Scientific curriculum of Emanuele Haus

November 20, 2024

Present position

- **(November 2024 - present)**: Full Professor of Mathematical Analysis at the University of Roma Tre.

Previous positions

- **(February 2022 - October 2024)**: Associate Professor of Mathematical Analysis at the University of Roma Tre.
- **(February 2019 - January 2022)**: Tenure-track Assistant Professor (RTD-B) at the University of Roma Tre.
- **(December 2016 - January 2019)**: Fixed-term Assistant Professor (RTD-A) at the University of Naples "Federico II".
- **(November 2016 - December 2016)**: Research collaborator ("co.co.co.") at the University of Roma Tre, within the ERC project "HamPDEs – Hamiltonian PDEs and small divisor problems: a dynamical systems approach" (principal investigator: Michela Procesi).
- **(August 2014 - July 2016)**: "assegno di ricerca" (post-doc position) at the University of Naples "Federico II", within the STAR project "Water waves, PDEs and dynamical systems with small divisors" (principal investigator: Pietro Baldi) and the ERC project "HamPDEs – Hamiltonian PDEs and small divisor problems: a dynamical systems approach" (principal investigator: Michela Procesi, local coordinator: Pietro Baldi).
- **(March 2013 - July 2014)**: "assegno di ricerca" (post-doc position) at the University of Rome "La Sapienza", within the ERC project "HamPDEs – Hamiltonian PDEs and small divisor problems: a dynamical systems approach" (principal investigator: Michela Procesi).
- **(January 2012 - December 2012)**: post-doc position at the Laboratoire de Mathématiques "Jean Leray" (Nantes), within the ANR project "HANDDY – Hamiltonian and Dispersive equations: Dynamics" (principal investigator: Benoît Grébert).

Education

- **(January 2009 - December 2011)**: *Ph.D. in Mathematics*, Università degli Studi di Milano, thesis defended in March 2012.
  - Title: "Dynamics of an elastic satellite with internal friction. Asymptotic stability vs collision or expulsion".
  - Advisor: prof. Dario Bambusi.
- **October 2008**: *Master's Degree in Mathematics and Applications*, Università degli Studi di Milano, 110/110 cum laude.
  - Title: "Perché la Luna mostra sempre la stessa faccia alla Terra?" ("Why does the Moon always show the same face to the Earth?").
  - Advisor: prof. Dario Bambusi.

<div align="center">NATIONAL QUALIFICATIONS</div>

Abilitazione Scientifica Nazionale (National Scientific Qualification)

- In May 2021, I have obtained the Italian *Abilitazione Scientifica Nazionale* for the rôle of <u>Full Professor</u> in the sector 01/A3 (Mathematical Analysis, Probability and Mathematical Statistics).
- In July 2018, I have obtained the Italian *Abilitazione Scientifica Nazionale* for the rôle of <u>Associate Professor</u> in the sector 01/A3 (Mathematical Analysis, Probability and Mathematical Statistics).

Qualification aux fonctions de Maître de Conférences

- In 2013, I have obtained the French *Qualification aux fonctions de Maître de Conférences* in Mathematics (section 25 of CNU).

<div align="center">RESEARCH ACTIVITY</div>

Main research interests

- Nonlinear Hamiltonian and dispersive PDEs:
  - growth of Sobolev norms, beatings and energy cascade;
  - periodic, quasi-periodic, almost-periodic solutions, KAM theory;
  - dynamical systems techniques, normal form.
- Dynamics of water waves.
- Control and Cauchy problems for PDEs.
- Nash-Moser type schemes.
- Dynamics of networks moving by mean curvature flow.
- Dynamics of a viscoelastic satellite in a gravitational field.

List of publications

- P. Baldi, F. Giuliani, M. Guardia, E. Haus, "Effective chaos for the Kirchhoff equation on tori", published online first in *Annales de l'Institut Henri Poincaré (C) Analyse Non Linéaire*, DOI: 10.4171/AIHPC/110, 2024.
- E. Haus, B. Langella, A. Maspero, M. Procesi, "Reducibility and nonlinear stability for a quasi-periodically forced NLS", *Pure and Applied Mathematics Quarterly*, special issue in honor of Claudio Procesi's 80th birthday, Volume 20, Issue 3, 2024.
- P. Baldi, E. Haus, "Size of data in implicit function problems and singular perturbations for nonlinear Schrödinger systems", *Annales de l'Institut Henri Poincaré (C) Analyse Non Linéaire*, Volume 40, Issue 5, pp. 1051-1091, 2023.
- P. Baldi, E. Haus, "Normal form and dynamics of the Kirchhoff equation", *Bollettino dell'Unione Matematica Italiana*, Volume 16, Issue 2, pp. 337-349, 2023.
- M. Guardia, Z. Hani, E. Haus, A. Maspero, M. Procesi, "Strong nonlinear instability and growth of Sobolev norms near quasiperiodic finite gap tori for the 2D cubic NLS equation", *Journal of the European Mathematical Society (JEMS)*, Volume 25, Issue 4, pp. 1497-1551, 2023.

- P. Baldi, E. Haus, "Longer lifespan for many solutions of the Kirchhoff equation", *SIAM Journal on Mathematical Analysis*, Volume 54, Issue 1, pp. 306-342, 2022.
- P. Baldi, E. Haus, "On the normal form of the Kirchhoff equation", *Journal of Dynamics and Differential Equations*, special issue in memory of Walter Craig, Volume 33, Issue 3, pp. 1203-1230, 2021.
- E. Haus, A. Maspero, "Growth of Sobolev norms in time dependent semi-classical anharmonic oscillators", *Journal of Functional Analysis*, Volume 278, Issue 2, Article 108316, 2020.
- P. Baldi, E. Haus, "On the existence time for the Kirchhoff equation with periodic boundary conditions", *Nonlinearity*, Volume 33, Issue 1, pp. 196-223, 2020.
- M. Guardia, Z. Hani, E. Haus, A. Maspero, M. Procesi, "A note on growth of Sobolev norms near quasiperiodic finite-gap tori for the 2d cubic NLS equation", *Rendiconti Lincei - Matematica e Applicazioni*, Volume 30, Issue 4, pp. 865-880, 2019.
- P. Baldi, E. Haus, C. Mantegazza, "Existence of a lens-shaped cluster of surfaces self-shrinking by mean curvature", *Mathematische Annalen*, Volume 375, Issue 3, pp. 1857-1881, 2019.
- P. Baldi, M. Berti, E. Haus, R. Montalto, "Time quasi-periodic gravity water waves in finite depth", *Inventiones Mathematicae*, Volume 214, Issue 2, pp. 739-911, 2018.
- P. Baldi, M. Berti, E. Haus, R. Montalto, "KAM for gravity water waves in finite depth", *Rendiconti Lincei - Matematica e Applicazioni*, Volume 29, Issue 2, pp. 215-236, 2018.
- P. Baldi, E. Haus, R. Montalto, "Controllability of quasi-linear Hamiltonian NLS equations", *Journal of Differential Equations*, Volume 264, Issue 3, pp. 1786-1840, 2018.
- P. Baldi, E. Haus, C. Mantegazza, "Non-existence of Theta-shaped self-similarly shrinking networks moving by curvature", *Communications in Partial Differential Equations*, Volume 43, Issue 3, pp. 403-427, 2018.
- P. Baldi, E. Haus, "A Nash-Moser-Hörmander implicit function theorem with applications to control and Cauchy problems for PDEs", *Journal of Functional Analysis*, Volume 273, Issue 12, pp. 3875-3900, 2017.
- P. Baldi, E. Haus, C. Mantegazza, "On the classification of networks self-similarly moving by curvature", *Geometric Flows*, Volume 2, pp. 125-137, 2017.
- E. Haus, M. Procesi, "KAM for beating solutions of the quintic NLS", *Communications in Mathematical Physics*, Volume 354, Issue 3, pp. 1101-1132, 2017.
- P. Baldi, E. Haus, C. Mantegazza, "Networks self-similarly moving by curvature with two triple junctions", *Rendiconti Lincei - Matematica e Applicazioni*, Volume 28, Issue 2, pp. 323-338, 2017.
- P. Baldi, G. Floridia, E. Haus, "Exact controllability for quasi-linear perturbations of KdV", *Analysis and PDE*, Volume 10, Issue 2, pp. 281-322, 2017.
- M. Guardia, E. Haus, M. Procesi, "Growth of Sobolev norms for the defocusing analytic NLS on $\mathbb{T}^2$", *Advances in Mathematics*, Volume 301, pp. 615-692, 2016.
- E. Haus, M. Procesi, "Growth of Sobolev norms for the quintic NLS on $\mathbb{T}^2$", *Analysis and PDE*, Volume 8, Issue 4, pp. 883-922, 2015.

- L. Corsi, E. Haus, M. Procesi, "A KAM result on compact Lie groups", *Acta Applicandae Mathematicae*, Volume 137, pp. 41-59, 2015.
- E. Haus, D. Bambusi, "Asymptotic behavior of an elastic satellite with internal friction", *Mathematical physics, Analysis and Geometry*, Volume 18, Issue 1, Article 14, 2015.
- E. Haus, L. Thomann, "Dynamics on resonant clusters for the quintic non linear Schrödinger equation", *Dynamics of Partial Differential Equations*, Volume 10, Issue 2, pp. 157-169, 2013.
- D. Bambusi, E. Haus, "Asymptotic stability of synchronous orbits for a gravitating viscoelastic sphere", *Celestial Mechanics and Dynamical Astronomy*, Volume 114, Issue 3, pp. 255-277, 2012.
- E. Haus, "Dynamics of an elastic satellite with internal friction. Asymptotic stability vs collision or expulsion", Ph.D. thesis, published by Ledizioni LediPublishing, 2013.

Research courses (Ph.D. level and higher)

- During the academic year 2024-2025 I will hold a Ph.D. course (20 hours, joint with M. Procesi) on the subject "Stability and instability for nonlinear Schrödinger equations on tori".
- In May 2019 I held a 5-hour course on the subject "Nonlinear dynamics of the Schrödinger equation with periodic boundary conditions", upon invitation by Juhi Jang, at the "Summer School on Recent Advances in Mathematical Fluid Dynamics", University of Southern California, Los Angeles.
- In April-May 2013, I held a mini-course (12 hours) about current research on the subject "Growth of Sobolev norms for the nonlinear Schrödinger equation" at the University of Rome Sapienza. The course was oriented towards researchers and Ph.D. students.

Research seminars

I have held the following seminars

- **June 2024**: "Normal form and dynamics of the Kirchhoff equation", Conference SPQT2024 "Symmetry and Perturbation in Quantum Theory", Santa Margherita di Pula (Sardinia).
- **May 2024**: "Normal form and dynamics of the Kirchhoff equation", Séminaire Analyse Numérique et EDP, Laboratoire de Mathématiques d'Orsay, Université Paris-Saclay.
- **September 2023**: "Energy cascade in the nonlinear Schrödinger equation", Scuola Superiore di Catania (SSC).
- **December 2022**: "Growth of Sobolev norms for the nonlinear Schrödinger equation on the torus", seminar of the group Dinamici a Roma Tre.
- **June 2022**: "Normal form and existence time for the Kirchhoff equation", Seminar on Analysis, Geometry and PDEs, Lund University, Sweden.
- **September 2021**: "Normal form and existence time for the Kirchhoff equation", SIMAI2020+2021, Parma, Italy.
- **September 2021**: "Exact controllability for some quasi-linear PDEs", SIMAI2020+2021, Parma, Italy.
- **May 2021**: "Normal form and existence time for the Kirchhoff equation", seminar of the group Dinamici a Roma Tre.

- **April 2021**: "Normal form and existence time for the Kirchhoff equation", Center for Dynamical Systems and Nonlinear Studies (CDSNS) Colloquium, GeorgiaTech, Atlanta (online talk).
- **December 2020**: "Normal form and existence time for the Kirchhoff equation", Third DAI DAY (online conference).
- **October 2020**: "Normal form and existence time for the Kirchhoff equation", Barcelona Mathematical Days 2020 (online conference).
- **November 2019**: "Strong Sobolev instability of quasi-periodic solutions of the 2D cubic Schrödinger equation", Workshop "Variational methods, with applications to problems in mathematical physics and geometry", Istituto Canossiano, Venezia.
- **June 2019**: "Strong Sobolev instability of quasi-periodic solutions of the 2D cubic Schrödinger equation", Workshop "Hamiltonian PDEs: KAM, Reducibility, Normal Forms and Applications", Casa Matemática Oaxaca, Mexico.
- **May 2019**: "Quasi-periodic gravity water waves in finite depth", PDE and Applied Math Seminar, UC Davis.
- **March 2019**: "Strong Sobolev instability of finite-gap solutions of the 2D cubic Schrödinger equation", Séminaire Géométrie EDP et Physique Mathématique, Université de Cergy-Pontoise.
- **December 2018**: "Quasi-periodic gravity water waves in finite depth", SISSA, Trieste.
- **June 2018**: "Time quasi-periodic gravity water waves in finite depth", Conference SPT2018 "Symmetry and Perturbation Theory", Santa Margherita di Pula (Sardinia).
- **April 2018**: "Growth of Sobolev norms and dynamics of the nonlinear Schrödinger equation on the torus", SISSA, Trieste.
- **February 2018**: "Time quasi-periodic gravity water waves in finite depth", School of Mathematics, Georgia Tech, Atlanta.
- **January 2018**: "Time quasi-periodic gravity water waves in finite depth", Università di Roma Tor Vergata.
- **November 2017**: "On the classification of networks self-similarly shrinking by curvature", Graduiertenkolleg Kolloquium, University of Regensburg (Germany).
- **September 2017**: "Growth of Sobolev norms for the nonlinear Schrödinger equation", seminar of the Math Workgroup, Università Federico II, Naples.
- **September 2017**: "Time quasi-periodic gravity water waves in finite depth", Conference IperPV2017 "XVII Italian Meeting on Hyperbolic Equations", Pavia.
- **June 2017**: "Non-existence of Theta-shaped self-similarly shrinking networks moving by curvature", Workshop "Curves and Networks in Geometric Analysis", Centro di Ricerca Matematica Ennio De Giorgi, Pisa.
- **February 2017**: "A Nash-Moser-Hörmander implicit function theorem with applications to control and Cauchy problems for PDEs", SISSA, Trieste.
- **February 2017**: "KAM for beating solutions of the quintic NLS", Séminaire d'Analyse, Laboratoire de Mathématiques Jean Leray, Nantes.
- **January 2017**: "KAM for beating solutions of the quintic NLS", Winter School "Dynamics and PDEs", Saint Étienne de Tinée (France).
- **December 2016**: "Dynamics of Hamiltonian PDEs on tori", Dipartimento di Matematica e Applicazioni, Università Federico II, Naples.

- **September 2016**: "Exact controllability for some quasi-linear PDEs", Dipartimento di Matematica, Università degli Studi di Milano.
- **September 2016**: "Exact controllability for quasi-linear perturbations of KdV", SIMAI2016, Milan.
- **July 2016**: "Growth of Sobolev norms for the NLS on $\mathbb{T}^2$", 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, Florida.
- **May 2016**: "Growth of Sobolev norms and beating effects for the NLS on tori", Università degli Studi Roma Tre.
- **February 2016**: "Growth of Sobolev norms for the NLS on $\mathbb{T}^2$", Analysis Seminar, School of Mathematics, Edinburgh.
- **October 2015**: "Exact controllability for quasi-linear perturbations of KdV", UPC, Barcelona.
- **September 2015**: "Growth of Sobolev norms for the NLS on $\mathbb{T}^2$", XX Congresso UMI (Italian Mathematical Union), Siena.
- **July 2015**: "Growth of Sobolev norms for the NLS on $\mathbb{T}^2$", Workshop "Trails in Quantum Mechanics and Surroundings", Como.
- **March 2015**: "Growth of Sobolev norms for the NLS on $\mathbb{T}^2$", Séminaire Analyse non-linéaire et EDP, Institut Henri Poincaré, Paris.
- **December 2014**: "Growth of Sobolev norms for the NLS on $\mathbb{T}^2$", Workshop "KAM and dispersive methods in Hamiltonian PDEs", Milan.
- **September 2014**: "Growth of Sobolev norms for the quintic NLS on $\mathbb{T}^2$", School "KAM theory and dispersive PDEs", Rome.
- **May 2014**: "Growth of Sobolev norms for the quintic NLS on $\mathbb{T}^2$", Conference SPT2014 "Symmetry and Perturbation Theory", Cala Gonone (Sardinia).
- **November 2013**: "Dynamics of the quintic non-linear Schrödinger equation on the n-dimensional torus", Dipartimento di Matematica, Università degli Studi di Milano.
- **September 2013**: "Growth of Sobolev norms for the quintic nonlinear Schrödinger equation", workshop "Multiscale methods in small divisor problems", Maiori (Amalfi coast).
- **September 2013**: "Asymptotic behavior of an elastic satellite with internal friction", International Meeting on Celestial Mechanics CELMEC VI, San Martino al Cimino - Viterbo.
- **May 2013**: "Dynamics on resonant clusters for the quintic non linear Schrödinger equation", Dipartimento di Matematica e Applicazioni, Università Federico II, Naples.
- **January 2013**: "Dynamics on resonant clusters for the quintic non linear Schrödinger equation", Dipartimento di Matematica, Università La Sapienza, Rome.
- **October 2012**: "Dynamics on resonant clusters for the quintic non linear Schrödinger equation", HANDDY workshop, Station Biologique de Roscoff.
- **April 2012**: "Asymptotic behavior of an elastic satellite with internal friction", Séminaire d'Analyse, Laboratoire de Mathématiques Jean Leray, Nantes.
- **February 2012**: "Asymptotic dynamics of an elastic satellite with internal friction", Dipartimento di Fisica, Università La Sapienza, Rome.
- **September 2011**: "Asymptotic stability of the synchronous resonance for an elastic satellite with internal friction", HANDDY workshop, Île Berder (Bretagne).

- **September 2011**: "Asymptotic stability of the synchronous resonance for an elastic satellite with internal friction", Laboratoire de Mathématiques Jean Leray, Nantes.
- **March 2011**: "Asymptotic stability of the synchronous resonance for a viscoelastic satellite", meeting of the Gruppo Nazionale di Fisica Matematica, Montecatini Terme.
- **February 2011**: "Asymptotic stability of the synchronous resonance for a viscoelastic satellite", Centro di Ricerca Matematica Ennio De Giorgi, Pisa.
- **December 2009**: "Asymptotic stability of the 1:1 spin-orbit resonance. A dynamical model", seminar of the research group in Mathematical Physics, Università degli Studi di Milano.
- **October 2009**: "A viscoelastic dynamical model for the study of the asymptotic stability of the 1:1 spin-orbit resonance", meeting of the Gruppo Nazionale di Fisica Matematica, Montecatini Terme.

Participation to conferences

- **September 2024** (forthcoming): third school and workshop "Hamiltonian and Dispersive PDEs", University of Milan, **invited speaker**.
- **June 2024**: Conference SPQT2024 "Symmetry and Perturbation in Quantum Theory", Santa Margherita di Pula (CA), **invited speaker**.
- **June 2023**: "Analysis and Hamiltonian PDEs: remembering Thomas Kappeler", University of Zürich.
- **May 2023**: second school and workshop "Hamiltonian and Dispersive PDEs", University of Roma Tre, **member of the organizing committee**.
- **September 2022**: first school and workshop "Hamiltonian and Dispersive PDEs", Department of Mathematics, University of Pisa.
- **July 2022**: "Dynamics week in Jerusalem", Einstein Institute of Mathematics, Hebrew University, Jerusalem.
- **September 2021**: SIMAI2020+2021, congress of the Italian Society of Industrial and Applied Mathematics, Milan, **invited speaker**.
- **December 2020**: Third DAI DAY (online conference), **invited speaker**.
- **October 2020**: Barcelona Mathematical Days 2020 (online conference), **invited speaker**.
- **May 2020**: Workshop "Mathematical Questions in Wave Turbulence", Banff International Research Station (online conference).
- **December 2019**: Workshop "From semi-classical to quantum many body through normal forms", Dipartimento di Matematica, Università degli Studi di Milano.
- **November 2019**: Workshop "Variational methods, with applications to problems in mathematical physics and geometry", Istituto Canossiano, Venezia, **invited speaker**.
- **June 2019**: Workshop "Hamiltonian PDEs: KAM, Reducibility, Normal Forms and Applications", Casa Matemática Oaxaca, Mexico, **invited speaker**.
- **May 2019**: "Summer School on Recent Advances in Mathematical Fluid Dynamics", USC, Los Angeles, **invited lecturer** (5-hour course).
- **June 2018**: School JISD2018 "Jornades d'Interacció entre Sistemes Dinàmics i Equacions en Derivades Parcials", UAB, Barcelona.
- **June 2018**: Conference SPT2018 "Symmetry and Perturbation Theory", Santa Margherita di Pula (Sardinia).

- **May 2018**: "BeKAM International Meeting 2018", Institut d'Études Scientifiques Cargèse (Corsica).
- **February 2018**: "Variational Methods in Analysis, Geometry and Physics", Centro di Ricerca Matematica Ennio De Giorgi, Pisa.
- **October 2017**: "Conference on Hamiltonian Systems (a tribute to the memory of John N. Mather)", Ascona (Switzerland).
- **October 2017**: "Analysis and Dynamics", Congress in honour of Luigi Chierchia's 60th Birthday, Marina di San Gregorio (LE), Italy.
- **September 2017**: Conference IperPV2017 "XVII Italian Meeting on Hyperbolic Equations", Pavia.
- **June 2017**: Workshop "Curves and Networks in Geometric Analysis", Centro di Ricerca Matematica Ennio De Giorgi, Pisa, **invited speaker**.
- **March 2017**: Workshop "A day in nonlinear analysis", **member of the scientific and organizing committee**.
- **January 2017**: Winter School "Dynamics and PDEs", Saint Étienne de Tinée (France), **invited speaker**.
- **September 2016**: SIMAI2016, congress of the Italian Society of Industrial and Applied Mathematics, Milan, **invited speaker**.
- **September 2016**: "Hamiltonian dynamics, PDEs and Waves on the Amalfi coast" Maiori (SA), Italy, **member of the scientific and organizing committee**.
- **July 2016**: 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando (Florida), **invited speaker**.
- **September 2015**: XX Congresso UMI (Italian Mathematical Union), Siena, **invited speaker**.
- **July 2015**: Workshop "Trails in Quantum Mechanics and Surroundings", Como, **invited speaker**.
- **June 2015**: Summer School "Normal forms and large time behavior for nonlinear PDE", University of Nantes.
- **February 2015**: Winter School "Dynamics and PDEs", Saint Étienne de Tinée (France).
- **December 2014**: Workshop "KAM and dispersive methods in Hamiltonian PDEs", University of Milan, **invited speaker**.
- **November 2014**: Workshop "Dynamics and PDEs", Institut d'Études Scientifiques Cargèse (Corsica).
- **September 2014**: School and Workshop "KAM theory and dispersive PDEs", University of Rome La Sapienza, **member of the organizing committee**.
- **June 2014**: School JISD2014 "Jornades d'Interacció entre Sistemes Dinàmics i Equacions en Derivades Parcials", UPC, Barcelona.
- **May 2014**: Conference SPT2014 "Symmetry and Perturbation Theory", Cala Gonone (Sardinia).
- **January 2014**: "Conference on Hamiltonian PDEs: Analysis, Computations and Applications", Fields Institute, Toronto.
- **September 2013**: Workshop "Multiscale methods in small divisor problems", Maiori (Amalfi coast), **invited speaker**.
- **September 2013**: International Meeting on Celestial Mechanics CELMEC VI, San Martino al Cimino - Viterbo.
- **June 2013**: HANDDY conference "Equations Hamiltoniennes et dispersives", CIRM, Marseille.
- **October 2012**: HANDDY (Hamiltonian and Dispersive equations: Dynamics) workshop, Station Biologique de Roscoff, **invited speaker**.

- **July 2012**: "Nonlinear Hamiltonian PDEs", Ascona (Switzerland).
- **September 2011**: HANDDY (Hamiltonian and Dispersive equations: Dynamics) workshop, Île Berder (Bretagne), **invited speaker**.
- **May 2011**: School and Workshop "KAM and Cauchy theory for PDEs", Napoli-Ravello.
- **February 2011**: "Nonlinear dynamical systems and applications", CRM Ennio De Giorgi, Pisa, **invited speaker**.
- **September 2010**: Riemann International School of Mathematics "Nonlinear Differential Equations", Verbania (Italy).
- **April 2010**: 'Topological and Variational Methods in Nonlinear Analysis", Brescia (BS), Italy.
- **January 2010**: Winter School "Dynamics and PDEs", Saint Étienne de Tinée (France).
- **November 2009**: "Three dispersive days", University of Milan.
- **October 2009**: "Asymptotics in dynamics, geometry and PDEs, generalized Borel summation", Pisa.
- **September 2009**: International Meeting on Celestial Mechanics CELMEC V, San Martino al Cimino - Viterbo.
- **May 2009**: School and Workshop "New connections between dynamical systems and PDEs", Napoli-Maiori.

Scientific responsibilities

Research projects as Principal Investigator or local coordinator

- I am the local coordinator at the Università degli Studi Roma Tre of the project PRIN 2022 "TESEO: Turbulent Effects vs Stability in Equations from Oceanography" (P.I.: Stefano Scrobogna, Università di Trieste).
- In 2014 I won a grant as Principal Investigator of the research project *Stable and unstable dynamics in evolution PDEs* at Sapienza Università di Roma, within the program "Progetti di avvio alla ricerca 2014".

Supervision of Ph.D. students

- Simone Marrocco (2023 –), University of Roma Tre.

Mentoring of Postdoc fellows

- Zhiqiang Wang (April 2024 –), University of Roma Tre.

Member of Ph.D. committees

- In September 2024, I will be a member of the committee for the Ph.D. defense of Charbella Abou Khalil, University of Nantes (Ph.D. advisors: Benoît Grébert, Joackim Bernier).

Scientific organization

- Member of the organizing committee (with L. Biasco, L. Corsi, P. D'Ancona, R. Feola, J.E. Massetti and M. Procesi) of the school and workshop "Hamiltonian and Dispersive PDEs" (Rome, 15-19 May 2023).
- Member of the scientific and organizing committees (with P. Baldi, N. Fusco and A. Verde) of the workshop "A day in nonlinear analysis" (Napoli, 2 March 2017).
- Member of the scientific and organizing committees (with P. Baldi, D. Bambusi, L. Biasco, V. Coti Zelati, W. Craig, R. Feola, B. Grébert, A. Maspero and M. Procesi) of the school and workshop "Hamiltonian dynamics, PDEs and Waves on the Amalfi coast" (Maiori, 5-10 September 2016).
- Member of the organizing committee (with L. Biasco, L. Corsi, R. Feola, P. Magrone and M. Procesi) of the "Roman summer school and workshop: KAM theory and dispersive PDEs" (Rome, 1-11 September 2014).

Refereeing activity

- I have peer-reviewed papers for several mathematical journals, including:
    - *Journal of the European Mathematical Society (JEMS)*
    - *Communications in Partial Differential Equations*
    - *Transactions of the American Mathematical Society*
    - *Discrete and Continuous Dynamical Systems - Series A*
    - *Journal of Mathematical Physics*
    - *Nonlinearity*
    - *Journal of Differential Equations*
    - *Nonlinear Analysis*
    - *Journal of Dynamics and Differential Equations*
    - *Nonlinear Differential Equations and Applications (NoDEA)*
    - *Rendiconti Lincei - Matematica e Applicazioni*
    - *Mathematical Physics, Analysis and Geometry*
    - *Bollettino dell'Unione Matematica Italiana.*
- Since 2013, I have been regularly reviewing papers on MathSciNet.

Administrative responsibilities

Member of committees

- Since November 2019, I have been a member of the "collegio di dottorato" for the Ph.D. program in Mathematics at the Università degli Studi Roma Tre.
- Since February 2022, I have been a member of the "commissione didattica" (Teaching Committee) for the Bachelor in Mathematics, the Master in Mathematics and the Master in Computational Sciences at the Università degli Studi Roma Tre.
- In 2023 I was a member of the committee for the admission to the Ph.D. program in Mathematics at the Università degli Studi Roma Tre.
- In September 2022, I was a member of a committee for the admission to the Ph.D. program in Mathematics Analysis, Modeling and Applications at SISSA (Trieste).

- Over the last 5 years, I was part of several committees for hiring researchers and postdocs, as well as several department committees for hiring exercisers and tutors.

<div style="text-align:center">

TEACHING ACTIVITY

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Teaching in excellence schools

- In the academic year 2021-2022, I held the second half (48 out of 96 hours) of an advanced course of Mathematical Analysis for students of scientific areas of the *Scuola Superiore Meridionale* (Institute for Advanced Studies of Naples). The first half of the course was held by Carlo Mantegazza.
- In the academic year 2020-2021, I held the second half (48 out of 96 hours) of an advanced course of Mathematical Analysis for students of scientific areas of the *Scuola Superiore Meridionale* (Institute for Advanced Studies of Naples). The first half of the course was held by Carlo Mantegazza.

Advisor of undergraduate theses

- Since 2022, I have been the advisor of 5 bachelor theses at the University of Roma Tre.

Curricular teaching activity

- "Titolare del corso" (Main teacher of the class) of Analisi Matematica 1 for students of Computer Engineering, Università degli Studi Roma Tre, academic year 2023-2024.
- "Titolare del corso" (Main teacher of the class) of Analisi Matematica 3 (for students of Mathematics), Analisi Matematica 2 - Mod. 1 (for students of Physics), Università degli Studi Roma Tre, academic year 2023-2024.
- Some lectures (10 hours) of Small Divisor Problems (for students of Mathematics), Università degli Studi Roma Tre, academic year 2022-2023.
- Some lectures (12 hours) of Analisi Matematica 5 (for students of Mathematics), Università degli Studi Roma Tre, academic year 2022-2023.
- "Esercitazioni" (Practical classes) of Analisi Matematica 4 (for students of Mathematics), Analisi Matematica 2 - Mod. 2 (for students of Physics), Università degli Studi Roma Tre, academic year 2022-2023.
- "Titolare del corso" (Main teacher of the class, together with R. Feola) of Partial Differential Equations for students of Mathematics, Università degli Studi Roma Tre, academic year 2022-2023.
- "Titolare del corso" (Main teacher of the class) of Analisi Matematica 3 (for students of Mathematics), Analisi Matematica 2 - Mod. 1 (for students of Physics), Università degli Studi Roma Tre, academic year 2022-2023.
- "Titolare del corso" (Main teacher of the class, together with R. Feola) of Sobolev Spaces and PDEs for students of Mathematics, Università degli Studi Roma Tre, academic year 2021-2022.
- "Titolare del corso" (Main teacher of the class) of Analisi Matematica 3 (for students of Mathematics), Analisi Matematica 2 - Mod. 1 (for students of Physics), Università degli Studi Roma Tre, academic year 2021-2022.

- "Titolare del corso" (Main teacher of the class, together with R. Feola) of Sobolev Spaces and PDEs for students of Mathematics, Università degli Studi Roma Tre, academic year 2020-2021.
- "Titolare del corso" (Main teacher of the class) of Analisi Matematica 2 (for students of Mathematics), Analisi Matematica 1 - Mod. 2 (for students of Physics), Università degli Studi Roma Tre, academic year 2020-2021.
- "Titolare del corso" (Main teacher of the class, together with P. Esposito) of Sobolev Spaces and PDEs for students of Mathematics, Università degli Studi Roma Tre, academic year 2019-2020.
- "Titolare del corso" (Main teacher of the class) of Analisi Matematica 2 for students of Mathematics, Università degli Studi Roma Tre, academic year 2019-2020.
- "Titolare del corso" (Main teacher of the class) of Analisi Matematica 2 for students of Mathematics, Università degli Studi Roma Tre, academic year 2018-2019.
- "Titolare del corso" (Main teacher of the class) of Analisi Matematica 2 for students of Automation, Biomedical, Computer, Electronic and Telecommunication Engineering, Università Federico II, Napoli, academic year 2017-2018.
- "Titolare del corso" (Main teacher of the class) of Analisi Matematica 2 for students of Civil, Environmental and Gestional Engineering, Università Federico II, Napoli, academic year 2016-2017.
- "Esercitazioni" (practical classes) of Analisi Matematica 1 for students of Biomedical Engineering, Università Federico II, Napoli, academic year 2015-2016.
- "Esercitazioni" (practical classes) of Analisi Matematica 2 for students of Biomedical Engineering, Università Federico II, Napoli, academic year 2015-2016.
- Tutor of Analisi Matematica 1 for students of Mathematics, Università Federico II, Napoli, academic year 2015-2016.

Other activities

Dissemination talks

- **April 2024**: "Oscillations and resonance", University of Roma Tre.
- **April 2023**: "Problems of Euclidean geometry in Mathematical Olympiads", Scuola Superiore di Catania (SSC).
- **April 2017**: "Oscillations and resonance: a universal phenomenon", Università Federico II, Naples.
- **May 2011**: "Numbers and notes: from Pythagoras to Debussy", City hall, Treviglio (BG), Italy.
- **April 2010**: "Taming infinity", School "Anna Frank", Varese (VA), Italy.

Examiner in committees for the admission to excellence schools

- **September 2023**: examiner of Mathematics in the committee for the admission to the Bachelor program of the class of Sciences at the Scuola Superiore di Catania (SSC).

- **September 2021**: examiner of Mathematics in the committee for the admission to the Bachelor program of the class of Sciences at the Scuola Superiore di Catania (SSC).

Youth mathematical competitions

- Since 2019, I have been participating in the organization of several individual and team competitions of mathematics for high school students, at the University of Roma Tre and at the University of Roma "Sapienza".
- From 2016 to 2019, I was a trainer of the local contestants in Naples for the Italian and International Mathematical Olympiad.
- As a member of the Italian team, I was a contestant at the 42nd International Mathematical Olympiad, held in Washington DC, 2001.
- I won a gold medal at the 2001 Italian Mathematical Olympiad.
- I was ranked 1st in the national mathematical competition "Kangourou Italia", category Student, 2001.

Roma, 12 luglio 2024