



Roberta Bianchini

Personal Data

Name **Roberta Bianchini**
Webpage <https://www.iac.cnr.it/personale/roberta-bianchini>

Affiliation

Istituto per le Applicazioni del Calcolo (IAC), National Research Council of Italy (CNR).

Positions

- Jan 2023 - **Senior Researcher (associate professor), Istituto per le Applicazioni del Calcolo**
National Research Council of Italy (CNR), Rome, Italy
- April 2020 - **Researcher (tenured), Istituto per le Applicazioni del Calcolo**
Dec 2022 National Research Council of Italy (CNR), Rome, Italy
- Nov 2019 - **Excellence FSMP Postdoc, LJLL, Paris, France**
- March 2020 Supervisor: Anne-Laure Dalibard.
- July 2019 - **ERC Postdoc (BLOC, PI Dalibard), LJLL, Paris, France**
Oct. 2019 Supervisor: Anne-Laure Dalibard.
- Jan. 2018 - **Postdoc, UMPA, ENS Lyon, France**
June 2019 Supervisor: Laure Saint-Raymond.

Education, Titles

- 2025 **Italian Habilitation for Full Professor, Mathematical Analysis (MATH/05)**
- 2023 **Italian Habilitations for Associate Professor, Mathematical Analysis (MATH/05) and Mathematical Physics (MATH/07)**
- Jan. 2019 **French Qualification, Assistant Professor (Maître de Conférences), Section 26 (Mathématiques appliquées et applications des mathématiques) and Section 25 (Mathématiques)**
- Nov. 2014 – **PhD in PDEs and Fluid Mechanics, University of Rome "Tor Vergata"**
Nov. 2017 Thesis defence: December 15th, 2017, University of Rome "Tor Vergata".
Title: "Advanced energy methods in Fluid Mechanics".
Advisor: Roberto Natalini (IAC-CNR, Rome).
Referees: Jean-Yves Chemin (UMPC, Paris), Paolo Secchi (University of Brescia).
Committee: Jean-Yves Chemin, Roberto Natalini, Enrique Zuazua (DeustoTech, Bilbao and UAM, Madrid).

*Istituto per le Applicazioni del Calcolo Mauro Picone, Consiglio Nazionale delle Ricerche
via dei Taurini 19, 00185 – Rome*

✉ roberta.bianchini@cnr.it – r.bianchini@iac.cnr.it

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- Oct. 2012 – **Master Degree in Applied Mathematics**, "Sapienza" University of Rome
 July 2014 Thesis: "Applicazioni della teoria dei sistemi iperbolici dissipativi ad alcuni modelli matematici per biofilms". Supervisors: Roberto Natalini (IAC-CNR(Rome)), Piero D'Ancona ("Sapienza" University of Rome). Final mark: 110/110 cum laude.
- June 2014 **Excellence Diploma for Master Degree in Applied Mathematics**, "Sapienza" University of Rome
- Oct. 2009 – **Bachelor Degree in Mathematics**, "Sapienza" University of Rome
 July 2012 Thesis: "Il teorema della curva di Jordan". Supervisor: Piero D'Ancona ("Sapienza" University of Rome). Final mark: 110/110 cum laude.
- June 2012 **Excellence Diploma for Bachelor Degree in Mathematics**, "Sapienza" University of Rome

Awards

- o **SIMAI Prize 2023** (Applied Mathematical Society of Italy) *Fausto Saleri*, biennial award in applied mathematics.

Awarded Grants as a PI

- 2023-2025 **Local coordinator of the PRIN Project**, *Turbulent Effects vs Stability in Eqs from Oceanography (4 units; CNR Unit: 46.872€)*
- 2023-2025 **PI of the PRIN Project**, *Hero-Mac Heterogeneity on the Road - Modeling, Analysis, Control (3 units; CNR Unit: 27.850€; Total: 224940€)*
- July 2022 **MSRI Research Membership Grant for a 1-month research stay**, Berkeley, US
- 2021-23 **International Exchange Grant 2020**, funded by the Royal Society of London. About 24.000 £. Co-PI with Michele Coti Zelati (Imperial College, UK)
- 2020-22 **CNR Short Term Mobility Grant**, for a 3-week research stay abroad
- 2020-21 **GNAMPA, INdAM, Grant 2020**, About 4000 €. PI of the project. Collaborators: Fabio Ancona, Francesca Guarguaglini, Roberto Natalini
- Jan-Mar 2020 **MSRI Research Membership Grant**, for a semester research stay, Berkeley, US
- Jan 2021 **ICERM Invitation for Visiting**, Fall 2021, Brown University
- Nov 2019 **FSMP Postdoc Fellowship**, Paris
- May 2018 **Fellowship in the Junior Trimester in Kinetic Theory**, HIM Hausdorff Research Institute for Mathematics, Bonn, funded research project in collaboration with Serena Cenatiempo (GSSI, L'Aquila, Italy), Lingbing He (Tsinghua University, Beijing, P.R. China), Chiara Saffirio (Basel), Sergio Simonella (Rome)

Other grants as a participant

- 2021-26 **PRIN Project. Nonlinear evolution PDEs, fluid dynamics and transport equations: theoretical foundations and applications**, Member of 1 over 4 national units. PI: Stefano Bianchini
- Mar 2022 **GNAMPA, INdAM, Grant 2022**, About 4500 €. Member of the project (PI: Stefano Scrobogna, Uni Trieste. Collaborators: Biagio Cassano, Michele Dolce)
- Mar 2019 **GNAMPA, INdAM, Grant 2019**, About 3000 €. Member of the project (PI: Roberto Natalini. Collaborators: Francesca Guarguaglini, Marco Papi, Flavia Smarrazzo)

2015-17 **International Exchange Grant 2015**, between CNR (Italy) and CNRS (France), Participant (PI: Roberto Natalini and Magali Ribot).

Editorial Service

- Starting in January 2026, I am associate editor of [SIAM Journal on Mathematical Analysis](#)
- Member of the editorial board of [Mathematics in Engineering](#). From May 2023
- Guest editor of the special issue *Fluid instabilities, waves and non-equilibrium dynamics of interacting particles*, published in [Mathematics in Engineering](#). Joint with Chiara Saffirio (Basel). From 2021 to 2022

Institutional responsibility

- Starting in March 2025, I am member of the PhD board of University of Tor Vergata (Rome, Italy)
- **2025**: Examiner of the PhD of Vincent Laheurte at Université de Bordeaux
- **2024**: Referee and examiner of the PhD of Augusto Del Zotto at Imperial College London (with P. Germain)
- **2023**: Examiner of the PhD of Luis Martínez-Zoroa at ICMAT, Madrid (with P. Constantin, R. Orive)

Academic service

- 2022: Reviewer for the Italian national evaluation of ANVUR 2022
- 2018- Reviewer for MathSciNet and ZbMATH
- 2015- Reviewer for several international journals: Comm Pure Appl Math, ARMA, Comm Math Phys, Journal de Math Pures et Appliquées, Analysis&PDE, Memoirs EMS, SIAM J Math Anal, Comm Math Sciences, J Diff Eq, Mathematische Annalen, Nonlinear Analysis, JMAA...

Students and Post-docs

- 2025: PhD of Valerio Conti (University of L'Aquila), expected in 2028 (co-supervised with University of L'Aquila); 5-month internship of Jacob Chmielewski (ENS Paris)
- 2024-25: supervision of: 1 and 1/2 year post-doc of Lucas Coeuret (from sept 2024, joint with University of Padova); master thesis of Valerio Conti (Sapienza University) on finite-time singularity in fluids; 1-year post-doc of Shan Wang (from feb 2024)
- 2022: supervision of the 9-month internship of Vincent Laheurte (ENS Paris Saclay)
- 2021: master thesis of Gianluca Orrù (Sapienza University) on boundary layer theory in fluid dynamics (joint with R. Natalini)

Research

Field **Mathematical Analysis and Applied Mathematics**

Topics **Partial Differential Equations: hyperbolic systems and fluid dynamics**, *Hyperbolic Partial Differential Equations, Fluid-Dynamics Models, Relaxation Systems, Kinetic Equations*

I am interested in the mathematical analysis of PDE models arising in fluid dynamics, with a special enthusiasm towards nonhomogeneous incompressible fluids, where both dispersive effects and nonlinear interactions play key roles. Hydrodynamic stability, boundary layers theory, anisotropic wave propagation, models for congestion/suspension, shallow water/hydrostatic fluid equations are some of the main topics of my research.

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Publications

Preprints

- [32] (2025) R. Bianchini, A. Maspero, S. Pasquali, Instabilities of internal gravity waves in the two-dimensional Boussinesq system. arXiv:2507.10390 (2025)
- [31] R. Bianchini, M. J. Jo, J. Park, S. Wang, Sharp asymptotic stability of the incompressible porous media equation. arXiv:2505.05165 (2025)

Published OA=Open Access

- [30] R. Bianchini, M. Coti Zelati, L. Ertzbischoff, Ill-posedness of the hydrostatic Euler-Boussinesq equations and failure of hydrostatic limit. **Commun. Math. Phys.** (2025) 406:254 **OA**
- [29] R. Bianchini, D. Córdoba, L. Martínez-Zoroa, Non Existence and Strong Ill-posedness in H^2 for the Stable IPM Equation. (2024), **J. Funct. Anal.** 289 (9) 2025 **OA**
- [28] R. Bianchini, T. M. Elgindi, Finite-time singularity formation for scalar stretching equations. Finite-time singularity formation for scalar stretching equations. **Nonlinearity**, 38 (2025) **OA**
- [27] R. Bianchini, L. Franzoi, R. Montalto, S. Terracina, Large amplitude quasi-periodic traveling waves in two dimensional forced rotating fluids. **Commun. Math. Phys.** 406, 66 (2025). <https://doi.org/10.1007/s00220-025-05247-z> **OA**
- [26] C. Balzotti, R. Bianchini, M. Briani, B. Piccoli, Adapting Priority Riemann Solver for GSOM on road networks. **Comm. Math. Sci.** 23 (2025) 2269-2317
- [25] R. Bianchini, V. Laheurte, F. Sueur, A new look at the controllability cost of linear evolution systems with a long gaze at localized data. **Comptes Rendus. Math.** 2025, Vol. 363, p. 241-266 <https://doi.org/10.5802/crmath.725> **OA**
- [24] M. Adim, R. Bianchini, V. Duchêne, Relaxing the sharp density stratification and columnar motion assumptions in layered shallow water systems. **Comptes Rendus Math.** 2024, Vol. 362, p. 1597-1626 <https://doi.org/10.5802/crmath.665> **OA**
- [23] R. Bianchini, L. E. Hientzsch, F. Iandoli, Strong Ill-Posedness in L^∞ of the 2D Boussinesq Equations in Vorticity Form and Application to the 3D Axisymmetric Euler Equations. **SIAM J. Math. Anal.**, 56(5). DOI **SIAM J. Math. Anal.** 56(5) (2024). arXiv:2303.16167
- [22] R. Bianchini, T. Crin-Barat, M. Paicu, Relaxation approximation and asymptotic stability of stratified solutions to the IPM equation. **Archive for Rational Mechanics and Analysis** 248 (2) (2024) **OA**
- [21] R. Bianchini, V. Duchêne, On the hydrostatic limit of stably stratified fluids with isopycnal diffusivity. **Comm PDE** Volume 49 Issue 5-6 (2024). arXiv:2206.01058
- [20] R. Bianchini, T. Paul, Reflection of internal gravity waves in the form of quasi-axisymmetric beams. **J. Funct. Anal.** 286 (1), 110189 (2024) **OA**
- [19] J. Bedrossian, R. Bianchini, M. Coti Zelati, M. Dolce, Nonlinear inviscid damping and shear-buoyancy instability in the two-dimensional Boussinesq equations. **Comm Pure and Applied Mathematics CPAM** 76 (12), 3685-3768 (2023) **OA**
- [21] F. Ancona, R. Bianchini, C. Perrin, Hard-congestion limit of the p-system in the BV setting. **ESAIM: Proceedings and Surveys** 72, 41-6 (2023)

- [17] R. Bianchini, G. Orrù, Linear boundary layer analysis of the near-critical reflection of internal waves with different sizes of viscosity and diffusivity. **Springer UMI Series**, INDAM, SIS **63**, 2022
- [16] R. Bianchini, M. Coti Zelati, M. Dolce, Linear inviscid damping for shear flows near Couette in the 2D stably stratified regime, **Indiana University Math. Journal**, 71(4), pp. 1467–1504 (2022)
- [15] R. Bianchini, R. Natalini, Nonresonant bilinear forms for partially dissipative hyperbolic systems violating the Shizuta-Kawashima condition, **Journal of Evolution Eqs.** 22 (3), 1-41 (2022) **OA**
- [14] R. Bianchini, C. Perrin, Soft congestion approximation to the one-dimensional constrained Euler equations, **Nonlinearity** (10) 6901 (2021); DOI 10.1088/1361-6544/ac1e33.
- [13] R. Bianchini, R. Natalini, Asymptotic behavior of 2D stably stratified fluids with a damping term in the velocity equation, **ESAIM: COCV** **27** (2021) 43.
- [12] R. Bianchini, A.-L. Dalibard One-dimensional turbulence with Burgers, Fluid Dynamics, Dispersive Perturbations and Quantum Fluids, **Springer UMI Series** (2021). arXiv2004.02825.
- [11] R. Bianchini, G. Staffilani, Revisitation of a Tartar's result on a semilinear hyperbolic system with null condition, Fluid Dynamics, Dispersive Perturbations and Quantum Fluids, **Springer UMI Series** (2021). arXiv:2001.03688.
- [10] R. Bianchini, Relative entropy in diffusive relaxation for a class of discrete velocities BGK models, **Communications in Mathematical Sciences**, **19** (1) (2021), 39-54. arXiv:1912.10988 (2019).
- [9] R. Bianchini, A.-L. Dalibard, L. Saint-Raymond, Near-critical reflection of internal waves, **Analysis and PDE** **14** (1) (2021), 205-249. DOI 10.2140/apde.2021.14.205. arXiv:1902.06669.
- [8] R. Bianchini, Strong convergence of a vector-BGK model to the incompressible Navier-Stokes equations, **J. Mathématiques Pures et Appliquées** **132** (2019), 280-307.
- [7] R. Bianchini, L. Gosse, E. Zuazua, A two-dimensional "flea on the elephant" phenomenon and its numerical visualization, **Multiscale Modeling & Simulation** **17** (1) (2019) , 137-166.
- [6] R. Bianchini, L. Gosse, A "truly-two dimensional" discretization of drift-diffusion equations on Cartesian grid **SIAM J Numer Anal**, **56** (5)(2018), 2845-2870.
- [5] R. Bianchini, Uniform asymptotic and convergence estimates for the Jin-Xin model under the diffusion scaling, **SIAM Journal on Mathematical Analysis** **50** (2) (2018), 1877-1899.
- [4] R. Bianchini, R. Natalini, Convergence of a vector-BGK approximation for the incompressible Navier-Stoker equations, **Kinetic and Related Models** **12** (1)(2019), 133-158.
- [3] R. Bianchini, R. Natalini, The paradifferential approach to the local well-posedness of some problems in mixture theory, **Comm PDE** **43** (7) (2019), 1051-1072, <https://doi.org/10.1080/03605302.2018.1499775>
- [2] R. Bianchini, R. Natalini, Well-posedness of a model of nonhomogeneous compressible-incompressible fluids, **J Hyperbolic Diff Eq** **14** (3) (2017), 487-516.

- [1] R. Bianchini, R. Natalini, Global existence and asymptotic stability of smooth solutions to a fluid dynamics model of biofilms in one space dimension, **J Math Anal Appl** **434** (2016), 1909-1923.

Expository papers and proceedings

- [3] R. Bianchini, L. Ertzbischoff, Mathematical Insights into Hydrostatic Modeling of Stratified Fluids, **Communications in Applied and Industrial Mathematics (CAIM)**, **15** (1), 2024, 86–105 DOI: 10.2478/caim-2024-0005.
- [2] R. Bianchini, C. Saffirio, Fluid instabilities, waves and non-equilibrium dynamics of interacting particles: a short overview. **Mathematics in Engineering**, 2023, 5(2): 1-5. DOI:10.3934/mine.2023033 **OA=Open Access** (introduction to a special issue)
- [1] R. Bianchini, (with R. Natalini), Space-times resonances and weakly dissipative hyperbolic systems. **Oberwolfach Report** 11/2021, Hyperbolic balance laws.

International/national conferences as a Speaker

1. June 2026, **IHP Program Mathematical developments in Geophysical fluid dynamics**, Paris (contact: C. Lacave)
2. Feb 2026, **Taming Complexity in Partial Differential Systems**, Vienna (contact: U. Stefanelli)
3. Oct 2025, **End of Crisis: a mathematical school and conference on fluid dynamics**, CIRM, Marseille (contact: F. Fanelli)
4. Oct 2025, **Mathematical Analysis of Fluid Flows by Variational Methods**, WIAS, Berlin (contact: R. Lasarzik)
5. Sept 2025, **Boundary Analysis for Dispersive and Viscous Fluids**, Pavia (contact: L. Spinolo)
6. May 2025, **Cado de Gata PDE days**, San Jose, Almería (contact: C. García)
7. March 2025, **Vortices, Boundary Layers and Instabilities**, Grenoble (contacts: A.-L. Dalibard, T. Gallay)
8. Feb 2025, **13th Meeting on Nonlinear Evolution PDEs, Fluid Dynamics and Transport Equations**, SISSA, Trieste (contacts: F. Ancona, S. Bianchini)
9. Dec 2024, **Singularities in Fluids and General Relativity**, IMS Singapore (contact: Yao Yao; declined due to maternity leave)
10. Sept 2024, **Trends and perspectives in the analysis of PDEs**, Rome. *Organizers*: D. Del Santo, R. Granero Belinchón and F. Fanelli
11. Sept 2024, **YAMC2024**, Rome (plenary talk)
12. July 2024, **Alhambra PDE days** Granada (declined due to pregnancy-related issues)
13. May 2024, **Oberwolfach seminar: Long-time behavior in fluids**, Germany. *Organizers*: P. Constantin, T. Drivas, T. M. Elgindi, M. Ignatova.
14. Nov 2023, **Control Methods in Hyperbolic Partial Differential Equations**, Oberwolfach Workshop, Germany. *Organizers*: F. Ancona, B. Anvari, O. Glass, M. Herty.
15. Sept 2023, **Enjoying probability and fluids in Lausanne**, Switzerland. *Organizers*: M. Dolce, L. Galeati, M. Sorella.
16. August 2023, **SIMAI Soc. Italiana Mat. Appl. e Ind. Biennial Conference**, Matera, Italy.
17. August 2023, **School on Wave Dynamics: Turbulent vs Integrable Effects**, ICTP, Trieste, Italy. *Organizers*: T. Grava, A. Maspero, R. Montalto, M. Onorato.
18. July 2023, **Stability and dynamics in fluid mechanics and kinetic theory**, Imperial College, London, UK. *Organizers*: J. Bedrossian, M. Coti Zelati.
19. Sept 2022, **Recent trends in fluid dynamics**, ICMAT, Madrid, Spain, *Organizers*: Á. Castro, D. Córdoba, A. Enciso, S. Agrawal.
20. Sept 2022, **Trials in Wave Turbulence**, GSSI, L'Aquila, Italy, *Organizers*: P. Antonelli, S.

- Cenatiempo, R. Montalto, A. Nota, R. Scandone.
21. July 2022, **12th Meeting on Nonlinear evolution PDEs, fluid dynamics and transport equations**, University of L'Aquila, Italy. *Organizers:* D. Donatelli, S. Fagioli, L. Forcella, S. Spirito. <https://sites.google.com/view/12thmenlevpdefdte/home>
 22. June 2022, **JEDP Obernai**, France. *Organizers:* David Dos Santos Ferreira and Laurent Thomann.
 23. April 2022, **SingFlows Workshop**, Bordeaux, France. Organized by C. Lacave, D. Lannes, D. G.-Varet.
 24. March 2022, **SIAM PD22, Minisymposium "Regularity and Irregularity in Fluid Dynamics"** organized by Gianluca Crippa and Emil Wiedemann.
 25. February 2022, **Conference on Wave Phenomena 2022**, KIT, Germany, 14-18 Feb. 2022, talk (online) at the Minisymposium "Stability and Instability in Fluids" organized by Christian Zillinger.
 26. September 2021, **CIRM Conference "Analysis, Control and Numerics for PDE Models" - Levico Terme, Sept. 20-24, 2021**, *Organizers:* Fatiha Alabau-Boussouira (Sorbonne Paris and Univ. Lorraine), Peter Benner (MPI Magdeburg and Univ. Magdeburg), Piermarco Cannarsa (Roma II) and Marco Sammartino (Palermo).
 27. Aug 2021, 1 hour lecture on weak wave turbulence (in presence), **MFD Mathematical Fluid Dynamics Summer School**, Cargèse, Corsica, France. *Organizers:* Emmanuel Dornay and Isabelle Gallagher (ENS, Paris).
 28. July 2021, (talk in presence), **ICMP, YRS Ginevra. Session: Partial Differential Equations, General Relativity and Dynamical Systems**, *Organizers:* Chiara Saffirio (Basel) and Peter Hintz (Zurich).
 29. June 2021, (talk in presence), **INdAM workshop: Analysis and Numerics of Design, Control and Inverse Problem**, Rome. *Organizers:* G. Floridia and E. Zuazua.
 30. Feb. 2021, **Applied Seminar, MSRI Fluid Dynamics Trimester**, Berkeley, US (online). *Organizers:* Didier Bresch and David Lannes.
 31. Feb. 2021, **Hyperbolic Balance Laws: modeling, analysis, and numerics**, Oberwolfach Workshop, Germany. *Organizers:* Remi Abgrall, Mauro Garavello, Maria Lukacova, Konstantina Trivisa.
 32. Nov. 2020, **Turb1d 2020**, online. *Organizers:* Rafael Granero Belinchón and Francesco Fanelli
 33. Nov. 2020, **Control Methods in Hyperbolic Partial Differential Equations**, Oberwolfach Workshop, Germany. *Organizers:* Fabio Ancona, Bani Anvari, Olivier Glass, Michael Herty.
 34. Sept. 2020 (postponed due to the pandemic), **Analysis, control, and numerics for PDE models of interest to physical and life sciences**, LIA COPDESC conference, Erice, Sicily, Italy. *Organizers:* Fatiha Alabau-Boussouira, Peter Benner, Piermarco Cannarsa, Marco Sammartino.
 35. May 2020 (postponed due to the pandemic), **PDE workshop**, ICMAT, Madrid, Spain. *Organizer:* Angel Castro.
 36. October 2019, **Math postdocs from the Paris region**, IHP, Paris, France. *Organizer:* Thomas Alazard.
 37. September 2019, **XXI Conference UMI (Unione Matematica Italiana)**, Pavia, Italy. *Seminar session organized by* Stefano Bianchini.
 38. July 2019, **Geometric Measure Theory and Partial Differential Equations**, University of Basel, Switzerland. *Organizers:* Paolo Bonicatto, Gianluca Crippa, Elio Marconi.
 39. March 2019, **Journées Jeunes EDPistes 2019**, INSA, Rennes, France. *Organizers:* Karine Beauchard, Rémi Carles, Olivier Ley, Karel Pravda-Starov, Miguel Rodrigues.
 40. December 2018, **Winter School on Fluid Dynamics, Dispersive Equations and Quantum Fluids**, Bressanone, Italy. *Organizers:* Fabio Ancona and Stefano Bianchini.
 41. September 2018, **Interactive workshop on hyperbolic equations**, Ferrara, Italy. *Organizers:* Andrea Corli and Massimiliano D. Rosini.
 42. August 2018, Mini-symposium **Modèles mathématiques et méthodes numériques en mécanique**

des milieux continus, dans le cadre du XIV colloque Franco-Roumain de Mathématiques Appliquées, Bordeaux, France.

Organizers: Didier Bresch, Lorenzo Brandolese, Sanda Cleja-Tigoiu.

43. July 2018, **International Workshop on Hyperbolic and Kinetic Problems: Theory and Applications**, Institute of Mathematics, Academia Sinica, Taipei, Taiwan.

Organizers: Fabio Ancona, Stefano Bianchini and Tai-Ping Liu .

Talks at university seminars, working groups and mini-courses

1. March 2026, **Seminar of Nonlinear Analysis and PDE in Paris** (mini-course)
2. Dec 2025, **GSSI Analysis & PDE Seminar, L'Aquila, Italy.**
3. Jan 2024, **Working Group MathInFluids, ENS Lyon, France.** *Organizers:* Christophe Lacave and Laure Saint-Raymond.
4. Dec 2023, **Princeton Fluid Seminar, USA.** *Organizer:* Tarek M. Elgindi.
5. Oct 2023, **Seminario di Analisi Matematica, Sapienza Univ Rome, Italy.** *Organizer:* Adriano Pisante.
6. June 2023, **Colloquium Talk at Munster University, Germany.** *Organizer:* Christian Seis.
7. May 2023, **Seminario di Equazioni Differenziali, University of Tor Vergata, Rome, Italy.** *Organizer:* Alfonso Sorrentino.
8. February 2023, **Duke PDE Seminar, Duke University, NC, USA.** *Organizer:* Tarek M. Elgidi.
9. Dec 2022, **Basel-Zurich Analysis Seminar, Zurich, Switzerland.** *Organizer:* G. Crippa, E. Lenzmann, C. Saffirio, B. Schelin, M. Struwe, K. Widmayer.
10. Nov 2022, **Laurent Schwartz Seminar X, École Polytechnique, France.** *Organizer:* F. Golse, F. Merle, L. Saint-Raymond.
11. July 2021, **Math Seminar, Konstanz University,** *Organizer:* Heinrich Freistühler.
12. April 2021, **Analysis of Fluids and Related Topics, Princeton Fluid Seminar,** *Organizers:* Peter Constantin, Sameer Iyer, Dan Ginsberg and Tristan Leger (Princeton University, US).
13. March 2021, **Seminari generali IAC 2021,** *Organizer:* Istituto per le Applicazioni del Calcolo Mauro Picone, CNR, Italy.
14. March 2021, **Control Methods in Hyperbolic Partial Differential Equations Talks,** *Organizers:* Fabio Ancona (Padova), Bani Anvari (London), Olivier Glass (Paris), Michael Herty (Aachen).
15. January 2021, **Online Analysis and PDE seminar,** *Organizers:* Universidad Autónoma de Madrid (UAM), Universidad de Cantabria (UC), Universidad Carlos III (UC3M), Universidad Complutense de Madrid (UCM), Instituto de Ciencias Matemáticas (ICMAT), Instituto de Matemáticas de la Universidad de Sevilla (IMUS), Spain. Invited by Rafael Granero Belinchón.
16. December 2020, **Analysis and Mathematical Physics seminar, online,** SISSA, Trieste, Italy. *Organizers:* Fabio Cavalletti, Alberto Maspero, Marcello Porta.
17. December 2020, **Séminaire d'Analyse et Probabilité", Paris-Dauphine, online,** Paris Dauphine CEREMADE, France. *Organizers:* Emeric Bouin.
18. October 2020, **CAA Online Seminar Series at FAU,** Erlangen, Germany. [Link Slides and Video.](#) *Organizers:* Marius Yamakou, Enrique Zuazua.
19. May 2020, **Séminaire du Laboratoire Jacques-Louis Lions -online- via Zoom,** LJLL, Paris, France. [Link YouTube.](#) *Organizers:* Y. Achdou, F. Bethuel, A. Cohen, A.-L. Dalibard, Y. Maday, F. Murat, B. Perthame, E. Trélat.
20. May 2020, **Mathematics of Planet Earth Webinars: Analysis and Modelling, online** [MPESMINARS2020.](#) [Link YouTube.](#) *Organizers:* Giulia Carigi, Francesca Elisa Leonelli, Gabriele Sbaiz, Milo Viviani.
21. March 2020 (postponed due to the pandemic), **Analysis and Probability Seminar at Paris-Dauphine,** Paris, France. *Organizer:* Emeric Bouin.

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22. February 2020, **Séminaire de l'équipe EDP-Physique Mathématique**, Institut Mathématique de Bordeaux, France. *Organizer*: Laurent Michel.
23. January 2020, **Séminaire ANEDP de Lille**, Université de Lille (Laboratoire Paul Painlevé), France. *Organizers*: Maxime Herda Thomas Rey.
24. November 2019, **Applied Maths Seminar**, Imperial College, London, UK. *Organizer*: Michele Coti Zelati.
25. June 2019, **Group de travail MathOcéan**, IMT Toulouse, France. *Organizer*: Jean-François Coulombel.
26. November 2018, **Séminaire "EDP" de Rennes**, France. *Organizers*: Vincent Duchêne and Yannick Bonthonneau.
27. May 2018, **EDP-Analyse Séminaire**, Institut Camille Jordan, Lyon, France. *Organizers*: Francesco Fanelli and Louis Dupaigne.
28. December 2017, **BGK approximations for hydrodynamic equations and the Xin-Jin system under the diffusion scaling**, ENS Lyon, France. *Organizer*: Laure Saint-Raymond.
29. May 2017, **Convergence of a vector-BGK approximation for the incompressible Navier-Stoker equations**, University of Vienna, Faculty of Mathematics, Wien, Austria. *Organizer*: Ulisse Stefanelli.
30. Nov. 2016, **The paradifferential approach to the local well-posedness of some problems in mixture theory**, Gran Sasso Science Institute, L'Aquila, Italy. *Organizers*: Paolo Antonelli, Pierangelo Marcati.
31. June 2016, **Well-posedness of a model of nonhomogeneous compressible-incompressible fluids**, DICATAM, Department of Mathematics, University of Brescia, Italy. *Organizer*: Paolo Secchi.

Research Visits

- Feb. 2024 (1 week) Duke University (contact: Tarek M. Elgindi).
- Dec. 2022 (2 weeks) Princeton and Duke University (contact: Tarek M. Elgindi).
- Feb. 2023 (1 week) Duke University (contact: Tarek M. Elgindi).
- Jan. 2023 (1 week) Uni of Milan, Italy (collaboration with R. Montalto).
- Nov. 2022 (two weeks) Sorbonne Uni and IHES, France (collaboration with A.-L. Dalibard and L. Saint-Raymond.)
- Oct. 2022 (1 week) Imperial College London, UK (collaboration with M. Coti Zelati).
- Nov. 2021 (two weeks) Sorbonne Uni and IHES, France (collaboration with A.-L. Dalibard and L. Saint-Raymond.)
- April 2020 (1 week) Imperial College of London - postponed due to the pandemic.
Organizer: Michele Coti Zelati.
- March 2020 (1 week) University of Basel - postponed due to the pandemic.
Organizer: Chiara Saffirio.
- January 2020 (3 days), I2M Marseille, France. *Organizer*: Charlotte Perrin.
- November 2019 (3 days), Imperial College, London, UK. *Organizer*: Michele Coti Zelati.
- July 2019 (10 days), MIT, Cambridge, USA. *Organizer*: Gigliola Staffilani.
- May-July 2019 (2 months), Junior Trimester in Kinetic Theory, HIM Bonn, Germany.
- April 2019 (1 week), GSSI, L'Aquila, Italy. *Organizer*: Pierangelo Marcati.
- March 2019 (1 week), I2M Marseille, France. *Organizer*: Charlotte Perrin.
- March 2019 (3 days), IRMAR, Rennes France. *Organizer*: Vincent Duchêne.
- November 2018 (2 days), University of Rennes 1, France. *Organizers*: Vincent Duchêne and Yannick Bonthonneau.
- September 2018 (3 days), University of Padova, Italy. *Organizer*: Fabio Ancona.
- September 2018 (3 days), University of Bonn, Germany. *Organizers*: Alessia Nota, Elena Pulvirenti.

- July 2018 (3 days), University of Rome Tor Vergata, Italy. *Organizer:* Andrea Braides.
- December 2017 (4 days), ENS Lyon, France. *Organizer:* Laure Saint-Raymond.
- November 2017 (1 week), ENS Lyon, France. *Organizer:* Laure Saint-Raymond.
- November 2017 (3 days), LJLL, UPMC, Paris, France. *Organizer:* Enrique Zuazua.
- September 2017 (3 days), LJLL, UPMC, Paris, France. *Organizer:* Enrique Zuazua.
- June 2017 (1 week), ENS Lyon, France. *Organizers:* Vincent Calvez, Laure Saint-Raymond.
- May 2017 (1 week), Faculty of Mathematics, University of Vienna, Wien, Austria. *Organizer:* Ulisse Stefanelli.
- November 2016 (2 days), Gran Sasso Science Institute, L'Aquila, Italy. *Organizers:* Paolo Antonelli, Pierangelo Marcati.
- June 2016 (2 days), DICATAM, Depart. of Math., University of Brescia, Italy. *Organizer:* Paolo Secchi.

Organization of Seminars

- **Seminari 'Vito Volterra'** (with Lucia De Luca and Sergio Simonella)
- **Seminari Generali dell'IAC** (with Nicola Apollonio, Claudia Capone, Giuliana Ramella)
- **MDN Pizza Seminar** (with Alessandro Alla, Maya Briani, Lucia de Luca, Emiliano Cristiani, Davide Torlo)

Organization of Conferences

- **2026:** Oberwolfach workshop on "Mathematics of the Ocean and the Atmosphere" (with P. Korn, J. Vanneste, N. Vercauteren); "Stable and unstable Dynamics in PDEs and Hamiltonian Systems" 26w5551, August, 2026, BIRS Workshop in Oaxaca (with M. Coti Zelati, J. Gomez-Serrano)
- June 10-14, **2024**, Co-organization (with A. Mazzucato, M. Sammartino) of the Minisymposium *AROUND BOUNDARY LAYERS AND SINGULAR LIMITS IN FLUID MECHANICS*, [Equadiff2024](#), Karlstad, Sweden.
- Oct 12-13, 2023, Co-organization (with M. Coti Zelati) of [Mathematical Aspects of Geophysical Flows](#), CNR-IAC, Rome, Italy.
- May 25-31, **2023**. Co-organization (with F. Ancona, L. Berselli, S. Bianchini, D. Donatelli, P. Secchi) of **Meeting on nonlinear evolution PDEs, fluid dynamics and transport equations**, International School of Mathematics Guido Stampacchia, Erice, Sicily, Italy.
- May 16-19, **2023**. Member of the Scientific Committee of **Nonlinear PDEs in Cosenza**, University of Calabria. <https://sites.google.com/view/nonlinearpdescosenza/home>
- March 14-15, **2023**. Co-organization (with M. Dolce) of the **Minisymposium "Decay, stability and growth in fluid and wave systems"**, **Conference SIAM PD 22** (online).
- June 24-28, **2019**. Bonn, Germany - Junior Trimester on Kinetic Theory at HIM - **Workshop: Effective equations: frontiers in classical and quantum systems**. <https://www.him.uni-bonn.de/de/programs/past-programs/past-junior-trimester-programs/kinetic-theory-2019/effective-equations/>
Co-organized with: Serena Cenatiempo, Lingbing He, Alessia Nota, Chaira Saffirio, Sergio Simonella and Raphael Winter.

Working Groups

Reading/working Group on non-homogeneous incompressible fluids organized by V. Duchêne (Rennes) - online (2023)

Groupe de travail "MathsInFluids" (2018-2019) Lieu: UMPA ENS Lyon, Organisateurs : D. Bresch (CNRS-LAMA Savoie Mont-Blanc), C. Lacave (IF-Grenoble) et L. Saint-Raymond (UMPA-ENS Lyon). <https://www-fourier.ujf-grenoble.fr/lacavec/MathsInFluids/>.

Groupe de travail "MathsInFluids" (2017-2018) Lieu: UMPA ENS Lyon,
Organisateurs : D. Bresch (CNRS-LAMA Savoie Mont-Blanc), C. Lacave (IF-Grenoble) et L. Saint-Raymond (UMPA-ENS Lyon). <https://www-fourier.ujf-grenoble.fr/lacavec/MathsInFluids/>.

Some conference as a participant

- **Summer School on Fluid Dynamics**, Lyon (2022).
- **Unione Matematica Italiana UMI Conference 2022**, Padova, Italy.
- **The mathematics of climate and the environment, Workshop 1, IHP, Paris, France** (2019).
- **Les 60 ans de Jean-Yves Chemin, IHP, Paris, France** (March 2019).
- **Systèmes Hors Equilibre, Lyon, France** (2018).
- **Young Women in Mathematical Physics, Bonn, Germany** (2018).
- **SISSA meets ENS Lyon, Trieste, Italy** (2018).
- **EMS Lecturer Summer School 2018, Rome, Tor Vergata, Italy** (2018).
- **Microlocal analysis, resonances and control theory in PDEs, Workshop GL2017, Cagliari, Sardegna, Italy** (2017);
- **Sussex Fluids Workshop 2017, University of Sussex, Brighton, UK** (2017);
- **IPERPV 2017, XVII Italian Meeting on Hyperbolic Equations, University of Pavia, Italy** (2017) (contributed talk);
- **9th Summer School in Analysis and Applied Mathematics, "Sapienza", University of Rome, Italy** (2017);
- **New trends in Control Theory and PDEs, INdAM, Rome, Italy** (2017);
- **Progetto MATHTECH - Modeling and computational approaches to Biology and Medicine, INdAM, Rome, Italy** (2017);
- **International Conference on Elliptic and Parabolic Problems, Gaeta, Italy** (2017) (short communication);
- **XVI International Conference on Hyperbolic Problems, Theory, Numerics, Applications, Aachen, Germany** (2016);
- **GSSI Summer School on Fluid Dynamics and Related Topics, L'Aquila, Italy** (2016);
- **9th European Conference on Elliptic and Parabolic Problems, Gaeta, Italy** (2016);
- **Innovative Algorithms and Analysis, INdAM, Rome, Italy** (2016),
- **Shocks, Singularities and Oscillations in Nonlinear Optics and Fluid Mechanics, INdAM, Rome, Italy** (2015),
- **Modelli matematici nella conservazione e valorizzazione dei beni culturali, Accademia Nazionale dei Lincei, Rome, Italy** (2015);
- **An afternoon of mathematics at Tor Vergata with Louis Nirenberg, Department of Mathematics, "Tor Vergata" University of Rome, Italy** (2015);
- **Espalia 2015, Dipartimento S.B.A.I., "Sapienza" University of Rome, Italy** (2015);
- **EMS Lectures at IAC: Mathematical models in biomedicine, IAC-CNR, Rome, Italy** (2014).

Outreach

- 2024 – discussion/interview for the event [Donne nella matematica](#) at CNR Consiglio Nazionale delle Ricerche, Rome, Italy.
- 2023 – interview for [Maddmaths!](#)
- 2022 – video-interview for **Sciences : un domaine de femmes**. Link video: [\[Sciences : un domaine de femmes\] Interview de Roberta Bianchini](#).
- January 2021 – video-interview for **Talent Harbour**, *Centrale dell'Acqua di Milano, MM* in collaboration with [Le Scienze](#). Link video: [Talent Harbour 7](#).
- March 2020 – videos/lectures on mathematical analysis for high school students for the RAI (national

*Istituto per le Applicazioni del Calcolo Mauro Picone, Consiglio Nazionale delle Ricerche
via dei Taurini 19, 00185 – Rome*

✉ roberta.bianchini@cnr.it – r.bianchini@iac.cnr.it

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- television) program **La scuola non si ferma**: [Zettel maturità-video1](#); [Zettel maturità-video2](#).
- Nov. 2016 – June 2017, Participation to a **Sperimental School on Diffusion of Science**, Libreria Assaggi, Rome;

■ Contacts

- Roberto Natalini, IAC-CNR, Roma, Italia.
- Laure Saint-Raymond, ENS de Lyon, Francia.
- Anne-Laure Dalibard, Sorbonne Université, Parigi, Francia.