) " Dark Energy Survey Year 3 results: curved-sky weak lensing mass map reconstruction" MNRAS, 505, 4626-4645 (2021) **corresponding author**, 2nd out of 131 52 citations
7) **M Gatti**, E. Sheldon, A. Amon, …, R.D. Wilkinson (DES collaboration) " Dark Energy Survey Year 3 Results: Weak Lensing Shape Catalogue", MNRAS 504 4312-4336 (2021), **corresponding author**, 1st out of 104 108 citations
8) **M Gatti**, C. Chang, B. Jain, …, J. Zuntz (DES collaboration) " Dark Energy Survey Year 3 Results: cosmology with moments of weak lensing mass maps – validation on simulations" , MNRAS 4988 4060-4087 (2020), **corresponding author**, 1st out of 72 44 citations
9) T.M.C. Abbott, F.B. Abdalla, A. Alarcon, …, J. Zuntz (DES Collaboration), "Dark Energy Survey Year 1 results: Cosmological Constraints from Galaxy Clustering and Weak Lensing", Phys. Rev. D 98, 043526 (2018) (alphabetical order paper), 1016 citations
10) **M. Gatti**, P. Vielzeuf, C. Davis, …, R.C. Wolf (DES collaboration) "Dark Energy Survey Year 1 Results: Cross-Correlation Redshifts - Methods and Systematics Characterization", MNRAS 477 1664-1682 (2018) , **corresponding author**, 1st out of 107 , 71 citations
11) **M. Gatti**, F. Shankar, V. Bouillot, ..., F.Fiore "Constraining AGN triggering mechanisms through the clustering analysis of active black holes", MNRAS 456, 1073-1092 (2016) **corresponding author**, 1st out of 7, 20 citations
12) **M. Gatti**, A. Lamastra, N. Menci, A. Bongiorno, F.Fiore "Physical properties of AGN host galaxies as a probe of supermassive black hole feeding mechanisms", A&A 576, A32 (2015) **corresponding author**, 1st out of 5, 13 citations

Tesi di dottorato

Title: “Weak lensing in DES Y3: redshift distributions, shape catalogue, and mass mapping”

- Marco Gatti(Barcelona, IFAE)

Sep, 2020, 273 pages
Supervisors:

- Ramon Miquel(Barcelona, IFAE)
- Chihway Chang(Chicago U., KICP)

Thesis: PhD

- Barcelona, IFAE

(defense: Sep, 2020)

- Published: 2020

DOI:

- 10.2172/1771180

Report number:

- FERMILAB-THESIS-2020-25

Experiments:

- DES

View in:

- OSTI Information Bridge Server

Elenco Descrittivo delle Pubblicazioni Presentate

Nell'elenco delle pubblicazioni presentate ai fini della procedura ho inserito 9 delle mie pubblicazioni a primo nome (sulle 11 totali). Tali pubblicazioni illustrano la varietà della ricerca che ho condotto da leader (composizione chimica della Luna, ammassi globulari, ammassi nucleari, popolazioni stellari, etc.). Inserisco, altresì, una pubblicazione ad alto impatto a cui ho fornito un contributo fondamentale (la numero [10]) e due paper importanti prodotti da studenti di PhD che ho supervisionato ([11] e [12]). I paper pubblicati senza il mio supervisor di Tesi sono indicati con (*). Per ogni pubblicazione fornisco una breve descrizione del mio contributo e del risultato scientifico principale. Il numero di citazioni menzionato ha come sorgente ADS. L'elenco numerato e non descrittivo delle stesse pubblicazioni è presentato nell'ultima pagina di questo documento.

1. (*) **Mastrobuono-Battisti, A.**, Perets, H. B. & Raymond S. N., 2015, *"A primordial origin for the composition similarity between the Earth and the Moon"*, **Nature**, 520, 212
   Doi: https://doi.org/10.1038/nature14333; ISSN: 1476-4687
   I initiated the collaboration and devised/directed a project that, through the analysis of one of the most extensive solar system formation models, proves that the extreme similarity between the Earth and Moon is a natural consequence of a late giant impact. This result solved the long-standing composition similarity challenge. 58 citations.
2. (*) **Mastrobuono-Battisti, A.** & Perets, H. B., 2013, *"Evolution of second-generation stars in stellar disks of globular and nuclear clusters: ω Centauri as a test case"*, **ApJ**, 779, 85
   Doi: https://doi.org/10.1088/0004-637X/779/1/85; ISSN: 1538-4357
   This is the first of a series of papers resulting from my project on the origin of multiple populations in globular clusters. With my models I developed a new and potentially ground-breaking method to use the current cluster characteristics to reconstruct their primordial and still unknown star formation history. 56 citations.
3. (*) **Mastrobuono-Battisti, A.**, Perets, H. B. & Loeb, A., 2014, *"Effects of Intermediate Mass Black Holes on Nuclear Star Clusters"*, **ApJ**, 796, 40
   Doi: https://doi.org/10.1088/0004-637X/796/1/40; ISSN: 1538-4357
   This paper sets a milestone in the understanding of the effects of the presence of intermediate-mass black holes at the centre of galaxies. My analysis provides a new way of detecting these objects through their indirect effects on the surrounding stellar system and galaxy (e.g. on the tidal disruption event rate). 52 citations.
4. (*) **Mastrobuono-Battisti, A.** & Perets, H. B., 2016, *"Second-generation stellar disks in Globular Clusters and cluster ellipticities"*, **ApJ**, 823, 61
   Doi: https://doi.org/10.3847/0004-637X/823/1/61; ISSN: 1538-4357
   This paper, that follows from an idea of mine as a follow-up of paper [2], sets the basis for a general method to trace the unknown origin of chemical anomalies in globular clusters through key observational predictions. 34 citations.
5. (*) **Mastrobuono-Battisti, A.**, Di Matteo, P., Montuori, M. & Haywood, M., 2012, *"Clumpy streams in a smooth dark halo: the case of Palomar 5"*, **A&A**, 546, L7
   Doi: https://doi.org/10.1051/0004-6361/201219563; ISSN: 1432-0746
   Thanks to my extremely accurate models built using N-body simulations, for the first time, I proved how the overdensities observed in the tidal streams of Pal 5 are just kinematical effects that cannot be used to quantify the granularity of the Galactic dark matter halo. Citations: 24
6. (*) **Mastrobuono-Battisti, A.**, Khoperskov, S. A., Di Matteo, P. & Haywood, M., 2019, *"Mergers, tidal interactions, and mass exchange in a population of disc globular clusters: II. Long-term evolution"*, **A&A**, 622, A86
   Doi: https://doi.org/10.1051/0004-6361/201834087; ISSN: 1432-0746
   I developed the project, set up the collaboration and built large scale direct N-body models which proved that globular cluster internal metallicity variations can be the result of mergers between clusters. These mergers are common, as opposite to what thought in the past. 16 citations.
7. (*) **Mastrobuono-Battisti, A.**, Perets, H. B., Gualandris, A., Neumayer, N., Sippel, A., 2019 , *"Star formation at the Galactic Centre: coevolution of multiple young stellar discs"*, **MNRAS**, 490, 5820
   Doi: https://doi.org/10.1093/mnras/stz3004; ISSN: 1365-2966

For the first time, I modeled star formation in multiple disks at the Galactic centre. I combined the expertise of the authors to explore chemo-dynamical and observational aspects of the co-evolution of stellar populations in the Galactic nucleus. 16 citations.

8. (*) **Mastrobuono-Battisti, A.**, Ogiya, G., Hahn, O., Schultheis, M., **2023**, *"Searching for clues of past binary supermassive black hole mergers in nuclear star clusters"*, **MNRAS**, 521, 6089
   Doi: https://doi.org/10.1093/mnras/stad898; ISSN: 1365-2966
   I modelled galactic mergers that lead to the formation of supermassive black hole binaries, finding large scale signature of their presence. These signatures can be observed with instruments such as VLT, JWST and ELT. Therefore, this work provides important tools to indirectly detect the elusive SMBHBs and gravitational wave precursors. 3 citations.
9. (*) **Mastrobuono-Battisti, A.**, Church, R., Davies, M., 2021, *"Close stellar encounters at the Galactic Centre - I. The effect on the observed stellar populations"*, **MNRAS**, 505, 3314
   Doi: https://doi.org/10.1093/mnras/stab1409; ISSN: 1365-2966
   I set up and directed a collaboration to explore the effects high energy phenomena, such as stellar collisions at the centre of the Milky Way. The analysis of my N-body models shows that collisions between different stellar types are common but they only slightly affect the nuclear cluster mass function. I shed light on the origin of the mysterious gaseous object G2, which is observed close to the central supermassive black hole, proving that it might have formed due to the physical collision between a red giant star and a stellar-mas black hole. Citations: 7
10. Antonini F., Capuzzo-Dolcetta R., **Mastrobuono-Battisti, A.** & Merritt D., 2012, *"Dissipationless Formation and Evolution of the Milky Way Nuclear Star Cluster"*, **ApJ**, 750, 111
    Doi: https://doi.org/10.1088/0004-637X/750/2/111; ISSN: 1538-4357
    This is the first paper that addressed the problem of the formation of our Galactic nucleus while providing a link between globular clusters and the supermassive black hole. The senior scientists in this paper agreed upon listing the authors in alphabetical order. However, I was the main contributor, the idea was mine and I performed most of the work. 182 citations.
11. (*) Tsatsi, A., **Mastrobuono-Battisti, A.**, Van de Ven, G., Perets, H. B., Bianchini, P. & Neumayer, N., 2017, *"On the rotation of nuclear star clusters formed by cluster inspirals"*, **MNRAS**, 464, 3720
    Doi: https://doi.org/10.1093/mnras/stw2593; ISSN: 1365-2966
    This work was part of the PhD Thesis of S. Tsatsi. Exploiting my models, we found that globular clusters can produce a nuclear cluster equal to the one in our Galaxy. I supervised and mentored S. Tsatsi throughout this project, which stemmed from my original idea and I further contributed a considerable amount of work in the development phase. 52 citations.
12. (*) Abbate, F., **Mastrobuono-Battisti, A.**, Colpi, M., Possenti, A., Sippel, A. C., Dotti, M., 2018, *"Probing the formation history of the nuclear star cluster at the Galactic Centre with millisecond pulsars"*, **MNRAS**, 473, 927
    Doi: https://doi.org/10.1093/mnras/stx2364; ISSN: 1365-2966
    This work was part of the PhD Thesis of F. Abbate. By combining my models with theoretical predictions, we provided ways to probe the nuclear star cluster formation with future observations of pulsars done with SKA. I developed the project idea and supervised F. Abbate throughout it. I further contributed a large amount of work in the development phase. 24 citations.

a. Tesi di Dottorato: *"Globular Clusters and Galactic Nuclei"*, supervisor: Prof. R. Capuzzo-Dolcetta. Discussa il 10/01/2012 presso La Sapienza, Università di Roma.
   Link : https://iris.uniroma1.it/retrieve/e3835315-d56c-15e8-e053-a505fe0a3de9/Thesis_AMB.pdf

Lista delle 12 pubblicazioni

1. **Ricci F.**, Treister E., Bauer F.E., Mejía-Restrepo J.E., Koss M.J., et al., **2022**, ApJS, 261, 8. “BASS. XXIX. the Near-infrared View of the Broad-line Region (BLR): The Effects of Obscuration in BLR Characterization” doi: 10.3847/1538-4365/ac5b67

2. Vito F., Brandt W.N., **Ricci F.**, Congiu E. et al. **2021**, A&A, 649A, 133V. “Chandra and Magellan /FIRE follow-up observations of PSO167-13: An X-ray weak QSO at z = 6.515”

3. Duras F., Bongiorno A., **Ricci F.**, Piconcelli E., Shankar F., Lusso E., Bianchi S., et al., **2020**, AA, 636, A73. “Universal bolometric corrections for active galactic nuclei over seven luminosity decades” doi:10.1051/0004-6361/201936817

4. **Ricci F.**, Lovisari L., Kraft R. P., Massaro F., Paggi A., Liuzzo E., Tremblay G., et al., **2018**, ApJ, 867, 35. “Stormy Weather in 3C 196.1: Nuclear Outbursts and Merger Events Shape the Environment of the Hybrid Radio Galaxy 3C 196.1” doi:10.3847/1538-4357/aae487

5. **Ricci F.**, Marchesi S., Shankar F., La Franca F., Civano F., **2017**, MNRAS, 465, 1915. “Constraining the UV emissivity of AGN throughout cosmic time via X-ray surveys” doi:10.1093/mnras/stw2909

6. **Ricci F.**, La Franca F., Onori F., Bianchi S., **2017**, AA, 598, A51. “Novel calibrations of virial black hole mass estimators in active galaxies based on X-ray luminosity and optical/near-infrared emission lines” doi:10.1051/0004- 6361/201629380

7. **Ricci F.**, La Franca F., Marconi A., Onori F., Shankar F., Schneider R., Sani E., et al., **2017**,MNRAS, 471, L41. “Detection of faint broad emission lines in type 2 AGNs - III. On the M_{BH}-σ_* relation of type 2 AGNs” doi:10.1093/mnrasl/slx103

8. Onori F., **Ricci F.**, La Franca F., Bianchi S., Bongiorno A., Brusa M., Fiore F., et al., **2017**, MNRAS, 468, L97. “Detection of faint broad emission lines in type 2 AGN - II. On the measurement of the black hole mass of type 2 AGN and the unified model” doi:10.1093/mnrasl/slx03

9. Bischetti M., Piconcelli E., Vietri G., Bongiorno A., Fiore F., Sani E., Marconi A., Duras F., Zappacosta L., Brusa M., Comastri A., Cresci G., Feruglio C., Giallongo E., La Franca F., Mainieri V., Mannucci F., Martocchia S., **Ricci F.**, et al. **2017**, A&A, 598A,122B. “The WISSH quasars project: I. Powerful ionised outflows in hyper-luminous quasars” doi:10.1051/0004-6361/201629301

10. Nicholl M., Berger E., Kasen D., Metzger B.D., Elias J., Briceño C., Alexander K.D., Blanchard P.K., Chornock R., Cowperthwaite P.S., Eftekhari T., Fong W., Margutti R., Villar V.A., Williams P.K.G., Brown W., Annis J., Bahramian A., Brout D., Brown D.A., Chen H.-Y., Clemens J.C., Dennihy E., Dunlap B., Holz D.E., Marchesini E., Massaro F., Moskowitz N., Pelisoli I., Rest A., **Ricci F.**, Sako M., Soares-Santos M., Strader J. **2017**, ApJ, 848L, 18N. “The Electromagnetic Counterpart of the Binary Neutron Star Merger LIGO/Virgo GW170817. III. Optical and UV Spectra of a Blue Kilonova from Fast Polar Ejecta” doi: 10.3847/2041-8213/aa9029

11. Álvarez Crespo N., Masetti N., **Ricci F.**, Landoni M., Patiño-Álvarez V., Massaro F., et al. **2016**, A J, 151, 32A. “Optical Spectroscopic Observations of Gamma-ray Blazar Candidates. V. TNG, KPNO, and OAN Observations of Blazar Candidates of Uncertain Type in the Northern Hemisphere” doi:10.3847/0004-6256/151/2/32

12. **Ricci F.**, Massaro F., Landoni M., D'Abrusco R., Milisavljevic D., Stern D., Masetti N., et al., **2015**, AJ, 149, 160. "Optical Spectroscopic Observations of Gamma-ray Blazar Candidates. IV. Results of the 2014 Follow-up Campaign" doi:10.1088/0004-6256/149/5/160

Tesi di dottorato:
Titolo: "The role of AGN in galaxy evolution"
Autrice: Ricci F.
Relatore: La Franca F., co-relatori: Massaro F., Shankar F.

Marco Gatti

Department of Physics & Astronomy, University of Pennsylvania, Philadelphia, PA 19104, (USA)

11/03/2024

Current Position

Postdoctoral researcher Nov. 2020 - PRESENT
University of Pennsylvania (Department of Physics & Astronomy)
Philadelphia (USA)
Advisor: Prof. Gary M. Bernstein, Prof. Bhuvnesh Jain

EDUCATION

Doctor of Philosophy (PhD) in Physics Oct. 2015 - Sept. 2020
Institut de Física d'Altes Energis (IFAE),
Universitat Autonoma de Barcelona (UAB), Barcelona (Spain)
Thesis: Weak lensing in DES Y3: redshift distributions, shape catalogue, and mass mapping
Advisor: Prof. Ramon Miquel, Prof. Chihway Chang
Final mark: Excellent & cum Laude

Master's Degree in Astronomy and Astrophysics Oct. 2012 - July 2014
Sapienza University of Rome
Rome (Italy)
Thesis: The growth of supermassive balck holes: disk instability vs interactions
Advisor: Prof. Fabrizio Fiore
Final Mark: 110 cum Laude/110. All exams marked 30 cum Laude/30

Bachelors's Degree in Physics Oct. 2009 - July 2012
University of Genoa
Genoa (Italy)
Final Mark: 110 cum Laude/110

CV SUMMARY

I graduated in Physics from the University of Genoa in 2012, followed by a Master's in Astronomy and Astrophysics at University La Sapienza in 2014. During my Master's, I spent a year with the Astronomy and High Energy Astrophysics group at Osservatorio Astronomico di Roma. In 2015, I joined the Observational Cosmology group at the Institut de Física d'Altes Energies, Universitat Autonoma de Barcelona, conducting doctoral research on galaxy surveys as a Severo Ochoa 'La Caixa' fellow. In 2020, I became a postdoctoral researcher at the University of Pennsylvania, obtaining a five-year fellowship. In January 2024, I won the KICP fellowship at the University of Chicago starting in summer 2024.

My research interests center around studying the Universe's large-scale structure, focusing on various scientific aspects of photometric galaxy surveys. I am keen on discovering new methods to optimize information extraction from current datasets, aiming to rigorously test the ΛCDM model and its extensions. Simultaneously, I am developing techniques to mitigate observational and astrophysical systematics. I am part of the Euclid consortium, and I am deeply involved in the Dark Energy Survey (DES), contributing to almost every DES analysis stage over the years. My work spans from pixel-level tasks to leading new cosmological data

analyses. During the DES Y1 and Y3 analyses, I pioneered the clustering-z technique for inferring galaxy redshift distributions. We introduced a joint likelihood framework that combines clustering redshift and photometric methods for redshift estimation, efficiently marginalizing over systematic effects. In DES Y3, I co-led the creation of the DES Y3 weak lensing catalog (which is the largest weak lensing catalog to date) and assessed systematic effects on galaxy shape measurements and weak lensing observables. I also co-led producing and characterizing the DES Y3 weak lensing mass maps, the largest from a photometric survey. I developed an analytical pipeline for modeling the second and third moments of these maps, aiming to infer cosmological parameters. This approach led to the most precise constraints on S8 from a weak lensing survey. Using DES Y3 weak lensing data and Compton-y maps from Planck and ACT, I measured the weak lensing-thermal Sunyaev-Zeldovich correlation at an unprecedented significance level, and I used the measurement to test various baryonic feedback mechanisms. I also discovered that weak lensing map-based higher-order statistics are significantly influenced by source galaxy clustering, a previously overlooked effect. I am now working on the first weak lensing analysis combining various non-Gaussian statistics using a robust simulation-based inference framework. For the DES Y6 analysis, I am leading the creation of one of two weak lensing catalogs, applying the Bayesian Fourier Domain method for the first time, which is expected to double the number of galaxies with respect to the DES Y3 catalog. Additionally, through my recent collaboration with data scientists from the UPenn Data-Driven Discovery Initiative, I am exploring different machine learning topics applied to cosmology.

I currently have around 110 original publications in leading peer-reviewed astronomy journals. These include around 100 authored through collaborations and about 10 with small groups of collaborators. Of these, I am the corresponding author for 11 publications, which have collectively accumulated more than 400 citations. Additionally, I am among the first-tier authors (meaning I made major contributions) in another 18 papers. Within the DES collaboration, I have published more papers as the first author (9 in total) than any other member since the inception of DES. I have been invited to present my work at more than 25 conferences and seminars across the US and Europe. I have mentored, and continue to mentor, several undergraduate and graduate students, co-authoring multiple publications with them. I am part of the DES mentoring program, which provides extra career support to early career scientists within the collaboration. Due to my infrastructure contributions to DES, I have been awarded Builder status since 2021. I have also been appointed co-coordinator of the DES Shear Catalog Analysis Team (2019-2020), and I am currently co-lead of the DES Mass Mapping and Forward Modelling Team (2021-). Since 2017, I have been serving as a referee for Monthly Notices of the Royal Astronomical Society (MNRAS), Astronomy & Astrophysics (A&A), the Astrophysical Journal (ApJ), Publications of the Astronomical Society of Japan (PASJ), and the Journal of Cosmology and Astroparticle Physics (JCAP). I have been engaged in various outreach activities, including conducting seminars for high school students, developing and organizing hands-on activities with students, and giving interviews to national and international newspapers. In 2023, I have been awarded the italian habilitation to academic professorship by the Italian Ministry of Education.

RESEARCH ACHIEVEMENTS

- Detected for the first time the impact of source clustering effects on weak lensing non Gaussian statistics (Gatti et al. 2023).
- Developed a pipeline able to use the second and third-order moments of weak lensing mass maps to infer cosmology (Gatti et al. 2022, Gatti et al. 2020). The analysis delivered the tightest cosmological constraints from a weak lensing-only analysis to date.
- Co-leading the DES Mass Mapping and Forward Modelling working group since 2020, which is delivering the most constraining weak lensing non Gaussian analyses to date.
- Produced the largest weak lensing mass maps to date (Jeffrey & Gatti et al. 2022).
- Co-lead the DES shear testing working group during the Year 3 data, which delivered the largest weak lensing shape catalogue to date.
- Devised a joint likelihood framework which provides redshift estimates combining constraints from clustering-z and photo-z methods (Gatti et al. 2022).
- Measured the cross-correlation between thermal Sunyaev-Zeldovich maps and weak galaxy lensing shears at the highest significance to date, and used to test baryonic feedback mechanisms (Gatti et al 2022).

SELECTED TALKS AND SEMINARS

Mar. 2024	"Weak lensing simulation based inference", cosmology seminar, Yale University (**invited**)
Dec. 2023	"Non Gaussian weak lensing statistics in the era of precision cosmology", cosmology seminar, Leiden University (**invited**)
Dec. 2023	"Non Gaussian weak lensing statistics in the era of precision cosmology", cosmology seminar, La Sapienza, Rome (**invited**)
Dec. 2023	"Non Gaussian weak lensing statistics in the era of precision cosmology", cosmology seminar, University of Genoa (**invited**)
Dec. 2023	"Cosmology from weak lensing simulation based inference" at "Debating the potential of machine learning for astronomical surveys" Center for Computational Astrophysics (CCA), New York
Sept. 2023	"Simulation-based inference with Non-Gaussian statistics of weak lensing observables & DES Y3 data " at COSMO23, Madrid
March 2023	"Constraints from Non Gaussian weak lensing analyses", cosmology seminar, Columbia University (**invited**)
Sept. 2022	"Cosmology with weak lensing", cosmology seminar, Berkeley, (**invited**)
July 2022	"Constraints from Non Gaussian weak lensing analyses", at "Intriguing discrepancies in the growth of structures over cosmic time", Sexten, Italy (**invited**)

June 2022 "Constraints on AGN feedback models from lensing-tSZ cross-correlations" SZ Worshop, CCA (**invited**)

May 2022 "Cosmology from Weak Lensing Non-Gaussian Statistics" LMU lensing seminar , Ludwig Maximilian University (**invited**)

May 2022 "Cosmology from non Gaussian Map Based Statistics with DES Y3 data", IberiCOS, Barcelona 2022

Apr. 2022 "Cosmology from non Gaussian Map Based Statistics with DES Y3 data" at "Cosmology with Weak Lensing: Beyond the Two-point Statistics", YITP, Kyoto (**invited**)

Mar. 2022 "Cosmology from Weak Lensing Non-Gaussian Statistics", cosmology seminar, LBL, Berkeley (**invited**)

Jan. 2022 Guest expert at the workshop "How measuring baryons can improve clustering analyses" (online) (**invited**)

Jan. 2022 Speaker for the Cosmopalooza 2022, "Cosmology from Non-Gaussian Map-Based Statistics with DES Y3 data" (**invited**),

Jan. 2022 "Cosmology from Non-Gaussian Map-Based Statistics with DES Y3 data", 239th AAS Aunnual Meeting (**invited**),

Feb. 2021 "Clustering Redshifts in DES Y3 and the DES Y3 photo-z calibration strategy", German Center for Cosmological Lensing (GCCL) seminar (**invited**)

Sept. 2020 "Curved-Sky Weak Lensing Mass Map with the Dark Energy Survey Y3 data", cosmology seminar, CMU/UPitt (**invited**)

Jan. 2020 "Curved-Sky Weak Lensing Mass Map with the Dark Energy Survey Y3 data", cosmology seminar, Duke University (**invited**)

Sept. 2019 "Cosmological Constraints from Moments of Weak Lensing Mass Maps" at COSMO19 , Aachen

June 2018 "Cosmology with curved-sky weak lensing mass maps", cosmology seminar, KICP Chicago (**invited**)

Apr. 2018 Panelist for the photo-z discussion session, at "Statistical Challenges for Large-scale Structure in the Era of LSST", Oxford UK (**invited**)

Oct. 2017 "Clustering-redshift in the DES Y1 analysis",at Euclid Photo-z workshop, Tolouse (**invited**)

Apr. 2015 "Triggering AGN activity: disk instability vs. galaxy interactions", seminar, MPE Munich (**invited**)

Oct. 2014 "The role of disk instabilities and galaxy interactions in triggering AGN activity", seminar, Southampton (**invited**)

RESEARCH STAYS

(In addition to the time spent at the host institution)

2 months research stay at the Kavli Institute for Cosmological Physics, Chicago	2018
18 months research stay at the Osservatorio Astronomico di Roma (OAR), Rome (Italy)	2013-2015
1 week research stay at the University of Southampton (UK)	2014
6 months research stay at the Institute of Space Astrophysics and Planetology (IAPS), Rome (Italy)	2013

MEMBERSHIP AND COORDINATION IN INTERNATIONAL COLLABORATIONS, EVALUATION COMMITTEES & REFEREEING

Dark Energy Suvery (DES) collaboration - member	2015 - Present
Euclid collaboration - member	2022 - Present
Co-Coordinator of the DES Mass Mapping and Forward modelling Working Group	2021 - Present
Co-Coordinator of the DES Shear Catalogue Tests Working Group	2019 - 2020
Mentor for the DES Mentorship program	2021 - Present
External referee for MNRAS, A&A, PASJ, JCAP,APJ	2017 - Present

AWARDS

Italian professorship habilitation	2023 - Present
KICP Postdoctoral fellowship at the University of Chicago (246000$)	2024 - 2027
postdoctoral fellowship at the University of Pennsylvania (310000$)	2020 - 2025
GCCL Postdoctoral fellowship at the University of Bochum, declined (220000 euros)	2020 - 2024
Dark Energy Survey Builder	2021 - Present
Severo Ochoa “La Caixa” PhD fellowship	2015 - 2019
“Percorso di Eccellenza” Msc fellowship, Sapienza University (2000 euros)	2013
“Wanted the best” Msc fellowship, Sapienza University (5000 euros)	2012 - 2013

SUPERVISING AND MENTORING ACTIVITIES

Mentoring graduate student (Giulia Giannini), 2 papers	2020 - 2022
Mentoring graduate student (Shivam Pandey), 2 papers	2020 - 2022
Mentoring graduate student (Minsu Park), 1 paper in prep.	2022 - Present
Mentoring graduate student (Vernon Wetzell), 1 paper in prep.	2022 - Present
Mentoring graduate student (Rafael Gomes) 1 paper in prep.	2022 - Present
Mentoring graduate student (Zhou Conghao) 1 paper in prep.	2022 - Present
Mentoring undergraduate student (Jack Purple)	2023
Mentoring undergraduate student (Sanjit Kobla) 1 paper in prep.	2023 - Present
Mentoring undergraduate student (Sara Kane)	2022
Mentoring undergraduate student (Michael Jacob)	2023 - Present
Mentoring graduate student (Dhayaa Anbajagane) 2 papers	2023 - Present
Mentoring graduate student (Shub Agrawal) 1 paper in prep.	2023 - Present
Mentoring graduate student (Kunhao Zhong) 1 paper	2023 - Present

OUTREACH

May/Oct 2021	Press release for the DES Y3 analysis and interviews on international and national newspapers
March 2018, March 2019	Cosmology-related hands-on activities for high-school students visiting IFAE
April 2017	Cosmology seminar for high-school students visiting IFAE

REFERENCES

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LIST OF PUBLICATIONS

11 as corresponding author (which have collected more than 400 citations). According to NASA ADS (Scopus), h-index of 38 (28), 6000+ (4000+) total citations, and a total of 107 (93) publications. Publications are divided into two groups, depending on my contribution.

PUBLICATION WITH MAJOR CONTRIBUTIONS

Publications that I led, that one of my students led or where I played a leading role.

REFEREED

1. *Dark Energy Survey Year 3 results: simulation-based νwCDM inference with wavelet scattering and moments of weak lensing mass maps I – validation on simulations*
   M. Gatti, N. Jeffrey, L. Whiteway, et al. (DES collaboration)
   PRD, 2024 (in press)|arXiv:2310.17557 | ADS

2. *Beyond the 3rd moment: A practical study of using lensing convergence CDFs for cosmology with DES Y3*
   D. Anbajagane, C. Chang, A. Banerjee, T. Abel, **M. Gatti**, et al. (DES collaboration)
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3. *Detection of the significant impact of source clustering on higher-order statistics with DES Year 3 weak gravitational lensing data*
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4. *Dark Energy Survey Year 3 Results: Redshift Calibration of the MagLim Lens Sample using Self-Organizing Maps and Clustering Redshifts*
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5. *Robust field-level inference with dark matter halos*
   H. Sao, F. Villaescusa-Navarro, P. Villanueva-Domingo, **M. Gatti**, et al.
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   D. Zuercher, J. Fluri, R. Sgier, T. Kacprzak, **M. Gatti**, et al. (DES collaboration)
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P. Fiedorowicz, E. Rozo, S. S. Boruah, C. Chang and **M. Gatti**,
MNRAS, 2022 | arXiv:2105.14699 | ADS

10. *Dark Energy Survey Year 3 Results: Calibration of Lens Sample Redshift Distributions using Clustering Redshifts with BOSS/eBOSS*
R. Cawthon, J. Elvin-Poole, A. Porredon, M. Crocce, G. Giannini, **M. Gatti**. et al. (DES collaboration)
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11. *Cross-correlation of DES Year 3 lensing and ACT/Planck Sunyaev Zel'dovich Effect measurements I: measurements, systematics tests, and feedback model constraints*
M. Gatti, S. Pandey, et al. (DES & ACT collaborations)
PRD, 2022| arXiv:2108.01600 | ADS

12. *Cross-correlation of DES Year 3 lensing and* ACT/Planck *Sunyaev Zel'dovich Effect measurements II: Modeling and constraints on halo pressure profiles*
S. Pandey, **M. Gatti**, et al. (DES & ACT collaborations)
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13. *Dark Energy Survey Year 3 Results: Clustering Redshifts – Calibration of the Weak Lensing Source Redshift Distributions with redMaGiC and BOSS/eBOSS*
M. Gatti, G. Giannini, et al. (DES collaboration)
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14. *The DES view of the Eridanus supervoid and the CMB Cold Spot*
A. Kovacs, N. Jeffrey, **M. Gatti**, et al. (DES collaboration)
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M. Gatti, E. Sheldon, et al. (DES collaboration)
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M. Gatti, F. Shankar, V. Bouillot, et al.
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22. *Physical properties of AGN host galaxies as a probe of supermassive black hole feeding mechanisms*
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27. *Late Time Modification of Structure Growth and the S8 Tension*
M-X Lin, B. Jain, M. Raveri, E. Baxter, C. Chang, **M. Gatti**, S. Lee, J. Muir
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28. *Sum-of-Parts Models: Faithful Attributions for Groups of Features*
W. You, H. Qu, **M. Gatti**, B. Jain., and E. Wong
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IN PREPARATION

29. *Dark Energy Survey Year 3 results: simulation-based νwCDM inference with wavelet scattering and moments of weak lensing mass maps II – application to data on simulations*
M. Gatti, B. Jain, et al. (DES collaboration)
To be submitted in Spring 2024

30. *Dark Energy Survey Year 6 results: Weak Lensing Shape Catalogue, BFD*
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34. *Dark Energy Survey Year 1 Results: Cross-Correlation Redshifts in the DES – Calibration of the Weak Lensing Source Redshift Distributions*
C. Davis, **M. Gatti**, R. Cawthon, et al. (DES collaboration)
(Main author left the field and did not submit the work to journals) | arXiv:1710.02517 | ADS

OTHER PUBLICATIONS

For these publications I contributed with data products, testing, validation or other infrastructure

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P. Lemos, (DES collaboration, including **M. Gatti**)
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36. *Dark Energy Survey Year 3 results: magnification modelling and impact on cosmological constraints from galaxy clustering and galaxy-galaxy lensing*
J. Elvin-Poole, (DES collaboration, including **M. Gatti**)
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45. *Timing the r-process Enrichment of the Ultra-faint Dwarf Galaxy Reticulum II*
J. Simon, (DES collaboration, including **M. Gatti**)
MNRAS, 2023| arXiv:2212.00810 | ADS

46. *Joint analysis of Dark Energy Survey Year 3 data and CMB lensing from SPT and Planck. III. Combined cosmological constraints*
DES collaboration, including **M. Gatti**
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47. *A galaxy-driven model of type Ia supernova luminosity variations*
P. Wiseman., (DES collaboration, including **M. Gatti**)
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48. *Dark Energy Survey Year 3 results: Imprints of cosmic voids and superclusters in the Planck CMB lensing map*
A. Kovacs, (DES collaboration, including **M. Gatti**)
MNRAS, 2022| arXiv:2203.11306 | ADS

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M. Dixon, (DES collaboration, including **M. Gatti**)
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50. *Joint analysis of DES Year 3 data and CMB lensing from SPT and Planck III: Combined cosmological constraints*
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51. *Dark Energy Survey Year 3 results: Magnification modeling and impact on cosmological constraints from galaxy clustering and galaxy-galaxy lensing*
J. Elvin-Poole, (DES collaboration, including **M. Gatti**)
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52. *Cosmic shear in harmonic space from the Dark Energy Survey Year 1 Data: compatibility with configuration space results*
H. Camacho, (DES collaboration, including **M. Gatti**)
MNRAS, 2022| arXiv:2111.07203 | ADS

53. *Dark energy survey year 3 results: High-precision measurement and modeling of galaxy-galaxy lensing*
J. Prat et al. (DES collaboration, including **M. Gatti**)
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54. *Non-local contribution from small scales in galaxy-galaxy lensing: comparison of mitigation schemes*
J. Prat (DES collaboration, including **M. Gatti**
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J. Myles, (DES collaboration, including **M. Gatti**)
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56. *Constraining the Baryonic Feedback with Cosmic Shear Using the DES Year-3 Small-Scale Measurements*
A. Chen, (DES collaboration, including **M. Gatti**)
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57. *A measurement of the mean central optical depth of galaxy clusters via the pairwise kinematic Sunyaev-Zel'dovich effect with SPT-3G and DES*
E. Schiappucci, (DES collaboration, including **M. Gatti**)
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59. *Core-collapse Supernovae in the Dark Energy Survey: Luminosity Functions and Host Galaxy Demographics*
M. Grayling, (DES collaboration, including **M. Gatti**)
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60. *Probing gravity with the DES-CMASS sample and BOSS spectroscopy*
S. Lee, (DES collaboration, including **M. Gatti**)
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61. *Dark Energy Survey Year 3 results: Galaxy-halo connection from galaxy-galaxy lensing*
G. Zacharegkas, (DES collaboration, including **M. Gatti**)
PRD, 2022| arXiv:2106.08438 | ADS

62. *Dark Energy Survey Year 3 Results: Cosmological Constraints from Galaxy Clustering and Weak Lensing*
T. Abbott, (DES collaboration, including **M. Gatti**)
PRD, 2022| arXiv:2105.13549 | ADS

63. *Dark Energy Survey Year 3 results: Cosmological constraints from galaxy clustering and galaxy-galaxy lensing using the MAGLIM lens sample*
A. Porredon, (DES collaboration, including **M. Gatti**)
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64. *Dark Energy Survey Year 3 Results: Cosmology from Cosmic Shear and Robustness to Modeling Uncertainty*
L. Secco, (DES collaboration, including **M. Gatti**)
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65. *Dark Energy Survey Year 3 Results: Cosmology from Cosmic Shear and Robustness to Data Calibration*
A. Amon, (DES collaboration, including **M. Gatti**)
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C. Sanchez, (DES collaboration, including **M. Gatti**)
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67. *Dark Energy Survey Year 3 Results: Covariance Modelling and its Impact on Parameter Estimation and Quality of Fit*
O. Friedrich, (DES collaboration, including **M. Gatti**)
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C. Doux, (DES collaboration, including **M. Gatti**)
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S. Pandey., (DES collaboration, including **M. Gatti**)
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71. *The DECam Local Volume Exploration Survey Data Release 2*
A. Drlica-Wagner, (DES collaboration, including **M. Gatti**)
ApJS, 2022| arXiv:2203.16565 | ADS

72. *Dark Energy Survey Year 3 results: Cosmology from combined galaxy clustering and lensing validation on cosmological simulations*
J. De rose, (DES collaboration, including **M. Gatti**)
PRD, 2022| arXiv:2105.13547 | ADS

73. *Milky Way Satellite Census. IV. Constraints on Decaying Dark Matter from Observations of Milky Way Satellite Galaxies*
S. Mau, (DES collaboration, including **M. Gatti**)
ApJ, 2022| arXiv:2201.11740 | ADS

74. *Joint analysis of DES Year 3 data and CMB lensing from SPT and Planck II: Cross-correlation measurements and cosmological constraints*
A. Leauthaud, (DES collaboration, including **M. Gatti**)
MNRAS, 2021| arXiv:2111.13805 | ADS

75. *DeepZipper: A Novel Deep-learning Architecture for Lensed Supernovae Identification*
R. Morgan, (DES collaboration, including **M. Gatti**)
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83. *Dark Energy Survey Year 1 Results: Cosmological Constraints from Cluster Abundances, Weak Lensing, and Galaxy Correlations*
C. To, (DES collaboration, including **M. Gatti**)
PRL, 2020| arXiv:2010.01138 | ADS

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H. Huang, (DES collaboration, including **M. Gatti**)
MNRAS, 2020| arXiv:2007.15026 | ADS

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*M. Jarvis, (DES collaboration, including **M. Gatti**)*
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M. E. S Pereira, (DES collaboration, including **M. Gatti**)
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87. *Dark Energy Survey Year 1 Results: Cosmological constraints from cluster abundances and weak lensing*
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Y. Fang, (DES collaboration, including **M. Gatti**)
MNRAS, 2019| arXiv:1909.01386 | ADS

90. *Detection of cross-correlation between gravitational lensing and gamma rays*
S. Ammazzalorso, (DES collaboration, including **M. Gatti**)
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B.Mawdsley, et al. (DES collaboration, including **M. Gatti**)
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M. Troxel et al. (DES collaboration, including **M. Gatti**)
PRD, 2018 | arXiv:1708.01538 | ADS

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C. Ting-Yun, (DES collaboration, including **M. Gatti**)
MNRAS, 2022| arXiv:2209.06897 | ADS

103. *Cosmological shocks around galaxy clusters: A coherent investigation with DES, SPT & ACT*
D. Anbajagane, (DES collaboration, including **M. Gatti**)
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DES collaboration, including **M. Gatti**
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G. A. Marques, (DES collaboration, including **M. Gatti**)
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M. Aguena, (DES collaboration, including **M. Gatti**)
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J. Duarte, (DES collaboration, including **M. Gatti**)
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L. Bleem, (DES collaboration, including **M. Gatti**)
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M. Vincenzi, (DES collaboration, including **M. Gatti**)
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DES collaboration, including **M. Gatti**
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112. *SPT Clusters with DES and HST Weak Lensing. II. Cosmological Constraints from the Abundance of Massive Halos*
S. Boquet, (DES collaboration, including **M. Gatti**)
submitted to PRD, 2024| arXiv:/2401.02075 | ADS

Curriculum Vitae

RICERCA, CARRIERA E LEADERSHIP

Sono un'astrofisica computazionale e teorica che con la sua ricerca ha contribuito in maniera significativa alla comprensione della formazione e dell'evoluzione chemo-dinamica di sistemi stellari densi (ammassi globulari e nucleari) in potenziali galattici e in presenza di buchi neri stellari e supermassicci.

Nei miei studi, modello questi sistemi utilizzando codici *N-body* eseguiti su schede grafiche (GPU), incluso il mio codice, *NBSymple* (https://github.com/alessandramb/NBSymple). Sono interessata all'origine delle popolazioni stellari e degli oggetti compatti di questi ammassi, al loro utilizzo per studi di "**near field cosmology**", come anche all'analisi dei processi dinamici e relativistici. Su ***scala planetaria***, ho proposto una soluzione all'annoso problema della estrema somiglianza tra Terra e Luna in termini di composizione chimica (Mastrobuono-Battisti et al. 2015, **Nature**). Questo lavoro è stato seguito da numerosi (50+) comunicati stampa.

Sono una degli esperti di ammassi globulari all'interno del consorzio Gaia dell'ESA, sono **membro** del **team scientifico** che lavora allo sviluppo dello spettrografo multi-oggetto **MOSAIC dell'ESO/ELT** e sono membro della collaborazione **Lunar Gravitational Wave Antenna** (guidata dal GSSI). Ho co-supervisionato **7 studenti di dottorato** (**9 pubblicazioni, e una in preparazione**), 2 studenti di master e uno studente di bachelor (1 pubblicazione). **Ho organizzato un congresso internazionale** e sono stata membro del comitato scientifico per ulteriori sette congressi. Ho partecipato a comitati di esperti (per proposal HST, commissioni di tesi, assunzione di studenti e postdoc). Ho attratto **fondi per oltre 500,000€** in Europa, Israele e Stati Uniti **come PI** di progetti. Sono stata PI e Co-PI di varie proposte di calcolo e Co-I di proposte di osservazione (incluso HST Cycle 28). Ho 70 pubblicazioni in riviste di livello Q1 con più di 6500 citazioni, con un h-index di 29 (fonte: ADS).

Parole chiave: Dinamica stellare, sistemi stellari densi, ammassi globulari, buchi neri, nuclei galattici, popolazioni stellari, Via Lattea, onde gravitazionali, simulazioni numeriche, GPU

POSIZIONE ATTUALE

2021 – **Affiliate Researcher** (tramite una **Marie Curie Individual Fellowship. Project: THESYS**)
GEPI (Galaxies, Stars, Physics and Instrumentation) Laboratory, Observatoire de Paris & CNRS (Centre national de la recherche scientifique), Meudon (Francia)
Congedo di maternità (novembre 2022 - marzo 2023)

POSIZIONI PASSATE

2020 – 2021 **Senior Research Fellow**
Department of Astronomy and Theoretical Physics, Lund University, Lund (Svezia)
Congedo di maternità (febbraio 2020 - ottobre 2020, per il primo figlio nato all'inizio della pandemia da Covid-19, con forte impatto sulla produttività scientifica e sulla possibilità di networking).

2015 – 2019 **Independent Research Fellow (MPIA Prize Fellowship)**
Galaxies and Cosmology Department, Max Planck Institute for Astronomy, Heidelberg, Germania

2012 – 2015 **Postdoctoral Fellow (Lady Davis prize fellowship),**
Dipartimento di Fisica, Technion-Israel Institute of Technology, Haifa, Israele

TITOLI ACCADEMICI E CERTIFICAZIONI

2024 **Qualifica di Maître de Conference**, Sezione 34 (Astronomie et Astrophysique), Conseil National des Universités (CNU). Valida a partire dal 09/02/2024 per 4 anni.

2023 **Abilitazione Scientifica Nazionale** alle funzioni di professore universitario di **prima fascia** nel Settore Concorsuale **02/C1 - ASTRONOMIA, ASTROFISICA, FISICA DELLA TERRA E DEI PIANETI.** Valida a partire dal 16/10/2023.

2023 **Abilitazione Scientifica Nazionale** alle funzioni di professore universitario di **seconda** fascia nel Settore Concorsuale **02/C1 - ASTRONOMIA, ASTROFISICA, FISICA DELLA TERRA E DEI PIANETI.** Valida a partire dal 16/10/2023.

2012 **Dottorato di Ricerca in Astronomia**; Classificazione: Eccellente;

Dipartimento di Fisica e Astrofisica, Sapienza Università di Roma, Italia
Supervisore: Prof. Roberto Capuzzo-Dolcetta

2008 **Laurea Specialistica in Astronomia e Astrofisica**
Voto: 110/110 e lode;
Dipartimento di Fisica e Astrofisica, Sapienza Università di Roma, Italia

2006 **Laurea Triennale in Fisica e Astrofisica**
Voto: 110/110 e lode;
Dipartimento di Fisica e Astrofisica, Sapienza Università di Roma, Italia

POSSESSO DEL REQUISITO ASN

- **Abilitazione Scientifica Nazionale** alle funzioni di professore universitario di **II fascia** nel Settore Concorsuale **02/C1 - ASTRONOMIA, ASTROFISICA, FISICA DELLA TERRA E DEI PIANETI.**
- **Data di conseguimento:** 16/10/2023
- **Data di scadenza:** 16/10/2034

FELLOWSHIPS E RESPONSABILITÀ SCIENTIFICA PER PROGETTI DI RICERCA FINANZIATI SULLA BASE DI BANDI COMPETITIVI E PEER-REVIEWED

2021 – 2023 **Vincitrice della borsa e responsabile del relativo progetto: Horizon 2020 Marie Skłodowska-Curie (MSCA) Individual Fellowship (200,000€, THESYS, grant agreement n. 895174).** Titolo del progetto: *"THESYS: The build-up and fate of self-gravitating systems in the Universe"*. Istituzione ospitante: **GEPI, Observatoire de Paris**, Meudon, Francia.

2015 – 2019 **Vincitrice della borsa e responsabile del relativo progetto: MPIA Prize Fellowship (250,000€)**. Titolo del progetto: *"Globular and nuclear clusters through the Universe"*. Istituzione ospitante: Galaxy and Cosmology Department, **Max-Planck-Institut-für-Astronomie**, Heidelberg, Germania.

2012 – 2014 **Vincitrice della borsa borsa di studio: Lady Davis Research Fellowship (18,000USD)**. Borsa di studio assegnata ai più talentuosi postdoc della Hebrew University e del Technion. Istituzione ospitante: **Technion, Israel Institute of Technology,** Haifa, Israele.

2012 **Responsabile del progetto finanziato tramite un bando HPC-Europa2** (Pan-European Research Infrastructure on High Performance Computing) per l'accesso a risorse di calcolo internazionali **(3000€,** https://www.hpc.cineca.it/projects/hpc-europa2). Visita di otto settimane presso un'istituzione straniera, 50000 ore CPU e ore illimitate su GPU per 3 mesi, su risorse nazionali francesi (GENCI/CINES). Titolo del progetto: *"Globular cluster evolution in the Galactic field"*. Istituzione ospitante: **GEPI, Observatoire de Paris**, Meudon, Francia.

2008 – 2011 **Vincitrice della borsa di studio di dottorato** (**60,000€** circa). Titolo del progetto: *"Globular clusters and galactic nuclei"*, borsa concessa dal Ministero dell'Istruzione, dell'Università e della Ricerca Italiano. Prima classificata all'esame di ammissione al dottorato. Istituzione ospitante: **Sapienza Università di Roma**, Italia.

DIREZIONE E PARTECIPAZIONE A GRUPPI DI RICERCA INTERNAZIONALI

Di seguito sono elencate le direzioni e partecipazioni a gruppi di ricerca internazionali attualmente in corso, focalizzandoci sulle più rilevanti. L'elenco comprende le pubblicazioni su riviste con revisione paritaria, le quali sono numerate in modo corrispondente all'elenco delle pubblicazioni allegato tra i titoli. Il mio contributo a tutte queste collaborazioni consiste nella concezione di progetti, nello sviluppo di modelli numerici e teorici, nell'analisi dei dati provenienti dalle simulazioni da me condotte e nell'utilizzo dei suddetti modelli per l'interpretazione di dati osservativi provenienti da vari strumenti all'avanguardia. Maggiori dettagli sui contributi aggiuntivi sono riportati nell'elenco seguente.

- **Direzione di un gruppo** composto da 2 studenti di dottorato co-supervisionati (E. Lacchin, GEPI e INAF Bologna e G. Pagnini, GEPI) e da 2 studenti di master (L. Delit, GEPI & Elisa Aerospace, e M. Maglione, GEPI e Università di Padova, entrambe laureatesi a pieni voti). Il gruppo è stato sovvenzionato dai miei fondi Marie Curie H2020, da una Borsa Marco Polo assegnata a E. Lacchin e da una borsa Erasmus+ assegnata a M. Maglione. Il tema di ricerca è legato a vari aspetti dell'evoluzione di ammassi globulari nella Via Lattea. La supervisione di E. Lacchin e di G. Pagnini sono ancora in corso (E. Lacchin ha recentemente conseguito il Dottorato in Astronomia presso l'Università di Padova, ma la nostra

collaborazione è ancora in corso). Il gruppo ha finora prodotto 4 pubblicazioni su riviste peer-reviewed (pubblicazioni [2], [8], [9] e [27]). A partire da marzo 2022, in corso.

- Membro attivo del gruppo del gruppo "Stellar Dynamics and Evolution" guidato dal Dr. Ross Church presso il Lund Observatory (Università di Lund, Svezia). Contributo: collaborazione scientifica su dinamica di ammassi stellari densi, astrofisica delle alte energie (collisioni stellari, accrescimento di buchi neri super massicci) insegnamento e partecipazione in commissioni di tesi, conferenze e seminari, conduzione di progetti scientifici legati all'attribuzione di tempo di calcolo su GPUs, organizzazione delle riunioni di gruppo settimanali. A partire dal 2020. Pubblicazioni: [33], [48]. A partire dal 2020.
- Membro del **Gaia DPAC** (Coordinate Unit CU6, spectroscopic data reduction). In quanto responsabile della validazione dei dati spettroscopici negli ammassi globulari ho analizzato tutti i dati relativi alle velocità radiali di stelle appartenenti ad ammassi globulari Galattici tendendo conto delle membership riportate nella letteratura più recente. In tal modo ho quantificato la precisione e l'accuratezza dei dati Gaia in ambienti densamente popolati da stelle, caratterizzati da magnitudini basse e basso segnale su rumore, con possibile futura applicazione per archeologia stellare e studio del bulge Galattico. Sono co-autrice delle pubblicazioni del consorzio. Il risultato del mio lavoro di validazione è presentato in [18].
- Membro dell'"**ELT-MOSAIC Science Team**" che lavora allo sviluppo dello spettrografo multi-oggetto MOSAIC dell'ESO/ELT. Membro dei seguenti gruppi di lavoro: **(i)** SWG3 – Mass assembly of galaxies through cosmic time; **(ii)** SWG4 – Stellar populations beyond the Local Group; **(iii)** SWG5 – Galactic archaeology. A partire dal 2022.
- Membro della core community del "**Nancy Grace Roman Space Telescope**". In qualità di membro di tale comunità ho partecipato alla stesura di uno dei white papers sull'utilizzo del futuro telescopio spaziale, ed in particolare nell'ambito della "High Latitude Time Domain Survey", per la detezione di binarie di buchi neri supermassicci, per l'individuazione di precursori di sorgenti di onde gravitazionali rilevabili dal futuro interferometro spaziale LISA. A partire dal 2023. Il white paper è disponibile al link: https://arxiv.org/abs/2306.14990
- Membro della collaborazione "**Lunar Gravitational Wave Antenna**", una missione lunare che mira a utilizzare la Luna come un rivelatore gravitazionale, sfruttando la sua intrinseca risposta sismologica e strutturale alle onde gravitazionali. La missione "Soundcheck", guidata da diversi istituti di ricerca italiani come GSSI, INFN ed INAF, che avrà il compito di dimostrare la realizzabilità tecnologica della Lunar Gravitational-Wave Antenna. Tale missione è stata recentemente selezionata dall'ESA all'interno del *Reserve Pool of Science Activities for the Moon*, primo passo per l'approvazione definitiva. Nella collaborazione, sono membro del WG2 che si occuperà della scienza relativa all'esplorazione lunare, della determinazione della risposta della struttura lunare all'effetto delle onde gravitazionali, nonché all'utilizzo delle onde gravitazionali per lo studio della struttura interna della Luna, ancora parzialmente ignota. Sono co-autrice dello science white paper dello strumento, responsabile della sezione sulla formazione lunare. A partire dal 2023.
- Membro attivo del gruppo "Galactic Nuclei" guidato da: Dr. Nadine Neumayer (Max Planck Institute for Astronomy, Germania). Contributo: collaborazione scientifica sulla formazione di buchi neri supermassicci e di massa intermedia in ammassi nucleari e globulari, su popolazioni stellari in ammassi nucleari e globulari, supervisione di studenti, organizzazione e partecipazione in conferenze e seminari, conduzione di progetti, collaborazione a progetti. La collaborazione si prefigge come obiettivo lo studio dell'origine degli ammassi nucleari e delle loro popolazioni stellari. La collaborazione ha prodotto finora 7 pubblicazioni su riviste peer-reviewed (n. [6], [29], [37], [43], [46], [51], [57] nella lista delle pubblicazioni). A partire dal 2015, in corso.
- Membro attivo e ufficiale del gruppo "Galactic Dynamics", guidato dal Prof. G. van de Ven (Università di Vienna). Contributo: supervisione di studenti, organizzazione delle riunioni settimanali del gruppo, organizzazione e partecipazione in conferenze e seminari. La collaborazione si prefigge come obiettivo lo studio dell'origine degli ammassi nucleari e globulari e delle loro popolazioni stellari e buchi neri stellari e di massa intermedia, nel contesto di galassie simili alla Via Lattea. All'interno della collaborazione ho co-supervisionato tre studenti di dottorato, con 4 pubblicazioni su peer-reviewed journals (pubblicazioni n. [4], [32], [44], [57] nella lista completa). A partire dal 2016.
- Partecipazione alle attività di ricerca di un gruppo formato da ricercatori del Max Planck Institute for Astronomy di Heidelberg (Anna Sippel, Ryan Leaman, Mayte Alfaro-Cuello, Francisco Aros) e della

McMaster University, Ontario, Canada (Allison Sills, Paolo Bianchini). La collaborazione sul progetto "Visitors to Our Neighbourhood: Identifying and exploiting accreted star clusters in the Milky Way's halo" ha avuto come scopo lo studio dell'evoluzione di ammassi stellari in galassie nane accresciute dalla Via Lattea. All'interno di tale collaborazione ho contribuito con la supervisione di studenti di dottorato (M. Alfaro-Cuello e F. Aros) e con la modellizzazione teorica e numerica dell'evoluzione di ammassi stellari. Una pubblicazione prodotta su rivista (n. [50] nella lista completa delle pubblicazioni). Dal 2017 al 2018.

- Responsabilità e partecipazione in progetti svolti con scienziati dell'Osservatorio di Parigi. La collaborazione esplora vari aspetti della formazione ed evoluzione degli ammassi globulari nella Via Lattea (correnti stellari, collisioni tra ammassi, fusione tra galassie), tramite l'utilizzo dei miei modelli dinamici costruiti attraverso l'utilizzo di simulazioni a *N*-corpi. I collaboratori principali sono P. Di Matteo e M. Haywood (GEPI, Observatoire de Paris). Contributo: conduzione di progetti, collaborazione a progetti con relative pubblicazioni, incarichi di insegnamento riportati nella relativa sezione di questo CV. La collaborazione ha prodotto finora 6 pubblicazioni su riviste peer-reviewed (pubblicazioni [8], [9], [52], [53], [66] nella lista delle pubblicazioni). A partire dal 2012, in corso.
- Responsabilità e partecipazione in progetti svolti all'interno del gruppo guidato dal Prof. H. Perets (Technion, Israele). La collaborazione si prefigge come obiettivo lo studio dell'origine e l'evoluzione degli ammassi stellari densi, delle loro popolazioni stellari e dei loro oggetti compatti (buchi neri) dal punto di vista dinamico e delle alte energie e della relatività generale (incluse onde gravitazionali). Nell'ambito della collaborazione ho modellato l'evoluzione di tali sistemi su 12Gyr, utilizzando simulazioni a *N*-corpi ed il confronto con osservazioni, fornendo spiegazioni a diversi fenomeni osservati (struttura degli ammassi stellari, tidal disruption events, formazione del nucleo Galattico). Contributo: conduzione e co-conduzione di progetti. La collaborazione ha prodotto finora 11 pubblicazioni su riviste peer-reviewed (n. [34], [51], [56], [57], [58], [59], [60], [61], [63], [64], [65] nell'elenco completo delle pubblicazioni). A partire da ottobre 2012, in corso.
- Collaborazione con il gruppo di ricerca dell'INAF – Osservatorio Astronomico di Bologna, guidato da: Dr. Francesco Calura. La collaborazione si prefigge come obiettivo lo studio dell'ignota origine delle popolazioni multiple in ammassi globulari, grazie alla combinazione di modelli idrodinamici e a *N*-corpi. La collaborazione ha prodotto finora 2 pubblicazioni su riviste peer-reviewed (n. [2] e [27] nella lista delle pubblicazioni). A partire dal 2019.
- Collaborazione con il gruppo GALFOR guidato dal prof. A. Milone (Università di Padova). La collaborazione si prefigge come obiettivo lo studio dell'ignota origine delle popolazioni multiple in ammassi globulari, usando i miei modelli come riferimento per l'interpretazione dei dati osservativi. All'interno della collaborazione ho co-supervisionato la studentessa di Master M. Maglione, laureatasi a ottobre 2022. La collaborazione ha prodotto finora 5 pubblicazioni su riviste peer-reviewed (n. [2], [28], [45], [49], [54] nella lista delle pubblicazioni). A partire dal 2018.
- Collaborazione con il gruppo di ricerca guidato da A. Calamida (STScI, USA). Tale collaborazione si prefigge come obiettivo lo studio dell'origine di ammassi globulari peculiari, come Omega Centauri. Una proposta osservativa HST Cycle 28 e' stata accettata nell'ambito della collaborazione. La collaborazione ha prodotto finora 2 pubblicazioni su riviste peer-reviewed (n. [7], [47]). A partire dal 2017.
- Membro eletto del centro di ricerca collaborativo di Heidelberg SFB881 "The Milky Way System" (https://sfb881.zah.uni-heidelberg.de/). Dal 2016 al 2019.
- Responsabile o collaboratore principale di progetti svolti nel gruppo guidato da R. Capuzzo Dolcetta (Sapienza, Roma). Il tema della collaborazione è lo studio della dinamica di ammassi stellari densi, come ammassi globulari e nucleari. La collaborazione ha prodotto finora 5 pubblicazioni su riviste peer-reviewed (n. [36], [67], [68], [69], [70]). A partire da novembre 2008.

PARTECIPAZIONE IN PROPOSTE DI FINANZIAMENTO DI SUCCESSO

2017 **Co-PI** per una proposta di finanziamento presso la German Research Foundation (DFG) attraverso il Collaborative Research Centre (SFB 881) "The Milky Way System", **9500€** concessi per l'organizzazione del congresso internazionale di successo ***"Survival of dense stellar clusters in the Milky Way system",*** Heidelberg, 19-23 nov. 2018: https://sfb881.zah.uni-heidelberg.de/conferences-workshops.html

2016 **Co-I** per la proposta di finanziamento per mobilità scientifica del tipo DAAD-PPP (https://www.daad.org/en/ppp/) *"Visitors to Our Neighbourhood: Identifying and exploiting accreted star clusters in the Milky Way's halo"*, PI: Ryan Leaman, **30000€** concessi.

2016 **Co-I** per due proposte di finanziamento DFG SFB881 per l'organizzazione: **i)** del workshop internazionale *"The exciting lives of galactic nuclei"*, 27/02-03/03/2017, Castello di Ringberg e **ii)** del congresso internazionale *"Piercing the Galactic darkness: Stellar populations in highly extincted regions of the Milky Way",* 16-19/10/2017, Heidelberg (**20,000€** concessi).

2016 **PI e Co-I** di diverse proposte di finanziamento DFG SFB881 per coprire le spese di viaggio e alloggio di ricercatori in visita a MPIA **(10,000€** concessi).

PROPOSTE DI TEMPO DI CALCOLO E DI OSSERVAZIONE DI SUCCESSO

2021 **PI** di **due** proposte di calcolo SNIC, che hanno ottenuto (ciascuna) risorse per 120,000 ore GPU/CPU su supercomputer svedesi. Progetto: "*The origin of the Galactic nuclear star cluster*" (https://nim.nsc.liu.se/projects/3921/).

2020 **Co-I** per la proposta di osservazione del **Cycle 28 del telescopio spaziale Hubble** "*Digging into the mystery of the Galactic globular clusters M22 and NGC1851*" (PI: Annalisa Calamida, STScI).

2017 **Co-PI** per una proposta CINECA, risorse concesse: 200,000 ore CPU/GPU (per 9 mesi). Progetto: *"Formation of nuclear clusters through mergers of a realistic population of globular clusters"* (in collaborazione con M. Dotti, Bicocca, Milano).

2014 **Co-PI** per una proposta LinkSCEEM/Cy-Tera, risorse concesse: 12000 ore GPU disponibili per 12 mesi. Progetto: *"Formation and evolution of dense stellar clusters"*.

2014 **Co-I** per una proposta di osservazione sul telescopio GEMINI, *"The Milky Way nuclear star cluster as a benchmark for the structure and build-up of galactic nuclei"* (PI: Anja Feldmeier-Krause, ESO).

2012 **Co-I** per una proposta CFHT, *"The extended tidal tails of Palomar 14"* (PI: Prof. D. Valls-Gabaud, Observatoire de Paris).

CONSEGUIMENTO DI PREMI E RICONOSCIMENTI

2016 Premio **"Immagine"** per l'eccezionale carriera scientifica, assegnato dall'"Associazione Nuova Immagine", Latina, Italia. Premio annuale assegnato alle eccellenze provenienti dalla provincia di Latina. Il conferimento del premio è avvenuto il 10/12/2016 durante un evento ufficiale.

2016 Premio **"Talento Pontino",** assegnato dall'Associazione Rinascita Civile di Latina (Italia) per gli eccellenti risultati scientifici. Premio annuale per scienziati eccellenti. Il premio è stato assegnato il 25/04/2016 durante l'evento "Lievito 2016". Link a un articolo sull'evento e sul premio: https://www.latinacorriere.it/latina-si-apre-sipario-lievito-2016/

2015 Premio **"Latina va in Scena"** per gli eccellenti risultati scientifici nel campo astrofisico, e in particolare per i risultati sulla composizione lunare pubblicati sulla rivista Nature. Il premio, assegnato dalla Provincia di Latina (Italia) è stato conferito durante l'annuale galà di beneficenza dell'associazione LILT tenutosi il 28/06/2015. Link ad un articolo sull'evento: https://www.radioluna.it/news/2015/06/latina-vain-scena-2015-una-maratona-per-la-lilt/

2015 Riconoscimento formale **("Menzione d'onore")** assegnata dal consiglio comunale della città di Pontinia e assegnato dal sindaco E. Tombolillo. L'assegnazione del premio è avvenuta durante una seduta speciale e pubblica del consiglio comunale il 25/05/2015.

2011 Premio di 500€ per uno dei cinque migliori talk del congresso Cefalù Meeting 2011, assegnato il 17/06/2011 per il talk: "The formation of the Milky Way's nuclear star cluster".

SINTESI DELLE CONFERENZE PUBBLICHE, COLLOQUIA E SEMINARI

- 10 interventi su invito a conferenze (dal 2014, 4 a partire dal 2022).
- 12 seminari/lezioni pubbliche (tra cui un **TED^{X}**, dal 2015).
- 21 colloqui/seminari su invito presso istituti internazionali (dal 2012).
- Più di 50 interviste alla stampa, tra cui 2 sulla parità di genere che hanno contribuito alla pubblicazione di libri su questo tema:
  https://blog.redooc.com/storie-di-donne-il-senso-delle-donne-per-la-scienza/
  https://www.donnamoderna.com/news/speciali/donne-come-noi/donne-come-noi-il-libro

- 30 contributi a conferenze (dal 2010).

CONFERENZE SU INVITO *(10 interventi su invito)*

2024 **Invited review talk**. "2024 Alpbach workshop on clouds, star clusters and black holes", Alpbach, Austria, 10-14/06. **Titolo del Talk:** "Detecting Supermassive Black Hole Binaries in Nuclear Star Clusters". Link: https://events.gwdg.de/event/584/

2023 **Invited Talk.** "A multi-wavelength view on globular clusters near and far: from JWST to the ELT", Sesto, Italia, 3-7/07. **Titolo del talk:** "Modelling the origin of multiple populations in globular clusters." *I talk di tutti i congressi organizzati presso il Sexten Centre for Astrophysics sono solo su invito.*

Link: https://www.sexten-cfa.eu/event/a-multi-wavelength-view-on-globular-clusters-near-and-far-from-jwst-to-the-elt/

2023 **Invited Talk.** "Phases Of Galactic Evolution As Traced By Stellar Populations And Star Clusters", Sesto, Italia, 26-30/06. **Titolo del talk:** "Modelling the origin of multiple populations in globular clusters." *I talk di tutti i congressi organizzati presso il Sexten Centre for Astrophysics sono solo su invito.*

Link: https://www.sexten-cfa.eu/event/phases-of-galactic-evolution-as-traced-by-stellar-populations-and-star-clusters/

2022 **Invited review talk**. "The Puzzles of the Galactic Centre", Heidelberg, Germania, 5-7/09. **Titolo del talk:** "The Galactic nuclear star cluster and supermassive black hole formation and co-evolution: where do we stand?". Durante il congresso, **ho guidato una sessione di discussione** nel ruolo di esperta sulla formazione ed evoluzione di ammassi nucleari. *Congresso esclusivamente su invito.*
Link: https://sites.google.com/view/galactic-centre-puzzles/home

2019 **Invited talk**. "Uncovering the Physics of Formation of Globular Clusters and their Host Galaxies", KITP, Santa Barbara, US, 11-14/05, congresso rimandato a causa dell'epidemia di Covid19. **Titolo del talk:** "The dynamics of merging globular clusters".
Link: https://www.kitp.ucsb.edu/activities/clusters-c20

2018 **Invited talk.** "Multiple populations in Globular clusters: where do we stand?", Sesto, Italy, 09-13/07. **Titolo del talk:** "On the merger origin of metallicity spreads in globular clusters". *I talk di tutti i congressi organizzati dal Sexten Centre for Astrophysics sono solo su invito.*
Link: https://www.sexten-cfa.eu/event/multiple-populations-in-globular-clusters-where-do-we-stand/

2018 **Invited talk.** MPIA Galaxy and Cosmology Retreat 2018, Lobbach, Germania, 14-16/05. **Title:** "The chemo-dynamical evolution of the Solar System".

2017 **Invited review talk**. "The amazing life of stars", Cefalù, Italia, 04-08/09. **Titolo del talk:** "The formation and evolution of Nuclear star clusters".
Link: http://amazingstars2017.weebly.com/

2014 **Invited review talk**. "Growth and evolution of the Milky Way's nuclear star cluster and its central black hole", Alajar, Spagna, 20-28/09. **Titolo del talk:** "The formation and evolution of Nuclear star clusters". *Congresso esclusivamente su invito.*
Link: http://astro-gr.org/alajar-meeting-2014-growth-evolution-milky-ways-mbh/

2014 **Invited talk.** "Stellar *N*-body Dynamics", Sesto, Italia, 08-12/09. **Titolo del talk:** "The formation and evolution of Nuclear star clusters". *I talk di tutti i congressi organizzati dal Sexten Centre for Astrophysics sono solo su invito.*
Link: https://www.sexten-cfa.eu/event/stellar-n-body-dynamics/

SEMINARI/COLLOQUIA SU INVITO *(21 seminari in diversi istituti internazionali)*

17/03/2023 "Searching for clues of past binary supermassive black hole mergers in nuclear star clusters", Lund Observatory, SW

06/05/2021 "Merging globular clusters in an evolving galaxy", Observatoire de Paris, FR

22/05/2020 "Stellar cluster mergers and star formation in galactic nuclei", University of Zurich, CH

21/11/2019 "Globular cluster mergers and star formation at the Galactic Centre", INAF Bologna, IT

14/11/2019 "Merging globular clusters in an evolving galaxy", Lund Observatory, SW

05/03/2019 "The hidden link between globular and nuclear clusters", Nice Observatory, FR

03/05/2018 "Globular cluster evolution in the Galaxy: inspirals and mergers", Padova Uni., IT

03/02/2018 "Mergers of globular clusters: the origin of metallicity spreads", Strasbourg Obs., FR

12/01/2017 "A primordial origin for the composition similarity between the Earth and the Moon", University of Milano-Bicocca, IT

12/01/2017 "The mass assembly history of Nuclear Star Clusters", Uni. of Milano-Bicocca, IT

21/10/2016 "The mass assembly history of Nuclear Star Clusters", GEPI-Obs. de Paris, FR

27/04/2016 "Evolution of second population stellar disks in Globular Clusters and Nuclear Star Clusters", INAF, Osservatorio Astronomico di Roma, IT

26/02/2016 "Simulating the mass assembly history of Nuclear star clusters: what we learn from the Milky Way center", MPIA colloquium, Heidelberg, DE

21/01/2016 "Evolution of second-generation stars in stellar disks of globular and nuclear clusters", Galaxy Coffee, MPIA, Heidelberg, DE

11/02/2015 "Dynamical evolution of dense stellar systems", MPIA Colloquium, Heidelberg, DE

11/02/2015 "A primordial origin for the composition similarity between the Earth and the Moon", Planet and Star Formation weekly seminar, MPIA, Heidelberg, DE

16/10/2013 "Dynamical evolution of stellar systems: Globular Clusters and Galactic Nuclei", Technion-Israel Institute of Technology, IL

23/07/2012 "Dynamical evolution of stellar systems: Globular Clusters and their clumpy tidal tails", Centre for Astronomy & Particle Theory, University of Nottingham, UK

22/06/2012 "Dynamical evolution of stellar systems: Globular Clusters and their clumpy tidal tails", ITC-Harvard, Smithsonian Center for Astrophysics, US

21/06/2012 "Globular Clusters and Galactic Nuclei", ITC-Harvard, CfA US

05/03/2012 "Globular Clusters and Galactic Nuclei", GEPI-Observatoire de Paris, FR

CONTRIBUTI ORALI IN CONFERENZE INTERNAZIONALI *(30 talks)*

2023 Metal Production and Distribution in a Hierarchical Universe – II, ESO, Santiago, Chile. Talk: "The origin of multiple populations and metallicity variations in globular clusters" (13-17/11).

2022 Journées scientifiques "Galaxies" du PNCG 2022, Strasbourg, Francia, Talk: "Mass loss and multiple populations in Galactic globular clusters" (20-22/06)

2021 Online Workshop on the Galactic Centre and Inner Galaxy, Heidelberg, Germania, Talk: "Star formation at the Galactic Centre: coevolution of multiple young stellar discs" (10-12/02)

2020 Compact Objects for All, Lund Observatory, Svezia, Talk: "Supermassive and intermediate-mass black holes in nuclear star clusters" (9-11/02).

2019 EWASS 2019, Lyon, Francia. Talks: "Unveiling the build-up history of galactic nuclei: models and observations in the era of ELTs" and "The dynamical origin of metallicity spreads in globular clusters" (24-28/06).

2019 EWASS 2019, Lyon, Francia. Talk: "The dynamical origin of metallicity spreads in globular clusters" (24-28/06/2019).

2019 "IAU Symposium 351 and MODEST 2019: Star Clusters: from the Milky Way to the Early Universe", Bologna, Italia. Talk: "The amazing life of a globular cluster: tidal interactions and mergers in the Galactic disc and nuclear star cluster" (27-31/05).

2018 "Survival of dense stellar systems in the Milky Way system", Heidelberg, Germania. Talk: "Surviving till the end: the link between globular and nuclear star clusters" (19-23/11).

2018 "SFB star clusters meeting", Heidelberg, Germania. Talk: "On the origin of multiple populations and metallicity spreads in Galactic globular clusters" (15-17/08).

2018 "Marcel Grossmann 14, session GW8", Rome, Italia. Talk: "The assembly history of nuclear star clusters: black holes and pulsars" (02-07/07).

2018 "Marcel Grossmann 14, session BH2", Rome, Italia. Talk: "The assembly history of nuclear star clusters: supermassive, intermediate mass and stellar black-holes" (02-07/07).

2017 "Piercing the Galactic darkness", Heidelberg, Germania. Talk: "The build-up of the Milky Way's

Nuclear Star Cluster" (16-19/10).

2017 MODEST17, Prague, Repubblica ceca. Talk: "The build-up of nuclear star clusters: simulations and observations" (18-22/09).

2017 SF2A 2017, "Chemical and dynamical modelling of Milky Way type galaxies", Parigi, Francia. Talk "The mass assembly history of the Milky Way Nuclear Star Cluster" (04-07/07).

2017 SF2A 2017, "Models and interpretation of stellar populations", Parigi, Francia. Talk "Constraining the origin of multiple stellar populations in globular clusters with *N*-body simulations" (04-07/07).

2016 631.Wilhelm und Else Heraeus–Seminar: "Stellar aggregates over mass and spatial scales", Bonn, Germania. Talk: "Simulating the mass assembly history of Nuclear Star Clusters: the imprints of cluster inspirals" (05-09/12).

2016 "Star Clusters: From Infancy to Teenagehood", Heidelberg, Germania. Talk: "Multiple Stellar Populations in globular clusters: Constraining their origin using *N*-body simulations" (08-12/08).

2016 EWASS 2016, session SS8, Atene, Grecia. Talk: "Second-generation stellar disks in globular clusters" (04-08/07).

2016 MODEST16, "Star Clusters as Cosmic Laboratories", Bologna, Italia. Talk: "Simulating the mass assembly history of NSCs through Globular Cluster mergers" (18-22/04).

2015 Harvey–prize Workshop, Technion, Israele. Talk: "The formation and evolution of NSCs" (27/04).

2014 IAU Symposium #312, "Star Clusters and Black Holes in Galaxies across cosmic time", Beijing, Cina. Talk: "The formation and evolution of Nuclear Star Clusters" (19-25/08).

2014 Cefalù Meeting 2014, "The Unquiet Universe", Cefalù, Italia. Talk: "The formation and evolution of Nuclear star clusters: the role of Intermediate Mass Black Holes" (02-07/06).

2014 MODEST14, "Dense stellar systems from infant to old", Bad Honnef, Germania. Talk: "Evolution of second-generation stars in stellar disks of globular and nuclear clusters" (02-06/06).

2013 GC2013, "The Galactic Center Black Hole Laboratory", Granada, Spagna. Talk: "The Galactic Center: the nuclear star cluster formation and evolution" (19-21/11).

2013 Gravasco Workshop, "Dynamics and kinetic theory of self–gravitating systems", Parigi, Francia. Talk: "Evolution of second-generation stars in stellar disks of globular and nuclear clusters: ωCentauri as a test case" (04-08/11).

2013 Italian-Israeli Conference on High Energy Astrophysics, Akko, Israele. Talk: "Dynamics in NSCs and their relevance to tidal disruption and gravitational wave events" (13-14/10).

2012 Israel Physics Society Conference, Gerusalemme, Israele. Talk: "Clumpy streams in a smooth dark matter halo: the case of Palomar 5" (09/12).

2011 Cefalù meeting 2011, Italia. Talk: "The formation of the Milky Way's Nuclear Star CLuster" (13-17/06).

2010 NVIDIA GPU Technology Conference, San Jose (CA), USA. Talk: "Gravitational *N*-body Simulations: How Massive Black Holes Interact with Stellar Systems" (20-23/09).

2009 E4 Computing Workshop 2010, Bologna, Italia. Talk: "A high precision code to simulate *N*-body systems on hybrid machines: quality and performance benchmarking" (17-19/09).

SOMMARIO DELLE PUBBLICAZIONI

- *h-index:* 29; 6803 citazioni (5940 dal 2019; dati Nasa ADS).
- **70 pubblicazioni** su riviste peer-reviewed (65 senza il mio supervisore di dottorato).
- **11 come primo autore**, di cui: **1 su Nature**, 5 su MNRAS, 3 su ApJ, 2 su A&A, tutte senza il mio supervisore di dottorato;
- **20 come secondo o terzo autore** (9 come supervisore di dottorato e 1 come supervisore di uno studente di laurea).
- 3 white paper e 14 atti di conferenze

Total Citations (as of 03/2024)	6803
Average Citations per publication	97.2
Total Impact factor	467
Average Impact factor per publication	6.7

Hirsch (H) index	29

ATTIVITÀ ISTITUZIONALI

1) ORGANIZZAZIONE DI CONGRESSI INTERNAZIONALI

2023 **Co-chair del SOC e Co-I della proposta** per la **Sessione Speciale EAS** *"Understanding the connection between nuclear star clusters, black holes and galaxy evolution: merging observations and simulations"*, **Kraków, Polonia** (10-14/07/2023).

2021 **Membro del SOC** per la conferenza *"Multiple stellar populations in the next decade"* (da tenersi a Padova, Italia, rinviata a causa dell'epidemia di covid, https://indico.ict.inaf.it/event/994/)

2019 **Membro del SOC e Co-I della proposta** per la **sessione speciale EWASS** "The dynamics of stellar clusters", Lione (24-28/06/2019).

2018 **Organizzatore principale, chair del SOC e PI della proposta di finanziamento** per la conferenza internazionale *"Survival of dense stellar clusters in the Milky Way system*", 85 partecipanti, Heidelberg, Germania (19-23/11/2018).

2017 **(1) Membro del SOC, moderatore della discussione** e **co-chair del LOC** per la conferenza internazionale: *"Piercing the Galactic darkness"*, 70 partecipanti, Heidelberg, Germania (16-19/10/2017). **(2) Organizzatore principale**, membro **SOC** e **LOC** per il ritiro annuale del Dipartimento di Galassia e Cosmologia del MPIA, 90 partecipanti, Schöntal, Germania (22-24/05/2017). **(3) Membro del SOC e moderatore della discussione** per il congresso: *"The exciting lives of galactic nuclei"*, 40 partecipanti, Ringberg, Germania (27/02-03/03/2017).

2011 **Membro del LOC** per il congresso: *"Advances in Computational Astrophysics: methods, tools and outcomes"* 2011, 80 partecipanti, Cefalù, Italia (13-17/06/2011).

2) RESPONSABILITÀ ISTITUZIONALI

2023 – **Membro** della collaborazione "**Lunar Gravitational Wave Antenna**".

2023 – **Membro** della core community del "**Nancy Grace Roman Space Telescope.**

2022 – **Membro** del team scientifico **ESO/ELT MOSAIC**.

2021–2023 **Co-organizzatore** del "Paris Observatory Joint Galaxies and Cosmology Seminar": https://ggsapi.obspm.fr/seminars/.

2021 **Commissario e membro della giuria** per l'esame e la valutazione finale di una **tesi di Master** (Lund, Svezia).

2021 **Commissario e membro della giuria** per l'esame finale e la valutazione di una **tesi di laurea** (Lund, Svezia).

2018 – Membro del **consorzio Gaia DPAC (gruppo CU6)**, responsabile della **validazione dei dati spettroscopici negli ammassi globulari**.

2017 **Organizzatore principale per una conferenza** e membro del **SOC** per **7**. Presidente del LOC per una conferenza, membro del LOC per 2 conferenze.

2016 2021 **Organizzatore** e chair di riunioni di gruppo settimanali (Svezia e Germania).

2016 – 2019 **Membro** di diverse **commissioni** per la selezione di futuri postdoc, dottorandi e studenti di tirocinio, MPIA, Heidelberg, Germania.

3) PRINCIPALI ATTIVITÀ DI REVISIONE

- Revisore Esperto: **Hubble Space Telescope Cycle 31 TAC** (commissario esterno sul tema delle popolazioni stellari, June 2023).
- Revisore Esperto: **Hubble Space Telescope Cycle 30 TAC** (commissario esterno sul tema delle popolazioni stellari, May 2022).
- Referee per diverse **riviste IOP** e per **MNRAS** e **A&A** (dal 2013).

ATTIVITÀ DIDATTICA FRONTALE

2023 **Docente**, primo anno di Master**, tirocinio di ricerca**: *"Dynamical fate of globular and open clusters in the Milky Way*". Uno studente, 40h.

2022 **Docente,** primo anno di Master, **modulo di inserimento in laboratorio (Laboratory Insertion Unit)**: *"Evoluzione dinamica e destino degli ammassi globulari nella Via Lattea"*, Observatoire de Paris (Francia). Due studenti, 40 ore.

2021 **Docente**, primo anno di Master, *"Astrofisica delle alte energie"*, Lund Observatory (Svezia). 15 studenti, Modulo di 15 ore.

2020 **Docente**, primo anno di Master, *"Struttura ed evoluzione stellare"*, Lund Observatory (Svezia). 15 studenti, Modulo di 3 ore più esercitazioni ed esami (6h);

2009 – 2010 **Assistente alla didattica**, terzo anno del corso di laurea triennale, *"Metodi numerici in astronomia",* Dipartimento di Fisica e Astrofisica, Sapienza Università di Roma, Italia. 50 studenti, 35 ore.

ATTIVITÀ DIDATTICA INTEGRATIVA

7 dottorandi, 2 studenti di master e 1 studente di bachelor supervisionati.

2022 – **Supervisore di Tesi di Dottorato** (con la Dr. P. Di Matteo): Salvatore Ferrone. Tesi: "Stellar Streams for Galactic Archeology". GEPI, Osservatorio di Parigi.

2022 – **Supervisore di Tesi Magistrale** (laureata: 04/10/2022): Lisa Delit (ELISA Aerospace & GEPI). Tesi: "Globular cluster disruption and the link with the Galactic nucleus" (finanziata attraverso la mia borsa MSCA). GEPI, Observatoire de Paris.

2022 **Supervisore di Tesi Magistrale** (con il Prof. A. Milone, Univ. di Padova; laureata il 12/10/2022): Mariasole Maglione. Tesi: "Internal kinematics of stellar populations in Terzan 5", GEPI, Observatoire de Paris.

2021 – **Supervisore di Tesi di Dottorato** (con la Dr P. Di Matteo): Dottoranda Giulia Pagnini. Tesi: "The early and late evolution of our Galaxy through the lens of globular clusters".

2020 – 2023 **Supervisore di Tesi di Dottorato** (con il Dr F. Calura, INAF-Bologna; PhD conferito il 30/06/2023): Dottoranda Elena Lacchin. Tesi: "Hydrodynamic simulations of multiple stellar populations in globular clusters". INAF & GEPI, Observatoire de Paris.

2017 – 2021 **Supervisore di Tesi di Dottorato** (con il Prof. G. van de Ven e Dr A. Sippel; PhD conferito il 6/07/2021): Studente di dottorato Francisco Aros. Tesi: "Intermediate mass black holes in globular clusters", Max Planck Institute for Astronomy (MPIA), Germania.

2017 – 2018 **Supervisore di Tesi Triennale** (laureato il 19/06/2018): Robin Herlan.Tesi: "Dark matter density profiles in dwarf galaxies: the case of Sagittarius", MPIA, Heidelberg, Germania.

2017 – 2018 **Co-supervisore di Tesi di Dottorato** (insieme al Prof. M. Colpi, Università di Milano-Bicocca; PhD conferito il 4/02/2020): Dottorando Federico Abbate. Tesi: "Exploiting globular cluster pulsars as probes of their environment". MPIA, Germania.

2015 – 2016 **Co-supervisore di Tesi di Dottorato** (con il Prof. G. Van de Ven; PhD conferito il 21/12/2016): Dottoranda Athanasia Tsatsi. Tesi: "Dynamical structure and evolution of merger remnants". Istituto Max Planck per l'astronomia (MPIA), Germania.

2012 – 2017 **Co-supervisore di Tesi di Dottorato** (con il Prof. H. Perets; PhD conferito il 30/05/2017): Studente di dottorato Danor Aharon. Tesi: "Stellar dynamics near massive black holes in nuclear star clusters". Technion, Istituto di Tecnologia di Israele.

CONFERENZE PUBBLICHE *(12 seminari/lezioni)*

2022 Contributo al congresso di formazione per insegnanti: "Moon Camp", https://www.esero.it/eventi/, Napoli, Italia (11/11). Ho tenuto la mia lezione sulla formazione della Luna nell'ambito del programma educativo ESA/ASI *ESERO Italia,* creato per sostenere l'apprendimento e l'insegnamento delle scienze e della tecnologia.

2021 Lezione tenuta a studenti di scuole superiori Svedesi, come parte della Scuola di Ricerca Spaziale "Astronomisk Ungdom", Lund, Svezia (27/07)

2019 Conferenza pubblica sull'origine dell'Universo e del sistema solare, Latina, Italia (26/10)

2019 Conferenza pubblica sull'origine della Luna e del sistema solare, Firenze, Italia (23/07)

2019 Lectio Magistralis per il 50° anniversario dello sbarco sulla Luna dell'Apollo 11, Latina, Italia (20/07)

2018 **TED^{x} Castelfranco talk**: *"Enigmi scientifici: la formazione della Luna"*, Castelfranco Veneto, IT (06/10): https://youtu.be/E2jzp_tJ8so.
2016 Lezione pubblica su invito per gli studenti delle scuole superiori di Latina, IT (25/04).
2016 Conferenza pubblica su invito per studenti universitari di Latina, IT (26/04).
2015 Lezione pubblica su invito presso l'Istituto Italiano di Cultura di Haifa, IL (29/06).
2015 Conferenza tenutasi presso il municipio per il Consiglio Comunale, Pontinia, IT (25/05).
2015 Lezione pubblica su invito per gli studenti delle scuole secondarie, Pontinia, IT (25/05).
2015 Lezione pubblica su invito presso l'Istituto Italiano di Cultura di Tel Aviv, IL (04/04).

COPERTURA STAMPA SELEZIONATA

Questo è un elenco parziale dei comunicati stampa riguardanti il mio lavoro, che includono *oltre 50 articoli di stampa, interviste televisive e radiofoniche*.

1. **Elenco degli articoli citati (Nature):** https://www.nature.com/articles/nature14333/metrics
2. **National Geographic:** https://tinyurl.com/3mwjyhy3
3. **Discovery Channel (Seeker):** https://tinyurl.com/2z42frf9
4. **Scienza:** http://www.sciencemag.org/news/2015/04/how-did-moon-really-form
5. Classificata al **n. 47 tra le 100 migliori storie di scienza del 2015** sulla rivista Discovery: https://www.discovermagazine.com/the-sciences/the-moons-violent-birth
6. **BBC:** http://www.bbc.com/news/science-environment-32219494
7. **NBC:** https://tinyurl.com/2p8hdxth
8. **Los Angeles Times:** https://tinyurl.com/losAngTimes
9. **L'Huffington Post:** https://tinyurl.com/huffingtonpostfrance
10. **Der Spiegel:** https://tinyurl.com/derspiegelde
11. **El Pais:** http://elpais.com/elpais/2015/04/08/ciencia/1428495111_666688.html
12. **Le Scienze:** https://tinyurl.com/LeScienzeMoon
13. **Il Corriere della Sera:** https://tinyurl.com/ITcorrieredellasera
14. **Intervista alla Televisione svizzera:** https://tinyurl.com/Swiss-TV-Interview
15. **Radio24, intervista a Giovani Talenti**: https://tinyurl.com/yjsyd82f
16. **Comunicato stampa GEPI su Palomar 5 tital tails:** https://tinyurl.com/gepitidaltails
17. **Contributo a capitoli di libri su donne eccezionali nella scienza e nella tecnologia:**
18. Contributi a capitoli di libri su donne eccezionali nella scienza e nella tecnologia:
    a. https://tinyurl.com/Agnese-Interview
    b. https://www.donnamoderna.com/news/speciali/donne-come-noi/donne-come-noi-il-libro

COMPETENZE INFORMATICHE

Linux, Mac OS X, Windows
C, C++, CUDA C, OpenMP, awk, Bash scripting, Fortran, Python, LaTeX, Gnuplot, Office Package, Matlab, Mathematica, Topcat

LINGUE

Italian (madrelingua)
English (conoscenza ottima)
German (conoscenza di base)
French (buona conoscenza)

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LISTA COMPLETA DELLE PUBBLICAZIONI SCIENTIFICHE *(Gli autori sottolineati sono studenti di dottorato e di laurea)*

2023: 26 papers (1 as the first author, 3 as the co-supervisor of PhD students, 1 as corresponding author and supervisor of a Bachelor student, 4 collaboration papers in which I had a major role, 1 Gaia paper in which I strongly contributed with the validation of globular cluster radial velocity data, 16 more Gaia papers)

1. Bianchini, P., **Mastrobuono-Battisti, A., 2024,** *"A cautionary lesson from Gaia systematics: the mono-metallic globular cluster NGC 5904"*, ***MNRAS Letters*****, 527, 32**
2. Lacchin, E., **Mastrobuono-Battisti, A.**, Calura, F., Nipoti, C., Milone, F., Meneghetti, M., Vanzella, E., **2024**, "Multiple stellar population mass loss in massive Galactic globular clusters", **A&A**, **681, A45**
3. Nogueras-Lara, F., Feldmeier-Krause, A., Schödel, R., Sormani, M. C., de Lorenzo-Cáceres, A., **Mastrobuono-Battisti, A.** et al., **2023**, *"Smooth kinematic and metallicity gradients between the Milky Way's nuclear star cluster and nuclear stellar disc. Different components of the same structure?"*, **A&A, 680, 75**
4. Thorsbro, B., Forsberg, R, Kordopatis, G, **Mastrobuono-Battisti, A.** et al., 2023, *"A Wide Metallicity Range for Gyr-old Stars in the Nuclear Star Cluster"*, **ApJL**, 958, L18
5. **Mastrobuono-Battisti, A.**, Ogiya, G., Hahn, O., Schultheis, M., **2023**, *"Searching for clues of past binary supermassive black hole mergers in nuclear star clusters"*, **MNRAS**, 521, 6089
6. Herlan, R., **Mastrobuono-Battisti, A.**, Neumayer, N., **2023**, "Nuclear star clusters as probes of dark matter halos: the case of the Sagittarius Dwarf Spheroidal Galaxy", **MNRAS**, 523, 2721
7. Johnson, C. I., Calamida, A., Kader, J. A., Ferraro, I, Pilachowski, C. A., Bono, G. Mastrobuono-Battisti, A., Rest, A., Zenteno, A., Zocchi, A., **2023**, "A Wide View of the Galactic Globular Cluster NGC 2808: Red Giant and Horizontal Branch Star Spatial Distributions", **AJ**,166, 3
8. Pagnini, G., Di Matteo, P., Khoperskov, S., **Mastrobuono-Battisti, A.,** Haywood, M., Renaud, F., Combes, F., **2023**, *"The distribution of globular clusters in kinematic spaces does not trace the accretion history of the host galaxy"*, **A&A**, 673, A86
9. Ferrone, S., Di Matteo, P., **Mastrobuono-Battisti, A.,** Haywood, M., Snaith, O. N., Montouri, M., Khoperskov, S., Valls-Gabaud, D. **2023**, *"The e-TidalGCs Project: Modeling the extra-tidal features generated by Galactic globular clusters"*, **A&A**, 673, A44
10. Gaia collaboration et al. including **Mastrobuono-Battisti, A., 2023**, *"Gaia Focused Product Release: Sources from Service Interface Function image analysis -- Half a million new sources in omega Centauri"*, **A&A**, accepted
11. Gaia collaboration et al. including **Mastrobuono-Battisti, A., 2023**, *"Gaia Focused Product Release: A catalogue of sources around quasars to search for strongly lensed quasars"*, **A&A**, accepted
12. Gaia collaboration et al. including **Mastrobuono-Battisti, A., 2023**, *"Gaia Focused Product Release: Radial velocity time series of long-period variables"*, **A&A**, accepted
13. Gaia collaboration et al. including **Mastrobuono-Battisti, A., 2023**, *"Gaia Data Release 3: Summary of the content and survey properties"*, **A&A**, 674, A1
14. Gaia collaboration et al. including **Mastrobuono-Battisti, A., 2023**, *"Gaia Data Release 3: Reflectance spectra of Solar System small bodies"*, **A&A**, 674, 35
15. Frémat, Y. et al. including **Mastrobuono-Battisti, A., 2023**, *"Gaia Data Release 3: Properties of the line broadening parameter derived with the Radial Velocity Spectrometer (RVS)"*, **A&A**, 674, A8
16. Gaia collaboration et al. including **Mastrobuono-Battisti, A., 2023**, "*Gaia Data Release 3: Mapping the asymmetric disc of the Milky Way"*, **A&A**, 674, A40
17. Gaia collaboration et al. including **Mastrobuono-Battisti, A., 2023**, *"Gaia Data Release 3: Pulsations in main sequence OBAF-type stars"*, **A&A**, 674, A38
18. Katz et al. including **Mastrobuono-Battisti, A., 2023**, *"Gaia Data Release 3: Properties and validation of the radial velocities"*, **A&A**, 674, A5

19. Gaia collaboration et al. including **Mastrobuono-Battisti, A.**, **2023**, *"Gaia Data Release 3: A Golden Sample of Astrophysical Parameters"*, **A&A**, 674, A39

20. Sartoretti et al. including **Mastrobuono-Battisti, A.**, **2023**, *"Gaia Data Release 3: G_RVS photometry from the RVS spectra"*, **A&A**, 674, A6

21. Gaia collaboration et al. including **Mastrobuono-Battisti, A.**, **2023**, *"Gaia Data Release 3: The extragalactic content"*, **A&A**, , 674, A41

22. Gaia collaboration et al. including **Mastrobuono-Battisti, A.**, **2023**, *"Gaia Data Release 3: Stellar multiplicity, a teaser for the hidden treasure"*, **A&A**, , 674, A34

23. Gaia collaboration et al. including **Mastrobuono-Battisti, A.**, **2023**, *"Gaia Data Release 3: Chemical cartography of the Milky Way"*, **A&A**, , 674, A38

24. Blomme, R. et al. including **Mastrobuono-Battisti, A.**, **2023**, *"Gaia Data Release 3: Hot-star radial velocities"*, **A&A**, , 674, A7

25. Gaia collaboration et al. including **Mastrobuono-Battisti, A.**, **2023,** *"Gaia Data Release 3. Exploring and mapping the diffuse interstellar band at 862 nm"*, **A&A**, 674, A40

26. Gaia collaboration et al. including **Mastrobuono-Battisti, A.**, **2023,** *"Gaia Data Release 3. The Galaxy in your preferred colours: Synthetic photometry from Gaia low-resolution spectra"*, **A&A**, 674, A33

2022: 5 papers (1 as the supervisor of a PhD student, 3 collaboration papers in which I had a major role, 1 Gaia paper, I have been on maternity leave for 4 months starting from November 2022)

27. Lacchin, E., Calura, F., Vesperini, E., **Mastrobuono-Battisti, A.**, **2022**, *"The role of rotation on the formation of second generation stars in globular clusters"*, **MNRAS**, 517, 1171

28. Jang, S., Milone, A., Legnardi, M. V., Marino, A. F., **Mastrobuono-Battisti, A.**, et al., **2022**, *"Chromosome maps of Globular Clusters from wide-field ground-based photometry"*, **MNRAS,** 517, 5687

29. Kacharov, N., Alfaro-Cuello, M., Neumayer, N., Lützgendorf, N., Watkins, L., **Mastrobuono-Battisti, A.** et al., **2022**, *"A Deep View into the Nucleus of the Sagittarius Dwarf Spheroidal Galaxy with MUSE. III. Discrete multi-component population-dynamical models based on the Jeans equations"*, **ApJ**, 939,118

30. Sormani, M. C., et al. including **Mastrobuono-Battisti, A.**, **2022**, *"Self-consistent modelling of the Milky Way's Nuclear Stellar Disc"*, **MNRAS**, 512, 1857

31. Gaia collaboration et al. including **Mastrobuono-Battisti, A.**, **2022**, *"Gaia Early Data Release 3. The celestial reference frame (Gaia-CRF3)"*, **A&A**, 667, A148

2021: 11 papers (2 as the first author, 1 as the supervisor of a PhD student, 2 collaboration papers in which I had a major role, 6 Gaia papers)

32. Aros, F., Sippel, A., **Mastrobuono-Battisti, A.**, Bianchini, P., Askar, A., Van de Ven, **2021**, *"Using binaries in Globular Clusters to catch sight of Intermediate-Mass Black Holes"*, **MNRAS**, 508, 4385

33. **Mastrobuono-Battisti, A.**, Church, R., Davies, M., **2021**, *"Close stellar encounters at the Galactic Centre - I. The effect on the observed stellar populations"*, **MNRAS**, 505, 3314

34. **Mastrobuono-Battisti, A.**, Perets, H. B., **2021**, *"Linking globular cluster structural parameters and their evolution: multiple stellar populations",* **MNRAS**, 505, 2548

35. Seabroke et al. including **Mastrobuono-Battisti, A.**, **2021**, *"Gaia Early Data Release 3: Updated radial velocities from Gaia DR2"*, **A&A**, 563, A160

36. Schiavi, R., Capuzzo-Dolcetta, R., Georgiev, I., Arca Sedda, M., **Mastrobuono-Battisti, A.**, **2021**, *"Are we observing a NSC in course of formation in the NGC 4654 galaxy?"*, **MNRAS**, 503, 594

37. Schultheis, M., Fritz, T. K., Nandakumar, G., Rojas-Arriagada, A., Nogueras-Lara, F., Feldmeier-Krause, A., Gerhard, O., Neumayer, N., Patrick, L. R., Prieto, M. A., Schödel, R., **Mastrobuono-Battisti, A.**, Sormani, M. C., **2021**, *"The nuclear stellar disc of the Milky Way: A dynamically cool and metal-rich component possibly formed from the central molecular zone"*, **A&A**, 650, A191

38. Gaia collaboration et al. including **Mastrobuono-Battisti, A.**, **2021**, *"Gaia Early Data Release 3:*

Acceleration of the solar system from Gaia astrometry", **A&A**, 649, A9

39. Gaia collaboration et al. including **Mastrobuono-Battisti, A., 2021**, *"Gaia Early Data Release 3: The Galactic anticentre"*, **A&A**, 649, A8
40. Gaia collaboration et al. including **Mastrobuono-Battisti, A., 2021**, *"Gaia Early Data Release 3: Structure and properties of the Magellanic Clouds"*, **A&A**, 649, A7
41. Gaia collaboration et al. including **Mastrobuono-Battisti, A., 2021**, *"Gaia Early Data Release 3: The Gaia Catalogue of Nearby Stars"*, **A&A**, 649, A6
42. Gaia collaboration et al. including **Mastrobuono-Battisti, A., 2021**, *"Gaia Early Data Release 3: Summary of the contents and survey properties"*, **A&A**, 649, A1

2020: 8 papers (1 as the supervisor of a PhD student, 7 collaboration papers in which I had a major role, please note I was on maternity leave most of 2020)

43. Sormani, M. C., Magorrian, J., Nogueras-Lara, F., Neumayer, N., Schoenrich, R., Klessen, R. S., **Mastrobuono-Battisti, A., 2020**, *"Jeans modelling of the Milky Way's nuclear stellar disc"*, **MNRAS**, 499, 7
44. Aros, F., Sippel, A., **Mastrobuono-Battisti, A.**, Abbas, A., Bianchini, P., Van de Ven, G., **2020**, *"Dynamical modelling of globular clusters: challenges for the robust determination of IMBH candidates",* **MNRAS**, 499, 4646
45. Cordoni, G., Milone, A. P., Marino, A. F., Da Costa, G. S., Dondoglio, E., Jerjen, H., Lagioia, E. P., **Mastrobuono-Battisti, A.,** Norris, J. E., Tailo, M., Yong, D., **2020**, *"Gaia and Hubble unveil the kinematics of stellar populations in the Type II globular clusters omega Centauri and M 22"*, **ApJ**, 898, 147
46. Alfaro-Cuello, M., Kacharov, N., Neumayer, N., Bianchini, P., **Mastrobuono-Battisti, A.** et al., **2020**, *"A deep view into the nucleus of the Sagittarius Dwarf Spheroidal Galaxy with MUSE. II. Kinematic characterization of the stellar populations"*, **ApJ**, 892, 20
47. Calamida, A., Zocchi, A., Bono, G., Ferraro, I., **Mastrobuono-Battisti, A.** et al., **2020**, *"The not so simple stellar system Omega Cen. II. Evidence in support of a merging scenario"*, **ApJ**, 891, 167
48. Thorsbro, B., Ryde, N., Rich, M., Schultheis, M., Renaud, F., Spitoni, F., Fritz, T., **Mastrobuono-Battisti, A.** et al., **2020**, *"Detailed abundances in the Galactic center: Evidence of a metal-rich alpha-enhanced stellar population"*, **ApJ**, 894,26
49. Cordoni, G., Milone, A. P., **Mastrobuono-Battisti, A.,** et al., **2020**, *"Three-component Kinematics of Multiple Stellar Populations in Globular Clusters with Gaia and VLT"*, **ApJ**, 889, 18
50. Leaman, R., Ruiz-Lara, T., Cole, A. A., Beasley, M. A., Boecker, A., Fahrion, K., Bianchini, P., Falcón-Barroso, J., Webb, J., Sills, A., **Mastrobuono-Battisti, A.** et al., **2020**, *"Globular cluster ejection, infall, and the host dark matter halo of the Pegasus dwarf galaxy"*, **MNRAS** 492, 5102

2019: 2 papers (2 as the first author)

51. **Mastrobuono-Battisti, A.**, Perets, H. B., Gualandris, A., Neumayer, N., Sippel, A., **2019**, *"Star formation at the Galactic Centre: coevolution of multiple young stellar discs"*, **MNRAS**, 490, 5820
52. **Mastrobuono-Battisti, A.**, Khoperskov, S. A., Di Matteo, P. & Haywood, M., **2019**, *"Mergers, tidal interactions, and mass exchange in a population of disc globular clusters: II. Long term evolution",* **A&A**, 622, A86

2018: 3 (1 as the supervisor of a PhD student, 2 collaboration papers in which I had a major role)

53. Khoperskov, S. A., **Mastrobuono-Battisti, A.**, Di Matteo, P. & Haywood, M., **2018**, *"Mergers, tidal interactions, and mass exchange in a population of disc globular clusters"*, **A&A**, 620, A154
54. Milone, A. P., Marino, A. F., **Mastrobuono-Battisti, A.**, Lagioia, E. P., **2018**, *"Gaia unveils the kinematics of multiple stellar populations in 47 Tucanae"*, **MNRAS**, 479, 500
55. Abbate, F., **Mastrobuono-Battisti, A.**, Colpi, M., Possenti, A., Sippel, A. C., Dotti, M., **2018**, *"Probing the formation history of the nuclear star cluster at the Galactic Centre with millisecond pulsars",* **MNRAS**, 473, 927

2017: 2 papers (1 as the first author, 1 as the supervisor of a PhD student)

56. **Mastrobuono-Battisti, A.** & Perets, H. B., **2017**, *"The composition of Solar system asteroids and Earth/Mars moons, and the Earth-Moon composition similarity"*, **MNRAS**, 469, 3597

57. Tsatsi, A., **Mastrobuono-Battisti, A.**, Van de Ven, G., Perets, H. B., Bianchini, P. & Neumayer, N., **2017**, *"On the rotation of nuclear star clusters formed by cluster inspirals"*, **MNRAS**, 464, 3720

2016: 2 papers (1 as the first author, 1 as the supervisor of a PhD student)

58. **Mastrobuono-Battisti, A.** & Perets, H. B., **2016**, *"Second-generation stellar disks in Globular Clusters and cluster ellipticities"*, **ApJ**, 823, 61

59. Aharon, D., **Mastrobuono-Battisti, A.** & Perets, H. B., **2016**, *"The History of Tidal Disruption Events in Galactic Nuclei"*, **ApJ**, 823, 137

2015: 1 Nature paper as the first author

60. **Mastrobuono-Battisti, A.**, Perets, H. B. & Raymond S. N., **2015**, *"A primordial origin for the composition similarity between the Earth and the Moon"*, **Nature**, 520, 212

2014: 4 papers (1 as the first author, 3 collaboration papers in which I had a major role)

61. **Mastrobuono-Battisti, A.**, Perets, H. B. & Loeb, A., **2014**, *"Effects of Intermediate Mass Black Holes on Nuclear Star Clusters"*, **ApJ**, 796, 40

62. Sollima A. & **Mastrobuono-Battisti, A.**, **2014**, *"Treatment of realistic tidal field in Monte Carlo simulations of star clusters"*, **MNRAS**, 443, 3513

63. Leigh N. W. C., **Mastrobuono-Battisti, A.**, Perets, H. B., Böker, T., **2014**, *"Stellar dynamics in gas: the role of gas damping"*, **MNRAS**, 441, 919

64. Perets, H. B. & **Mastrobuono-Battisti, A.**, **2014**, *"Age and Mass Segregation of Multiple Stellar Populations in Galactic Nuclei and their Observational Signatures"*, **ApJL**, 784, L44

2013: 1 first author paper

65. **Mastrobuono-Battisti, A.** & Perets, H. B., **2013**, *"Evolution of second-generation stars in stellar disks of globular and nuclear clusters: Omega Centauri as a test case"*, **ApJ**, 779, 85

2012: 1 first author paper (I had a career break of seven months in 2012)

66. **Mastrobuono-Battisti, A.**, Di Matteo, P., Montuori, M. & Haywood, M., **2012**, *"Clumpy streams in a smooth dark halo: the case of Palomar 5"*, **A&A**, 546, L7

4 PhD papers: *Paper 65, 67 and 68 should be considered as first author papers, considering that alphabetical order was adopted by the senior scientists.*

67. Antonini F., Capuzzo-Dolcetta R., **Mastrobuono-Battisti, A.** & Merritt D., **2012**, *"Dissipationless Formation and Evolution of the Milky Way Nuclear Star Cluster"*, **ApJ**, 750, 111

68. Sollima, A., Nipoti, C., **Mastrobuono-Battisti, A.**, Montuori, M., Capuzzo-Dolcetta, R., **2012**, *"A Monte Carlo analysis of the velocity dispersion of the globular cluster Palomar 14"*, **ApJ**, 744, 196

69. Capuzzo-Dolcetta, R., **Mastrobuono-Battisti, A.**, Maschietti, D., **2011**, *"NBSymple, a double parallel, symplectic N-body code running on Graphic Processing Units"*, **New Astron.**, 16, 284

70. Capuzzo-Dolcetta, R., **Mastrobuono-Battisti, A.**, **2009**, *"Globular cluster system erosion in elliptical galaxies"*, **A&A,** 507, 183

WHITE PAPERS

71. Zoltan, H, et al. including **Mastrobuono-Battisti, A.,** 2023, "Massive Black Hole Binaries as LISA Precursors in the Roman High Latitude Time Domain Survey", White Paper for the Nancy Grace Roman Space Telescope's Core Community Surveys (https://roman.gsfc.nasa.gov/science/ccs_white_papers.html)

72. Harms, J. et al. including **Mastrobuono-Battisti, A.,** 2023, "LGWA science white paper", in preparation

73. Schödel et al., including **Mastrobuono-Battisti, A.,** 2023, *"The JWST Galactic Center Survey -- A White Paper"*, https://arxiv.org/abs/2310.11912

CONFERENCE PROCEEDINGS

74. **Mastrobuono-Battisti, A.**, Khoperskov, S. A., Di Matteo, P. & Haywood, M., **2020***, "Globular cluster tidal interactions and mergers in the Galactic disc"*, IAU Symposium, 351, 442
75. Cordoni, G., Milone, A. P., **Mastrobuono-Battisti, A.,** et al., 2020, *"Kinematics of multiple stellar populations in Globular Clusters with Gaia"*, IAU Symposium, 351,281
76. Alfaro-Cuello, M., Kacharov, N., Neumayer, N., **Mastrobuono-Battisti, A.** et al., **2020**, *"A deep view into the nucleus of the Sagittarius dwarf spheroidal galaxy: M54"*, IAUS, 351, 47
77. Tsatsi, A. & **Mastrobuono-Battisti, A.**, **2017**, *"On the merger origin of nuclear star clusters"*, Proceeding, IAU Symposium, 321, 117
78. **Mastrobuono-Battisti, A.** & Tstasi, A., **2017**, *"The mass assembly history of the Milky Way nuclear star cluster"*, SF2A-2017: Proceedings of the Annual meeting of the French Society of Astronomy and Astrophysics, held 4-7 July 2017 in Paris. Eds.: C. Reylé, P. Di Matteo, F. Herpin, E. Lagadec, A. Lançon, Z. Meliani and F. Royer, 215
79. **Mastrobuono-Battisti, A.** & Perets, H. B., **2017**, *"Constraining the origin of multiple stellar populations in globular clusters with N-body simulations"*, SF2A-2017: Proceedings of the Annual meeting of the French Society of Astronomy and Astrophysics, held 4-7 July 2017 in Paris. Eds.: C. Reylé, P. Di Matteo, F. Herpin, E. Lagadec, A. Lançon, Z. Meliani and F. Royer, 311
80. **Mastrobuono-Battisti, A.**, & Perets, H. B., **2017**, *"The formation and evolution of Nuclear Stellar Clusters"*, Proceedings of the Fourteenth Marcel Grossman Meeting on General Relativity, World Scientific, Singapore, Massimo Bianchi, Robert T Jantzen, Remo Ruffini (eds)
81. **Mastrobuono-Battisti, A.**, Tsatsi, A. & Perets, H. B., **2016**, *"Simulating the mass assembly history of nuclear star clusters through globular cluster mergers"*, MmSAI, 87, 626
82. **Mastrobuono-Battisti, A.** & Perets, H. B., **2016**, *"Formation and evolution of nuclear star clusters"*, Proceedings of IAU Symposium No. 312, Volume 312, 122, "Star Clusters and Black Holes in Galaxies across cosmic time", 2014, Aug. 25–19, Beijing, China
83. **Mastrobuono-Battisti, A.**, Di Matteo, P., Montuori, M. & Haywood, M., **2013**, *"On the origin of the clumpy streams of Palomar 5"*, MmSAI, 84, 240
84. **Mastrobuono-Battisti, A.** & Capuzzo-Dolcetta, R., **2012**, "*The Formation of the Milky Way Nuclear Cluster", Proceedings of "Advances in Computational Astrophysics: methods, tools and outcomes"*, ASP Conference Series, R. Capuzzo-Dolcetta, M. Limongi and A. Tornambè (eds), 453, 237
85. Capuzzo-Dolcetta, R., Arca-Sedda, M., **Mastrobuono-Battisti, A.**, Punzo D. & Spera, M., **2012**, *"High performance astrophysics computing"*, Proceedings of "Advances in Computational Astrophysics: methods, tools and outcomes", ASP Conference Series, R. Capuzzo-Dolcetta et al. (eds), 453, 379
86. Montuori, M., Capuzzo-Dolcetta, R. & **Mastrobuono-Battisti, A.**, **2012**, *"Globular Cluster clumpy tidal tails", Proceedings of "Advances in Computational Astrophysics: methods, tools and outcomes"*, ASPCS, R. Capuzzo-Dolcetta, M. Limongi and A. Tornambè (eds), 453, 2191
87. Capuzzo-Dolcetta, R., Antonini, F. & **Mastrobuono-Battisti, A.**, **2011**, *"The Milky Way Nuclear Star Cluster"*, Proceedings of "Stellar Clusters and Associations – A RIA workshop on GAIA", 23-27 May 2011, Granada, Spain. 291

CONTACT INFORMATION

Federica Ricci

Skype
ORCID: 0000-0001-5742-5980
SCOPUS: 56942201200
Web of Science: AAO-7384-2020
NASA ads: list of publications

RESEARCH INTEREST

Research topics: AGN/galaxy coevolution, BH-host scaling relations, AGN feedback, AGN molecular outflows, AGN evolution, radio-loud AGN, multi-wavelength AGN surveys

RESEARCH AND EDUCATION

03/2022 - Today

Researcher (Ricercatrice TD-A)

Dipartimento di Matematica e Fisica, Universitá degli studi Roma Tre, Roma, Italia

- Preparatory work to full exploit Euclid data for AGN science, particularly to understand the AGN evolution and their demographics via the determination of several distribution functions, (such as: LF, BHMF, ERDF, bivariate distributions) taking advantage of Euclid transformative powers that are: exquisite image resolution, statistics (expected millions of AGN) and cosmological informations (LSS, host environments, etc). Leadership inside the Euclid Consortium of the Work Package dedicated to the study of type 1 and type 2 AGN.

11/03/2022-11/08/2022

(Paid) Maternity Leave - 5 months

12/2022 - Today

Associata INAF-OAR (Roma)

12/2020 - 11/2022

Associata INAF-OAS (Bologna)

10/2020 - 02/2022

Postdoc (Assegnista di Ricerca)

Dipartimento di Fisica e Astronomia, Università di Bologna, via Gobetti 93/2, 40129, Bologna, Italy

- "Probing the effect of BH winds on AGN host galaxies gas reservoirs" inside the BLACKOUT project . Data reduction, analysis and interpretation of ALMA data of high-z AGN with outflows in ionised phase and evidence of depleted molecular gas and of molecular outflows.
  - One paper as 1st author in preparation.

03/2018 - 09/2020

Fondecyt postdoctoral fellow

Instituto de Astrofísica and Centro de Astroingeniería, Facultad de Física, Pontificia Universidad Católica de Chile, Casilla 306, Santiago 22, Chile

- Unveil the black hole mass – host galaxy connection in obscured accreting supermassive black holes, 3-year project.
  - One paper as 1st author (BASS XXIX, ApJ Special Issue, Ricci+22);
  - One paper as 1st author in preparation;
  - CoI of other BASS papers (14 during the appointment, 22 in total);
  - One paper as 3rd author published (A&A, Duras+20 *Universal bolometric corrections for active galactic nuclei over seven luminosity decades*)
  - PI of OPT spectropolarimatry and NIR spectroscopic proposals
  - expert observer for the BASS collaboration

07/2017 – 10/2017

Postdoc

Harvard-Smithsonian Astrophysical Observatory, Cambridge, Boston, USA

- Multi-wavelength study (radio, optical, X-ray) on multiple scales (from the nucleus up to ~500 kpc) of kinetic feedback in action in 3C 196.1, a hybrid morphology radio galaxy, the BCG (brightest cluster galaxy) of a galaxy cluster.
  - One 1st author paper published on a international refereed journal (ApJ, Ricci+18: *Stormy weather in 3C 196.1*)
  - CoI of other 3C Chandra snapshot survey papers (7 published)
  - PI of several followup proposals with XMM and Chandra (see PI proposal section further below)

06/2017 **Visiting Postdoc**

Istituto di Radioastronomia (IRA), Bologna, Italy

- Data reduction and analysis of VLA observations of 3CR radiogalaxies observed in the Chandra snapshot survey.
  - One paper published on an international refereed journal (ApJS, Stuardi+18 *The 3CR Chandra Snapshot Survey: Extragalactic Radio Sources with Redshifts between 1 and 1.5*).

03/2017 – 05/2017 **Unpaid Postdoctoral Associate**

European Southern Observatory (ESO), Santiago, Chile

- Black hole – host connection in local obscured AGN. Morphological bulge-disc decomposition of mid- infrared emission of local samples of hard X-ray selected AGN employing GALFIT.
  - One 1st author paper published on international refereed journal (MNRAS Letter, Ricci+17c *Detection of faint broad emission lines in type 2 AGNs - III*)
  - One paper as 2nd author published on international refereed journal (Sani+18 *NGC1275*)

03/2017 – 02/2018 **Unpaid Postdoctoral Associate**

Dipartimento di Matematica e Fisica, Universitá degli studi Roma Tre, Roma, Italia

- Spectroscopic data reduction and analysis of optical and near-infrared spectra of local hard-X ray selected AGN

01/2014-02/2017 **PhD in Physics – XXIX cycle**

Dipartimento di Matematica e Fisica, Universitá degli studi Roma Tre, Roma, Italia

- Thesis: The role of AGN in galaxy evolution
  Three 1st autor papers published as part of my PhD on international refereed journals (AJ Ricci+15, A&A Ricci+17a *Novel calibrations of virial black hole mass estimators in active galaxies based on X–ray luminosity and optical/NIR emission lines* and MNRAS Ricci+17b)
  - One 2nd author paper as part of my PhD thesis published (MNRAS letter, Onori+17b *Detection of faint broad emission lines in type 2 AGN: II*)
  - One 3rd author paper as part of my PhD thesis published on international refereed journal (MNRAS Onori+17a *Detection of faint broad emission lines in type 2 AGN: I*)
  - One 3rd author paper related to the topic (but not presented in my PhD thesis) published on a refereed journal (La Franca+16 *Detection of Faint BLR Components in the Starburst/Seyfert Galaxy NGC 6221*)
  - PI of one NIR spectroscopic proposal

03/2015-04/2015 **Visiting student**

Department of Physics and Astronomy, University of Southampton, Southampton, UK

- The goal of the appointment was to perform a statistical demographic study of hard X-ray selected AGN using deep Chandra and COSMOS Legacy data. These X-ray samples, matched also with optical and UV selected AGN samples, were used to determine the evolution of the luminosity function of the ionizing AGN population up to z = 6, to constrain the role of the AGN in the hydrogen reionization.
  - One 1st author refereed paper (as part of my PhD thesis) has been published on an international journal (MNRAS, Ricci+17b *Constraining the UV emissivity of AGN*).

08/2014-10/2014

Visiting student

Harvard-Smithsonian Astrophysical Observatory, Cambridge, Boston, USA

- The goal of the project was the spectroscopic classification of unidentified gamma-ray sources observed by the Fermi satellite.
  - This collaboration (still ongoing) has led to a 1st author refereed paper as part of my PhD thesis (AJ, Ricci+15 *Optical spectroscopic observations of gamma-ray blazar candidates IV*)
  - Series of papers as CoI (14 published),
  - PI of optical spectroscopic followup proposals, expert observer for several nights

2011-2013

Master of Science in Physics

Dipartimento di Matematica e Fisica, Universitá degli studi Roma Tre, Roma, Italia

- Thesis: The measure of the AGN2 black hole mass with NIR spectroscopy
  - the work done during the master thesis ended up in one of the first publications done during my PhD with one paper published on MNRAS as 3rd author (La Franca+15 *Extending Virial Black Hole Mass Estimates to Low-Luminosity or Obscured AGN*)
- Grade: 110/110 cum laude

2008-2011

Bachelor of Science in Physics

Dipartimento di Matematica e Fisica, Universitá degli studi Roma Tre, Roma, Italia

- Grade: 110/110 cum laude

Mother tongue: Italian

Driving license: B

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C2	C2	C1	C2
Spanish	C1	C1	B2	B2	B2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
Common European Framework of Reference for Languages

Communication skills

- Excellent communication skills gained through several invited seminars as speaker and university lectures
- Excellent capacity of working in teams gained through leadership and participation to international scientific collaborations

Technical skills

- Expert observer, with 12 visiting and remote observing runs at Magellan and SOAR, >230 hrs (updated March 2024).
- Data analysis:
  + Firehose (IDL-based), reflex, IRAF/Pyraf, MIDAS software tools to reduce and analyse near-infrared and optical spectra of AGN.
  + Reduction of ALMA (12-m array, also ACA) and VLA (bands L,C,X) data using CASA and Python.
  + Image visualization and analysis with ds9 and Python.
  + Table visualization and cross match with Topcat, IDL, Python, Google Colab.
  + Multi Gaussian one-dimensional fitting performed with Python pyspeckit package and IDL-based MPFIT.
  + Stellar absorption fitting using Python ppxf package.
  + Two dimensional isophotal fitting performed with GALFIT, Sherpa.
  + Aperture photometry with APT
  + X-ray data reduction and analysis performed with CIAO, SAS and XSPEC.
  + X-ray surface brightness profile fit using IDL-based MPFIT.
  + Linear regression fit with IDL-based linmix_err (Bayesian), fitexy (symmetric regression).
  + Use of statistical tests (e.g., F-test, KS etc.).

TEACHING

Didattica PhD
A.A. 2023-2024
A.A. 2022-2023
A.A. 2021-2022

- PhD course “Evoluzione delle Galassie ad alto redshift“ 3CFU offered in the PhD degree in Physics of the Department of Mathematics and Physics, University Roma Tre

Didattica PhD
A.A. 2020-2021

- Half of the PhD course “Evoluzione delle Galassie ad alto redshift“ 3CFU offered in the PhD degree in Physics of the Department of Mathematics and Physics, University Roma Tre

Didattica
A.A. 2023-2024
A.A. 2022-2023

- “Laboratorio di Astrofisica” 6CFU FIS/05 offered during the Bachelor course in Physics of the Department of Mathematics and Physics, University Roma Tre

Advised students

- 01/2024 - present: One PhD student supervised (Ilaria Villani - expected defence: 2026), Roma Tre University, Italy
- 2023 - present: One Bachelor thesis supervised (Camilla Stazzi), Roma Tre University, Italy
- 2019 - present: Two master students supervised (James Aust, Kayleigh Richardson) University of Southampton, UK

Didattica integrativa
A.A. 2020-2021

- 20 hours as tutor for supporting the course “Laboratorio di Astrofisica” 6CFU FIS/05 offered during the Bachelor course in Physics of the Department of Mathematics and Physics, University Roma Tre

Didattica integrativa
A.A. 2014-2015

- 50 hours as tutor for supporting the class “Fisica Generale II” (General Physics second module, classic electromagnetism theory in vacuum and in matter) 12 CFU, offered in the Bachelor degree in Physics of the Department of Physics, University Roma Tre

Borsista del Laboratorio di Fisica
A.A. 2011-2012
A.A. 2010-2011
A.A. 2009-2010

- Teaching support for the laboratory activities of the courses for the Bachelor degree in Physics, Optics and Optometry, and Geology, offered at the Department of Physics, University Roma Tre.
  As part of the duties, during these three academic years I have also taken part to the preparation of numerous outreach activities (such as Open Days, Giornata di Vita Universitaria, Notte dei Ricercatori, Masterclasses etc) held both at the University of Roma Tre and in Frascati

LEADERSHIP

Publications

71(+3 in press) refereed publications, 6 as first author, in peer reviewed journals, including: AJ, A&A, ApJ, ApJL, ApJS, MNRAS (updated March 2024).
Author of 1 paper submitted to international journals.

Leadership

1. **Euclid SWG GAEV - AGN in Euclid**:
- **Euclid AGN Group WP9 (**LEADER: F. Ricci**,** S. Fotopoulou, V. Allevato) **-** leader role taken from 03/2024
- **DIRECTION** of the Euclid Science work package WP9 ("Type 1 and 2 AGN") where 89 scientists distributed between Italy, Germany, UK, Switzerland, the Netherlands, Japan participate.
- **COORDINATION** of the work carried out in WP9 and in its 7 working subgroups
- called Tiger Teams, setting monthly deadlines and objectives to be able to make the most of DR1 of the Euclid data and complete the first publications of the Euclid Consortium since the project began survey. Particular attention to developing synergies and collaborations between WP9 and the other WPs within the Science Working Group Galaxy and AGN Evolution (SWG-GAEV), which includes 11 WPs in total
- Monthly reports of progress and objectives achieved between the various WPs and SWG-GAEV leaders
- **DIRECTION AND ORGANIZATION** of the work of the Tiger Team AGN Distribution Functions (LEADER: F. Ricci, M. Bolzonella) the working group is made up of ~20 scientists belonging to WP9. This team must identify which AGN distribution functions are to be published with the first Euclid data (LF, BHMF, ERDF, 2PCF) and determine the various elements necessary for their quantification, such as selection effects, incompleteness, spectroscopic visibility masks and photometric, in synergy with what takes place within the other Organization Units (OU) such as OU-LE2 (VMSP/SEL-ID) and OU-LE3. I host monthly telecons to discuss the team's progress and identify next steps
- Active participation in other Tiger Teams within WP9, in particular in the one that deals with developing software to determine spectral parameters (FWHM and L of lines of interest, from the Paschen lines in NIR up to the CIV in UV), the one that is developing SED techniques to obtain the estimate of physical parameters (Mstar, SFR, Lbol), and the purpose of which is to do 2D fit to decompose the emission of the host from that of the AGN and therefore be able to study the structural parameters
- Actively contributing to the creation of a "stacked spectra" from optical to near-infrared with sharing of proprietary near-infrared spectroscopic data of type 1 AGN, this project led to the publication of a Pre-Launch Key Project Paper (Euclid Collaboration, Lusso et al. 2024 in press)
- Collaborators: Fotopolou, Allevato, Bongiorno, Lusso, Bolzonella

2. **SEAWIND - HEAD OF THE LOCAL RESEARCH UNIT** of Roma Tre for the **PRIN-MUR 2022 PNR SEAWIND** project funded by **NextGenerationEU** which involves around 15 scientists divided into 3 Research Units (RUs): INAF-Palermo, Roma Tre, IUSS Pavia (national PI: Pinto)
- **MANAGEMENT** of Roma Tre RU funds, ~54 kEUR (duration of 2 years)
- Participation in three commissions for the recruitment of two AdRs who were selected to work in the Roma Tre UdR (Dr. Matilde Signorini) and in that of IUSS Pavia (Dr. Rajath Sathyaprakash)
- **DIRECTION AND SUPERVISION** of the research work of Dr. Matilde Signorini (1-year postdoc contract, end Feb 2025)
- Contribution in the publication of 1 paper (SUBWAYS III, Gianolli+ in press)
- Collaborators: Pinto, Bianchi

3. **BASS** survey https://www.bass-survey.com/ - member of the international BASS collaboration involving ~60 scientists from USA, Israel, ESO, UK, Chile, Italy, Japan, China (22 articles of which one first name , Ricci+ 2022, ApJS published in international refereed journals MNRAS, ApJ, ApJS)
- **RESPONSIBLE** for the analysis and reduction of spectroscopic data in the NIR with the FIRE instrument of the Magellan's Baade telescope and of the "BASS is on FIRE" project, with an article as the first published name (Ricci+ 2022, ApJS) which is part of the ApJS Special BASS Data Release Issue 2. For NIR coverage, we have published (and made accessible to the community) the largest database of local AGN spectra in the restframe NIR (>300 sources)
- **DIRECTION AND ORGANIZATION** of the NIR spectroscopy observation campaign obtained in Chilean observatories (Magellan/Baade with FIRE instrument), which includes preparation of proposals as PI (3 proposals accepted, 5 nights of observations approved between 2019A and 2020B)
- Local expert observer of the collaboration, to perform visitor runs to Chilean observatories (Magellan, SOAR) for observation campaigns in optical and NIR spectroscopy, with >50 hours of accumulated experience (from 09/2018 to 09/2020)
- Participation in the drafting of observational proposals to obtain spectroscopic observations in the optical/NIR bands and to obtain IFU data (MUSE)
- Regular participation in collaboration meetings and workshops, with presentation of talks (of which 2 by INVITATION)
- Collaborators: Treister, Bauer, Koss, Trakhtenbrot

4. **3C Chandra Snapshot survey** - part of the international team of ~30 scientists (Us, Italy, Chile) whose goal is to perform an X-ray survey of the 3C radio sample (7 refereed articles published on ApJSS and ApJ, including one as 1st author Ricci+18, ApJ, and one as 3rd author Jimenez-Gallardo, Sani, Ricci+22, ApJ)
- **RESPONSIBLE** for the multiwavelength characterization in the radio, optical and Xray of a particolar source (3C 196.1), that lead to a 1st author paper (Ricci+18, ApJ) and one as 3rd author (Jimenez-Gallardo, Sani, Ricci+ 2022, ApJ)
- **DIRECTION AND ORGANIZATION** of observing programs to obtain followup in the X-rays for the same source 3C 196.1, 3 accepted proposals as PI (with XMM-Newton and Chandra)
- Participation to (accepted) proposal writing in X-ray and optical, both single sources and survey programs
- Collaborators: Massaro, Forman, Kraft, Paggi

5. **Fermi Blazar** - part of the International team with ~30 scientists from US, Italy, Chile,Mexico (15 refereed papers published on internazional journals: AJ, ApSS, A&A, one of which is 1st author Ricci+15)
- **DIRECTION AND ORGANIZATION** of optical spectroscopic followup for the identification of high-energy Fermi sources, with 4 accepted proposals as PI (ESO P104, P105 for a total of 6 nights, and CNTAC 2020A, 2020B, for a total of 5.5 nights)
- Participation to (accepted) proposal writing to obtain optical spectroscopy in 4 NOAO/Fermi cycles, > 30 nights accepted at telescopes SOAR, KPNO, Blanco
- Expert observer for the collaboration for spectroscopic campaigns in ground-based telescope, performed both in visiting and remotely, >120 hrs
- Collaborators: D'Abrusco, Massaro

Summary of proposal - leadership (PI) and participation (CoI) to national and international teams

- Proposals:
  - **PI of 14 proposals accepted** in several international facilities - updated: March 2024
    + optical/NIR spectroscopy ground- or space-based 6-8 m telescopes: 70 hrs
    + optical spectroscopy ground-based 3.5-4 m telescopes: 127 hrs
    + Space-based X-ray observations (Chandra, XMM): 239 ks
  - **Co-Investigator of >50 accepted proposals** - updated March 2024
    + optical/NIR spectroscopy ground- or space-based 6-8 m telescopes: >445 hrs
    + optical spectroscopy ground-based 3.5-4 m telescopes: >345 hrs
    + optical/NIR IFU ground-based 6-8 m telescopes (MUSE-ERIS): >145 hrs
    + Multi band opt/NIR photometry ground-based 6.5-8 m telescope: 96 hrs
    + Multi band opt/nir photometry ground-based 4m telescope: >210 hrs
    + ALMA: 18 hrs
    + Space-based X-ray observations (Chandra, XMM): 763 ks + 2 CCT proposals

Other Projects

- 4MOST ChANGES (PI: F. E. Bauer, P. Lira)
  - member of the 4MOST ChANGES (Chilean AGN/Galaxy Extragalactic Survey) project, one of the 4MOST COMMUNITY SURVEYS selected by ESO for the next generation 4MOST instrument.
  - Participation in the drafting of the scientific case for the "letter of interest", which was selected for the second stage of evaluation as 4MOST COMMUNITY SURVEY PROPOSALS - S16. Participation in monthly telecons (from 10/2020 to 02/2022)

- BLACKOUT PRIN-MUR 2017 funded project (PI. Fiore) - Probing the **effect of AGN feedback on galaxies' gas reservoirs at z~1.5** by using ALMA millimeters observations of obscured AGN in XMM-COSMOS.
  - **RESPONSIBLE** of the ALMA data reduction and analysis.

- Changing look AGN - member of an international team with ~15 scientists from US and Italy
  - **LEADER** for the optical spectroscopic followup of a well-known changing look AGN (1ES 1927+654) with 2 proposals accepted as PI (LBT call 2022-2023 with LBT/MODS, and AOT48 TNG/DOLORES)
  - Collaborators: Laha, Bianchi

Students and postdocs supervised

- 02/2024 - present: One postdoc AdR supervised (Matilde Signorini) Roma Tre University, Italy
- 01/2024 - present: One PhD student supervised (Ilaria Villani - expected defence: 2026), Roma Tre University, Italy
- 2023 - present: One Bachelor thesis supervised (Camilla Stazzi), Roma Tre University, Italy
- 2019 - present: Two master students supervised (James Aust, Kayleigh Richardson) University of Southampton, UK

Proposal (PI)

14. TNG AOT48, TNG/DOLORES, 12hrs: *Discovering the nature of the elusive new population of changing look AGN*
13. LBT 2022-2023 LBT/MODS 0.2 hours: *Spectroscopy of the changing-look-AGN 1ES 1927+654: are we witnessing the birth of a jet?*
12. Chandra Cycle 24 48ks: *Dissecting the stormy weather in 3C 196.1*
11. CNTAC2020B Magellan/FIRE 2 nights: *Peering into the hidden BLR: constraining the virial factor in obscured X-ray selected local AGN*
10. CNTAC2020B Blanco/COSMOS 3 nights: *Continuing the census of unidentified Fermi gamma-ray sources*
9. ESO P106 VLT/FORS2 6.4 hours: *Peering into the hidden BLR: constraining the virial factor in obscured X-ray selected maser AGN*
8. CNTAC2020A Blanco/COSMOS 2.5 nights: *Continuing the census of unidentified Fermi gamma-ray sources*
7. CNTAC2020A Magellan/FIRE 2 nights: *Peering into the hidden BLR: constraining the virial factor in obscured X-ray selected local AGN*
6. ESO P105 NTT/EFOSC 3 nights: *Continuing the census of unidentified Fermi gamma-ray sources*
5. ESO P104 NTT/EFOSC 3 nights: *Continuing the census of unidentified Fermi gamma-ray sources*
4. CNTAC2019A Magellan/FIRE 1 night: *The BASS is on FIRE: Near-IR spectroscopy of hard X-ray selected AGN in the local Universe*
3. XMM-Newton AO18 94ks (joint Chandra 48 ks): *Echoes of powerful outbursts in 3C 196.1 with XMM-Newton and Chandra*
2. XMM-Newton AO17 97ks (joint Chandra 40 ks): *Hunt for echoes of powerful outbursts in the BCG 3C 196.1: a XMM-Newton + Chandra look*
1. LBT 2016-2017 LBT/LUCI 13.5 hrs: *The first measures of the BH mass in local AGN2: probing the extremes of the Eddington ratio distribution*

Proposal (CoI)

2024

58. ESO P113, PI: Cresci, VLT/ERIS, 8hrs: *HIPER (High resolution Investigation of Feedback Processes with ERIs)*

2023

57. ESO P112, PI: Trakhtenbrot, VLT/XSH, 32 hrs: *A Complete Census of SMBHs in Nearby Powerful Obscured Swift-BAT AGN*
56. ESO P112, PI: Vito, VLT/HAWK-I, 4hrs: *One HAWK-I to find 'em: identifying galaxies around a z=6.5 QSO to study its large-scale environment*
55. ESO P112, PI: Cresci, VLT/ERIS, 20hrs: *HIPER (High resolution Investigation of Feedback Processes with ERis)*
54. ALMAcy10 (+ joint JWST), PI: Tripodi, ALMA 18hrs, JWST 3200s: *Dissecting the kinematics of the central region of a z~6 QSO with ALMA and JWST*
53. VST ESO P111, PI: Paolillo, *Toward next-generation time-domain surveys: census and properties of AGN in the LSST Deep Drilling Fields*
52. LBT 2022-2023 DDT, PI: La Franca, LBT/MODS, 0.3hrs: *Quasi Simultaneous DDT XMM+NTT observations of the changing look AGN B2 0917+23*
51. ESO P111 DDT, PI: La Franca, NTT/EFOSC2, 35m: *Simultaneous DDT XMM+NTT observations of the changing look AGN B2 0917+23*
50. ESO P111, PI: Cresci, VLT/ERIS, 15hrs: *HIPER (High resolution Investigation of Feedback Processes with ERis)*
49. ESO P111, PI: Vito, VLT/HAWK-I, 4hrs: *One HAWK-I to find 'em: identifying galaxies around a z=6.5 QSO to study its large-scale environment*
48. ESO P111, PI: Marchesi, NTT/SOFI, 6hrs: *Outside the halo: Tracking the Mpc-scale structure of a z~1.7 protocluster with SoFI*
47. TNG AOT47, PI: La Franca, TNG/DOLORES, 12hrs: *Discovering the nature of the elusive new population of changing look AGN*
46. XMM-Newton AO22, PI: Koss, 27ks: *A Detailed X-ray Study of the 230 pc Dual AGN in UGC 4211*

2022

45. ESO P110, PI: Venturi, VLT/MUSE 4 hrs: *Toppling the Teacup: Understanding the jet-outflow-ISM interplay with MUSE NFM magnifying glass*
44. ESO P110, PI: Venturi, VLT/MUSE 9 hrs: *Unveiling the mistery of turbulent gas perpendicular to low-power radio jets in Seyferts*
43. ESO P110, PI: Trakhtenbrot, VLT/XSH, 18.8 hrs: *A Complete Census of SMBHs in Nearby Powerful Obscured Swift-BAT AGN*

42. LBT 2022-2023, PI: Piconcelli, LBT/LUCI, 7hrs: *Shedding light on intriguing broad-line W1W2-dropout quasars*
41. CNTAC2022A, PI: Congiu, Magellan/IMACS+Fourstar, 3nights: *Probing the large-scale environment of the first obscured QSO candidate at z>6 hosted in a merging system*
40. ESO P109, PI: Treister, VLT/MUSE, 33hrs NFM +4.4hrs WFM: *The Nuclear Regions of Coalescing Major Galaxy Mergers Dissected with MUSE NFM*
39. ESO P109, PI: Trakhtenbrot, VLT/XSH, 30.7 hrs: *A Complete Census of SMBHs in Nearby Powerful Obscured Swift-BAT AGN*

2021

38. LBT 2021-2022, PI: Vito, LBT/LBC 8 hrs: *A foreground galaxy group toward the X-ray variable QSO J1641 at z=6.047 hinting at gravitational lensing*
37. ESO P108, PI: Venturi, VLT/MUSE 16 hrs: *Unveiling the mistery of turbulent gas perpendicular to low-power radio jets in Seyferts*
36. ESO P108, PI:Trakhtenbrot, VLT/XSH 36.1 hrs: *A Complete Census of SMBHs in Nearby Powerful Obscured Swift-BAT AGN*
35. ESO P108, PI: Vito, VLT/XSH, 11 hrs: *Probing nuclear winds in a peculiarly X-ray weak QSO at z=6.515*
34. CNTAC2021A, PI: Venturi, Magellan/FIRE+MagE, 2 nights: *Unveiling ongoing star-formation inside the galactic outflow of NGC4945*

2020

33. ESO P106, PI: Vito, VLT/XSH, 11 hrs: *Probing nuclear winds in a peculiarly X-ray weak QSO at z=6.515*
32. ESO P106, PI: Trakhtenbrot, VLT/XSH, 38.7 hrs: *A Complete Census of SMBHs in Nearby Powerful Obscured Swift-BAT AGN*
31. Chandra cycle 22, PI: Massaro, GO 186ks: *Hidden treasures in the 3CR Extragalactic catalog*
30. Chandra cycle 22, PI: Missaglia, GO 200ks: *Investigating the X-ray extended emission around the radio galaxy 3C 297*
29. CNTAC2020A, PI: Vito, Magellan/FIRE 2 nights: *The physical properties of a galaxy system hosting the first heavily obscured QSO candidate at z > 6*
28. CNTAC2020A, PI: Vito, Magellan/IMACS+Fourstar 2 nights: *The environment of an obscured QSO pair at z>6*
27. CNTAC2020A, PI: Vito, Magellan/FIRE 2 nights: *The first optical narrow line QSO candidate at z>6 from the SHELLQ survey*
26. CNTAC2020A, PI: Treister, MPG/GROND 3 nights: *GROND Multiwavelength SEDs of Swift/BAT-selected BASS AGN in Major Galaxy Mergers*
25. CNTAC2020B, PI: C. Ricci, Magellan/MagE 2 nights: *A Complete Census of SMBHs in Nearby Powerful Obscured Swift-BAT AGN*
24. NOAO-Fermi Joint proposal cycle 13, PI: Massaro, *An optical perspective of the unknown gamma-ray sky*
    Telescopes: SOAR/KPNO/Blanco, >30 nights including also NOAO-Fermi Joint proposal cycles 9,10,11,12 (see below)
23. Yale time 2020A, PI: Balokovic, primary CoI: F. Ricci, Magellan/FIRE 1.5 nights: *Infrared spectroscopy of peculiar X-ray selected AGN*

2019

22. ESO P105, PI: Trakhtenbrot, VLT/XSH, 40.7 hrs: *BAT AGN Spectroscopic Survey (BASS) - A Complete Census of SMBHs in Nearby Powerful Obscured AGN*
21. ESO P104, PI: Treister, VLT/MUSE, 14 hrs: *The Nuclear Regions of Nearby Dual AGN at the Highest Resolution with MUSE NFM*
20. ESO P104, PI: Treister, VLT/MUSE, 24 hrs: *High Resolution Kinematics in the Nuclear Region of (U)LIRGs across the Merging Sequence*
19. ESO P104, PI: Trakhtenbrot, VLT/XSH, 55 hrs: *BAT AGN Spectroscopic Survey (BASS) - A Complete Census of SMBHs in Nearby Powerful Obscured AGN*
18. Chandra cycle 21, PI: Massaro, 188ks: Xraying the unknown 3CR Extragalactic sky
17. CNTAC2019A, PI: Treister, MPG/GROND 3 nights: *GROND Multiwavelength SEDs of Swift/BAT-selected BASS AGN in Major Galaxy Mergers*
16. CNTAC2019A, PI:C. Ricci, SOAR 4 nights: *A Complete Census of SMBHs in Nearby Powerful Obscured Swift-BAT AGN*
15. CNTAC2019A, PI:C. Ricci, Magellan/MagE 2 nights: *A Complete Census of SMBHs in Nearby Powerful Obscured Swift-BAT AGN*
14. CNTAC2019B, PI:Vito, Magellan/IMACS MOS, 3 nights: *Unveiling the processes of early SMBH assembly: toward a robust high-redshift AGN X-ray luminosity function*
13. NOAO-Fermi Joint proposal cycle 12, PI: Massaro *Hunting gamma-ray blazars with optical spectroscopic observations*
12. Yale time 2019A, PI: Balokovic, primary CoI: F. Ricci, Magellan/FIRE 1.5 nights: *Infrared spectroscopy of peculiar X-ray selected AGN*

2018
11. Chandra cycle 20, PI: Massaro, GO 162ks: *Completing the Chandra Extragalactic 3CR Survey*
10. Chandra cycle 20, PI: Massaro, CCT: X-ray surveying radio-loud active galaxies and their large scale environments
9. Chandra cycle 20, PI: Koss, CCT: *C-BASS: A Chandra Legacy Survey of AGN at the Highest Spatial Resolutions*
8. LBT 2018-2019, PI:Bianchi, 20 hrs*: The smallest central accreting BHs in low mass galaxies*
7. NOAO-Fermi Joint proposal cycle 11, PI: Massaro: *The Optical Spectroscopic campaign of gamma-ray blazar candidates: 10 yrs after the FERMI launch*

2017
6. LBT 2016-2017, PI: Zappacosta, LBT/LUCI 0.33 hrs + LBT/MODS 0.1 hrs: *Probing variable gas motions in the hyperluminous quasar SDSSJ1521+5202*
5. NOAO-Fermi Joint proposal cycle 10, PI: Massaro: *Completing the optical Spectroscopic campaign of the gamma-ray blazar candidates*

2016
4. ESO P97, PI: Zappacosta, VLT/XSH 2hrs: *The puzzling variable line shifts in hyperluminous quasars*
3. NOAO-Fermi Joint proposal cycle 9, PI: Massaro: *Continuing the optical Spectroscopic campaign of the gamma-ray blazar candidates*

2015
2. Yale time 2015A, PI: Massaro, SOAR 3 nights: *Completing the optical spectroscopic campaign of candidate counterparts for the unidentied gamma-ray sources*

2014
1. ESO P93, PI: Onori, VLT/XSH 8 hrs: *The first measure of the local density of the Low Mass Black Holes via NIR spectroscopy of AGN2*

HONOURS AND AWARDS

National and international awards

- 2023-present: **ASN2021**, habilitation to become professor (II fascia, 02/C1, MUR, Italy)
- **FONDECYT fellowship** – PRINCIPAL INVESTIGATOR of the research project financed by FONDECYT ANID (Chilean National Agency for Research and Development of Chile), postdoctoral program n 3180506: "Unveil the black hole mass – host galaxy connection in obscured accreting supermassive black holes. The project was ranked 8th out of approximately 70 applications in the Astronomy, Cosmology and Particle Group
- **FONDECYT GRANT**: fund manager, 13.5 Million CLP (corresponding to 19.5 kUSD 3 years), allocated by ANID to encourage collaborations, travel and support participation in conferencesand workshops.
- ESO **fellowship** (declined)
- PhD scholarship (40k EUR, 3 years, Italy)

Professional and Academic service

- 05/2023-present: Funder and co-organizer of the DAJE (Digest AGN Journal Event) meeting, meeting of the AGN community working in Rome (every ~2 months)
- 2023-present: Member of 4 hiring committees for 4 postdoctoral positions (AdR): 2 in Rm3, 2 in IUSS Pavia
- 2022-present: Reviewer for the proposals TNG/REM AO47-AOT48 (INAF time)
- 2022-present: Member of several committees (5, controrelatrice for 3 of them) for attributing the Bachelor and Master degrees in Physics, Roma Tre University, Italy
- 07/2021-02/2022: Co-organizer of the FAME (Friday AGN MEetings), bi-weekly meetings of the Bologna IRA/INAF/DIFA Extragalactic AGN and Galaxies Group
- 06/2019 - 09/2020: IA Postdoc representative
- 11/2019: Review editor for Extragalactic Astronomy for the Frontiers in Astronomy and Space Science Journal
- 12/2018: LOC of the TORUS2018 meeting, Puerto Varas (CL)

TALKS AND SEMINARS

More than 35 talks (contributed, invited and seminars), including 16 invited, given to international conferences and workshops since 2014.

Conferences (as speaker)

- 09/2024 (Confirmed - TBD) Astrophysics and Space Science in Marche I : AGN feedback and star formation across cosmic scales and time, Sirolo (IT). Talk: *Extreme QSO feedback unveiled in a massive starburst at the golden epoch of galaxy evolution*
- 04/2024 (Confirmed - TBD) New Horizons for Understanding Nearby AGN, U. Maryland (US). Talk: *BASS AGN as standard candles anchors: Luminosity-variability correlations and its applications*
- 09/2023 YAGN 2023, Palermo (IT). Talk: *The NIR view of the BLR (and the effects of obscuration) in X-ray selected local AGN: BASS DR2*
- 06/2023 XRU, Athens (GR). Talk: *The NIR view of the BLR (and the effects of obscuration) in X-ray selected local AGN: BASS DR2*
- 05/2023 HSC Meeting 2023: HYPERION, WISSH and Friends, Bologna (IT). Talk: *AGN molecular outflows at the golden epoch of galaxy evolution*
- 05/2022 Active Galactic Nuclei XIV: The Renaissance of Black Holes and Galaxies, Florence (IT). Talk: *Molecular outflows and gas content of two obscured AGN at the golden epoch of galaxy evolution*
- 12/2020 Supermassive Black holes, Chile (online). Talk: *Peering into the hidden BLR: constraining the virial factor in obscured X-ray selected local AGN*
- 09/2019: The 3C Extragalactic radio sky survey: legacy of the third Cambridge catalogue, Turin (IT). Talk: *Stormy weather in 3C 196.1: Nuclear Outbursts and Merger Events Shape the Environment of the Hybrid Radio Galaxy 3C 196.*
- 09/2018: CLUSTER2, Napoli (IT). Talk: *Stormy weather in 3C 196.1: an hybrid morphology radio galaxy nuclear outburst shapes the environment of the surrounding cluster ICM*
- 08/2018: Are AGN Special? Durham (UK). Talk: *The role of AGN in the hydrogen reionization or are AGN special for the hydrogen reionization?*
- 07/2018: The early growth of Supermassive Black Holes, Sexten (IT). Talk: *The Mbh – galaxy scaling relations in the local Universe: what is the role of type 2 AGN*
- 03/2018: Local hard X-ray selected AGN across the multi-wavelength spectrum, Santiago (CL). Talk (invited): *The BH mass - galaxy scaling relations in the local Universe: what is the role of type 2 AGN?*
- 11/2017: Galaxy Evolution & Environment, Arcetri (IT). Talk: *The BH mass - galaxy scaling relations in the local Universe: what is the role of type 2 AGN?*
- 09/2016: Active Galactic Nuclei 12: a Multi-Messenger perspective, Naples (IT). Talk: *The BH mass - K-bulge luminosity relation in type 2 AGN*
- 08/2016: Hidden Monsters: Obscured AGN and Connections to Galaxy Evolution, Dartmouth (USA). Talk: *The BH mass - K-bulge luminosity relation in type 2 AGN*
- 07/2016: Active Galactic Nuclei: what's in a name?, Garching (GER). Talk: *The BH mass - Kbulge luminosity relation in type 2 AGN*
- 06/2016: Hot spots in the XMM sky: Cosmology from X-ray to Radio, Mykonos (GR). Talk: *Constraining the UV emissivity of AGN throughout cosmic time via X-ray surveys*
- 09/2015: Demographics and Environment of AGN from Multi-Wavelength Surveys, Chania (GR). Talk: *AGN feedback: kinetic and radiative efficiencies*
- 06/2014: The Unquiet Universe, Cefalu` (IT). Talk: *Looking for the broad emission lines in AGN2 with deep NIR spectroscopy and the measure of the mass of Intermediate Mass BH*

Seminars (invited)

- 12/2022: Physics Colloquium Rm3, Roma (IT) "AGN molecular outflows at the golden epoch of galaxy evolution"
- 10/2020: Astrophysics Talk UniBO, Bologna (IT)
- 09/2020: ALMA-JAO Colloquium, Santiago (CL)
- 10/2018: Departamento de Física, Universidad de Chile, Santiago (CL)
- 10/2018: Facultad de Ingeniería y Ciencias, Universidad Diego Portales, Santiago (CL)
- 11/2017: Osservatorio Astronomico di Brera, INAF, Milano (IT)
- 11/2017: Osservatorio Astronomico di Roma, INAF, Monte Porzio Catone RM (IT)
- 09/2017: CfA High Energy Astrophysics Division, Harvard-Smithsonian Astrophysical Observatory, Cambridge (USA)
- 06/2017: Colloquium at Osservatorio di Radioastronomia, INAF, Bologna (IT)
- 05/2017: ESO TMT, Santiago (CL)
- 05/2017: Instituto de Astrofísica, Facultad de Física, Pontificia Universidad Católica de Chile, Santiago (CL)
- 10/2014: CfA High Energy Astrophysics Division, Harvard-Smithsonian Astrophysical Observatory, Cambridge (USA)
- 09/2014: CfA High Energy Astrophysics Division, Harvard-Smithsonian Astrophysical Observatory, Cambridge (USA)

Workshops

- 07/2020 BASS annual (online) workshop. Talk (invited) *The NIR view of the BLR*
- 04/2020 ALMA Community Day Event at the JAO, Santiago
- 05/2019: SMBH: Formation and Growth in Conce, Concepcion (CL). Talk: *Looking through FIRE: NIR spectra of BASS AGN*
- 03/2019 ALMA Community Day Event at the JAO, Santiago
- 01/2019 BASS workshop in Gainesville, Florida (USA) Talk: *Unveiling the BH mass - host galaxy connection in obscured accreting supermassive black holes*
- 12/2018 Basal/CATA UC annual workshop, Majadas de Pirque, Pirque (CL)
- 09/2018: PUC-KIAA Bilateral Workshop, Santiago (CL). Talk (invited): *The role of AGN in the hydrogen reionization*
- 05/2015 JWST workshop: User training in JWST Data Analysis, Space Telescope Science Institute, Baltimore (USA)
- 11/2013 ESO ALMA workshop: ALMA Community Days: Preparing for Cycle 2, ESO Headquarters, Garching (GER)

Memberships

- BASS survey member
- Euclid survey member (AGN WP9)
- LSST survey member (INAF inkind team)
- ChANGES (Chilean AGN/Galaxy Extragalactic 4MOST Survey): color+variability-selected AGN
- Athena WG: Formation and Growth of the earliest SMBH
- Athena WG: Understanding the buildup of SMBH and galaxies
- SPICA

Bibliometric indexes

2140 total citations, 177 on first author papers, h-index 24, m-index 2.7, according to SAO/NASA ADS (updated 03/2024).

ANNEXES

Full publication list

La sottoscritta, consapevole che – ai sensi dell'art. 76 del D.P.R. 445/2000 – le dichiarazioni mendaci, la falsità negli atti e l'uso di atti falsi sono puniti ai sensi del codice penale e delle leggi speciali, dichiara che le informazioni rispondono a verità.

FULL LIST OF PUBLICATIONS

Refereed - 1st author

1. **F. Ricci**, E. Treister, F. E. Bauer, J. E. Mejía-Restrepo, M. J. Koss, J. S. den Brok, M. Baloković, et al., **2022, ApJS, 261, 8:"BASS. XXIX. The Near-infrared View of the Broad-line Region (BLR): The Effects of Obscuration in BLR Characterization"**
doi:10.3847/1538-4365/ac5b67
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