

# List of publications

Matteo Mancinelli

Post-doctoral research fellow, Institut Pprime

## Journal papers

1. S. Meloni, A. Di Marco, **M. Mancinelli**, R. Camussi, *Experimental investigation of jet-induced wall pressure fluctuations over a tangential flat plate at two Reynolds numbers*, Scientific Reports, 2020
2. S. Meloni, **M. Mancinelli**, R. Camussi, J. Huber, *Wall pressure fluctuations induced by a compressible jet in installed configuration*, AIAA Journal, 2020
3. S. Meloni, A. Di Marco, **M. Mancinelli**, R. Camussi, *Wall-pressure fluctuations induced by a compressible jet flow over a flat plate at different Mach numbers*, Experiments in Fluids, 2019
4. **M. Mancinelli**, V. Jaunet, P. Jordan, A. Towne, *Screech-tone prediction using upstream-travelling jet modes*, Experiments in Fluids, 2019
5. **M. Mancinelli**, R. Camussi, *Acceleration and wall pressure fluctuations generated by an incompressible jet in installed configuration*, Comptes Rendus Mécanique, 2018
6. **M. Mancinelli**, T. Pagliaroli, R. Camussi, T. Castelain, *On the hydrodynamic and acoustic nature of pressure POD modes in the near field of a compressible jet*, Journal of Fluid Mechanics, 2018
7. T. Pagliaroli, **M. Mancinelli**, G. Troiani, U. Iemma, R. Camussi, *Fourier and wavelet analyses of intermittent and resonant pressure components in a slot burner*, Journal of Sound and Vibration, 2018
8. R. Camussi, **M. Mancinelli**, A. Di Marco, *Intermittency and stochastic modelling of hydrodynamic pressure fluctuations in the near field of compressible jets*, International Journal of Heat and Fluid Flow, 2017
9. **M. Mancinelli**, T. Pagliaroli, A. Di Marco, R. Camussi, T. Castelain, *Wavelet decomposition of hydrodynamic and acoustic pressures in the near field of the jet*, Journal of Fluid Mechanics, 2017
10. **M. Mancinelli**, A. Di Marco, R. Camussi, *Multi-variate and conditioned statistics of velocity and wall pressure fluctuations induced by a jet interacting with a flat-plate*, Journal of Fluid Mechanics, 2017

11. A. Di Marco, **M. Mancinelli**, R. Camussi, *Flow-induced pressure fluctuations of a moderate Reynolds number jet interacting with a tangential flat plate*, Advances in Aircraft and Spacecraft Sciences, 2016
12. A. Di Marco, **M. Mancinelli**, R. Camussi, *Pressure and velocity measurements of an incompressible moderate Reynolds number jet interacting with a tangential flat plate*, Journal of Fluid Mechanics, 2015

## Ph.D. thesis

- M. Mancinelli, *Experimental investigation of compressible and incompressible jet aeroacoustics in free and installed configurations through advanced time-frequency analysis*, Università degli Studi Roma Tre, 2017

## **WORK EXPERIENCE**

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### **Associate professor qualifying examination**

[ 05/2021 – Current ]

Country: Italy

### **Associate professor qualifying examination**

[ 03/2021 – Current ]

Country: France

### **Post-doctoral research fellow**

**Centre National de la Recherche Scientifique - Institut Pprime** [ 01/12/2020 – Current ]

Address: 11 Boulevard Marie et Pierre Curie, 86962 Poitiers (France) - [www.pprime.fr](http://www.pprime.fr)

City: Poitiers

Country: France

Name of unit or department: Département Fluides Thermique et Combustion - Business or sector: Professional, scientific and technical activities

In the framework of the DJINN EU project:

- Acoustic measurements in a jet-wing configuration
- Noise control in a jet-wing configuration

### **Post-doctoral research fellow**

**Université de Poitiers - Institut Pprime** [ 01/12/2019 – 30/11/2020 ]

City: Poitiers

Country: France

- Experiments on single and twin supersonic jets
- Stability analysis of single and twin supersonic jets

### **Post-doctoral research fellow**

**Centre National d'Etudes Spatiales, assigned to Institut Pprime** [ 01/12/2017 – 30/11/2019 ]

City: Poitiers

Country: France

- Experimental tests on supersonic jets
- Jet noise data analysis
- Linear stability analysis of supersonic flows

### **Post-doctoral research fellow**

**Università degli Studi Roma Tre - Department of Engineering** [ 01/07/2017 – 30/11/2017 ]

Address: 79, Via della Vasca Navale, 00146 Rome (Italy) - [www.uniroma3.it](http://www.uniroma3.it)

- Aeroacoustics of subsonic jets in free and installed configurations
- Collaboration to the writing of the deliverables of the FP7 EU project JERONIMO (ACP2-GA-2012-314692)
- **Teaching activity:**
- Co-advisor for Bachelor's and Master's Degree theses
- Support to the teaching activity of the Bachelor's Degree course in Mechanical Engineering: Laboratory of Aeronautics.
- Support to the teaching activity of the Master's Degree courses in Aeronautical Engineering: Aerodynamics, Thermo-fluid dynamics of propulsive systems

### **Ph.D. candidate**

**Università degli Studi Roma Tre - Department of Engineering** [ 01/01/2017 – 13/06/2017 ]

Address: Rome (Italy)

- Experimental analysis of the interaction between a compressible jet and a tangential surface
- Aeroacoustics of subsonic jets in free and installed configurations
- Collaboration to the achievement of the scientific goals of the FP7 EU project JERONIMO (ACP2-GA-2012-314692)

### **Short term-contract researcher**

**Università degli Studi Roma Tre - Department of Engineering** [ 01/12/2016 – 31/12/2016 ]

Address: Rome (Italy)

Support to data analysis and writing of the report of the final deliverable of FP7 EU project EASIER (JTI-CS-2013-02-GRA-05-008)

## Ph.D. student

*Università degli Studi Roma Tre - Department of Engineering* [ 01/01/2014 – 31/12/2016 ]

Address: Rome (Italy)

- Experimental measurements of velocity and pressure fields generated by subsonic jets in free and installed configurations
- Data processing through advanced time-frequency analysis techniques based on wavelet transform
- **Teaching activity:**
- Co-advisor for Bachelor's and Master's Degree theses
- Support to the teaching activity of the Bachelor's Degree course in Mechanical Engineering: Laboratory of Aeronautics.
- Support to the teaching activity of the Master's Degree courses in Aeronautical Engineering: Aerodynamics, Thermo-fluid dynamics of propulsive systems
- Collaboration to the achievement of the scientific goals and the writing of the deliverables of the FP7 EU project JERONIMO (ACP2-GA-2012-314692)

## Long term-contract researcher

*Università degli Studi Roma Tre - Department of Engineering* [ 01/02/2015 – 01/12/2015 ]

Address: Rome (Italy)

Support to the business management and scientific report of the EU project AEROTRANET2 (FP7-PEOPLE-2012-ITN)

## Short term-contract researcher

*Università degli Studi ROMA TRE - Department of Engineering* [ 01/06/2013 – 31/12/2013 ]

Address: Rome (Italy)

Development of time-frequency analysis techniques based on wavelet transform for data processing in turbulent jets.

## Intern

*Airbus Operation S.A.S.* [ 22/10/2012 – 19/04/2013 ]

Address: 316 Route de Bayonne, 31000 Toulouse (France)

Study of the jet noise generated by a high by-pass ratio turbofan engine model focusing on the quantification and characterization of installation effects due to the presence of the pylon and of the wing (EXEJET2 project)

## EDUCATION AND TRAINING

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### An introduction to hydrodynamic instability

*ENSMA - École Nationale Supérieure de Mécanique et d'Aérotechnique* [ 04/12/2017 – 08/02/2018 ]

Address: 1 Avenue Clément Ader, 86360 Chasseneuil-du-Poitou, Poitiers (France)

[www.ensma.fr](http://www.ensma.fr)



## **Ph.D. in Mechanical and Industrial Engineering cum laude**

**Università degli Studi Roma Tre - Department of Engineering** [ 01/01/2014 – 31/12/2016 ]

Address: 79, Via della Vasca Navale, 00146 Rome (Italy)

[www.uniroma3.it](http://www.uniroma3.it)

Level in EQF: EQF level 8

Ph.D. courses:

- Università degli studi Roma Tre: Internal combustion engines, Aero-elasticity of rotors, Fourier and wavelet transforms: theory, algorithms and applications to turbulence, Jet noise
- Università degli Studi di Roma La Sapienza: Dynamics and modelling of turbulence, Experimental aerodynamics, Statistical mechanics
- Von Karman Institute of Fluid Dynamics, Bruxelles: Aeroengine noise, Measurement simulation and control of subsonic and supersonic jet noise
- Institute of Sound and Vibration Research, University of Southampton: Refresher course in sound and vibration, Advanced course in aeroacoustics and noise control

**Ph.D. thesis title:** *Experimental investigation of compressible and incompressible jet aeroacoustics in free and installed configurations through advanced time-frequency analysis*

## **Master's Degree in Aeronautical Engineering, 110/110 cum laude**

**Università degli Studi Roma Tre - Department of Engineering** [ 01/10/2010 – 31/05/2013 ]

Address: Rome (Italy)

Level in EQF: EQF level 7

Courses:

- Aerodynamics, Flight dynamics, Aeroelasticity, Aeronautical structures, Modelling in aeronautical engineering, Automatic controls, Thermo-fluid dynamics of propulsive systems, Turbomachinery, Materials for aeronautics, Aircraft design, Laboratory of aerodynamics and aeroacoustics

**Thesis title:** *Jet aeroacoustics: analysis of large-scale EXEJET2 experimental tests including pylon and wing model effects*

## **Bachelor's Degree in Mechanical and Industrial Engineering, 104/110**

**Università degli Studi Roma Tre - Department of Engineering** [ 01/10/2006 – 25/10/2010 ]

Address: Rome (Italy)

Level in EQF: EQF level 6

Courses:

- Mathematics, Geometry, Physics, Chemistry, Informatics, Machinery design, Applied physics, Applied thermodynamics, Electricity and magnetism, Electrical machines and systems, Hydrodynamics, Fluid dynamics, Regulation and control of dynamical systems, Mechanical technology, Mechanical constructions, Applied mechanics, Materials for mechanical engineering, Mechanical measurements, Economy, Occupational safety health and environment, Applied energetics, Machinery, International law

**Thesis title:** *Aerodynamic characterization of a low-speed jet*

## **Scientific Upper Secondary School Diploma, 97/100**

**Liceo Scientifico Statale G.B. MORGAGNI** [ 15/09/2001 – 31/07/2006 ]

Address: Rome (Italy)

Level in EQF: EQF level 4

## LANGUAGE SKILLS

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Mother tongue(s):

**Italian**

Other language(s):

**English**

**LISTENING C1 READING C1 WRITING C1**

**SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1**

**French**

**LISTENING C1 READING C1 WRITING C1**

**SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1**

## DIGITAL SKILLS

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Proficient User of MATLAB / Proficient User of Latex / Microsoft Office

## DRIVING LICENCE

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**Driving Licence: B**

## HONOURS AND AWARDS

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**Honours and awards**

EAA Best paper and presentation award

- **M. Mancinelli**, A. Di Marco, R. Camussi, *Flat-plate installation effects on velocity and wall pressure fields generated by an incompressible jet*, EURONOISE, Maastricht, 2015

## ORGANISATIONAL SKILLS

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**Organisational skills**

- Team-leading skills acquired by teamwork in academic and EU research projects
- Good organisational skills gained as co-advisor for Bachelor's and Master's Degree theses

## COMMUNICATION AND INTERPERSONAL SKILLS

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**Communication and interpersonal skills**

- Good communication skills gained through teamwork in academic and EU collaborative research projects
- Participation as speaker to the partners meeting of the EU project JERONIMO and to international aeroacoustics conferences

## JOB-RELATED SKILLS

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**Job-related skills**

- Adaptability to work in a multi-cultural and multi-nationality context
- Theoretical modelling
- Experimental research activity and data analysis

## OTHER SKILLS

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### Other skills

- Models for numerical solution of equations:
  - Finite difference method, Finite element method, Boundary element method
- Optimization:
  - Gradient-based methods, Particle swarm optimization

## JOURNAL PUBLICATIONS

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### 2021

- **M. Mancinelli**, E. Martini, V. Jaunet, P. Jordan, A. V. G. Cavalieri, A. Towne, Y. Gervais, *Reflection of a Kelvin-Helmholtz wave incident to a shock*, Journal of Fluid Mechanics (under preparation)
- **M. Mancinelli**, E. Martini, V. Jaunet, P. Jordan, *Completing the vortex-sheet eigenbasis for a description of acoustics in a jet*, The Journal of the Acoustical Society of America (under review)
- P. A. S. Nogueira, V. Jaunet, **M. Mancinelli**, P. Jordan, D. Edgington-Mitchell, *Closure mechanism of the A1 and A2 modes in jet screech*, Journal of Fluid Mechanics (under review)
- **M. Mancinelli**, V. Jaunet, P. Jordan, A. Towne, *A complex-valued resonance model for axisymmetric screech tones in supersonic jets*, Journal of Fluid Mechanics (under review), 2020

### 2020

- S. Meloni, A. Di Marco, R. Camussi, **M. Mancinelli**, *Single and Multivariate Statistics of Jet-Induced Pressure Fluctuations over an Infinite Plate*, Applied Science, 2020
- S. Meloni, A. Di Marco, **M. Mancinelli**, R. Camussi, *Experimental investigation of jet-induced wall pressure fluctuations over a tangential flat plate at two Reynolds numbers*, Scientific Reports, 2020
- S. Meloni, **M. Mancinelli**, R. Camussi, J. Huber, *Wall pressure fluctuations induced by a compressible jet in installed configuration*, AIAA Journal, 2020

### 2019

- S. Meloni, A. Di Marco, **M. Mancinelli**, R. Camussi, *Wall-pressure fluctuations induced by a compressible jet flow over a flat plate at different Mach numbers*, Experiments in Fluids, 2019
- **M. Mancinelli**, V. Jaunet, P. Jordan, A. Towne, *Screech-tone prediction using upstream-travelling jet modes*, Experiments in Fluids, 2019

### 2018

- **M. Mancinelli**, R. Camussi, *Acceleration and wall pressure fluctuations generated by an incompressible jet in installed configuration*, Comptes Rendus Mécanique, 2018
- **M. Mancinelli**, T. Pagliaroli, R. Camussi, T. Castelain, *On the hydrodynamic and acoustic nature of pressure POD modes in the near field of a compressible jet*, Journal of Fluid Mechanics, 2018
- T. Pagliaroli, **M. Mancinelli**, G. Troiani, U. Iemma, R. Camussi, *Fourier and wavelet analyses of intermittent and resonant pressure components in a slot burner*, Journal of Sound and Vibration, 2018

### 2017

- R. Camussi, **M. Mancinelli**, A. Di Marco, *Intermittency and stochastic modelling of hydrodynamic pressure fluctuations in the near field of compressible jets*, International Journal of Heat and Fluid Flow, 2017
- **M. Mancinelli**, T. Pagliaroli, A. Di Marco, R. Camussi, T. Castelain, *Wavelet decomposition of hydrodynamic and acoustic pressures in the near field of the jet*, Journal of Fluid Mechanics, 2017
- **M. Mancinelli**, A. Di Marco, R. Camussi, *Multi-variate and conditioned statistics of velocity and wall pressure fluctuations induced by a jet interacting with a flat-plate*, Journal of Fluid Mechanics, 2017



## 2016

- A. Di Marco, **M. Mancinelli**, R. Camussi, *Flow-induced pressure fluctuations of a moderate Reynolds number jet interacting with a tangential flat plate*, Advances in Aircraft and Spacecraft Sciences, 2016

## 2015

- A. Di Marco, **M. Mancinelli**, R. Camussi, *Pressure and velocity measurements of an incompressible moderate Reynolds number jet interacting with a tangential flat plate*, Journal of Fluid Mechanics, 2015

## CONFERENCE PROCEEDINGS

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### 2021

- M. Stavropoulos, **M. Mancinelli**, P. Jordan, V. Jaunet, D. Edginton-Mitchell, P. A. S. Nogueira, *Understanding twin-jet screech using a vortex-sheet model*, AIAA/CEAS, 2021
- **M. Mancinelli**, V. Jaunet, P. Jordan, A. Towne, S. Girard, *A complex-mode model for screech-frequency predictions in supersonic jets*, 3AF AERO2020+1, 2021
- **M. Mancinelli**, E. Martini, V. Jaunet, P. Jordan, A. V. G. Cavalieri, A. Towne, Y. Gervais, *A linear stability approach for the evaluation of the reflection coefficient of a Kelvin-Helmholtz wave incident to a normal shock*, ICTAM 2020+1, 2021

### 2019

- **M. Mancinelli**, V. Jaunet, P. Jordan, A. Towne, S. Girard, *Reflection coefficients and screech-tone prediction in supersonic jets*, AIAA/CEAS, Delft, 2019
- V. Jaunet, **M. Mancinelli**, P. Jordan, A. Towne, D. Edginton-Mitchell, G. Lehnasch, S. Girard, *Dynamics of round jet impingement*, AIAA/CEAS, Delft, 2019
- S. Meloni, **M. Mancinelli**, R. Camussi, J. Huber, *Wall pressure fluctuations induced by a compressible coaxial jet in installed configuration*, AIAA/CEAS, Delft, 2019
- S. Meloni, A. Di Marco, R. Camussi, **M. Mancinelli**, *Parametric characterization of wall pressure fluctuations induced by a compressible jet interacting with a flat plate*, AIAA/CEAS, Delft, 2019
- **M. Mancinelli**, V. Jaunet, P. Jordan, A. Towne, S. Girard, *Linear and non-linear aspects of screech dynamics in supersonic jets*, 3AF AERO2019, Paris, 2019

### 2018

- **M. Mancinelli**, R. Camussi, *An experimental investigation of the wall pressure field induced by a low and moderate Mach numbers jet on a tangential flat plate*, AIAA/CEAS, Atlanta, 2018
- **M. Mancinelli**, T. Pagliaroli, R. Camussi, T. Castelain, *On the interpretation of pressure POD modes in the near field of a subsonic jet in terms of hydrodynamic and acoustic pressures*, AIAA/CEAS, Atlanta, 2018

### 2017

- R. Camussi, **M. Mancinelli**, A. Di Marco, *Application of time-frequency decompositions in jet aeroacoustics*, AIMETA, Salerno, 2017

### 2016

- **M. Mancinelli**, R. Camussi, *Some applications of time-frequency decomposition in jet aeroacoustics*, Jet noise modelling and control EUROMECH Colloquium & IUTAM Symposium, Paris, 2016
- **M. Mancinelli**, T. Pagliaroli, A. Di Marco, R. Camussi, T. Castelain, O. Léon, *Hydrodynamic and acoustic wavelet-based separation of the near-field pressure of a compressible jet*, AIAA/CEAS, Lyon, 2016
- **M. Mancinelli**, A. Di Marco, R. Camussi, *Cross-statistical and wavelet analysis of velocity and wall-pressure fields in jet-surface interaction*, AIAA/CEAS, Lyon, 2016
- T. Pagliaroli, **M. Mancinelli**, G. Troiani, R. Camussi, *Aero-acoustic characterization of a slotted burner*, AIAA/CEAS, Lyon, 2016

2015

- A. Di Marco, **M. Mancinelli**, R. Camussi, *Flow-induced noise of a moderate Reynolds number jet interacting with a tangential flat plate*, NOVEM, Dubrovnik, 2015
- **M. Mancinelli**, A. Di Marco, R. Camussi, *Flat-plate installation effects on velocity and wall pressure fields generated by an incompressible jet*, EURONOISE, Maastricht, 2015
- A. Di Marco, **M. Mancinelli**, T. Pagliaroli, R. Camussi, *Velocity-pressure coupling deriving from the interaction of a low speed jet with a tangential flat plate*, AIDAA, Turin, 2015

## REVIEWING ACTIVITY

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### Reviewing activity

- Reviewer of research articles in the field of fluid mechanics, including top-level journals such as Journal of Fluid Mechanics, European Journal of Mechanics B/Fluids, Journal of Propulsion and Power, AIAA Journal, Physics of Fluids
- Reviewer of research articles in top-level aeroacoustics conferences, such as AIAA/CEAS
- Jet-noise session chairman in top-level aeroacoustics conferences, such as AIAA/CEAS

26/08/2021

Mattellucci