Davide Tramontana

06/09/1998, Fano (PU)

⚲ Dipartimento di Matematica, Università di Bologna, Piazza di Porta San Donato 5, 40126 Bologna, Italy

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Education

○ **PhD in Mathematics**
University of Bologna

September 2022 – December 2025

(advisor: Prof. Alberto Parmeggiani)

- **Thesis:** Diffusion of Regularity and Propagation of Isotropic Singularities Induced by Quadratic Differential Operators.
- **Research interests:** Analysis of PDEs, Propagation of Singularities, Microlocal Analysis, Spectral Theory, Dispersive Equations.

○ **Master Degree in Mathematics: 110/110 cum laude**
University of Bologna

September 2020 – September 2022

- **Thesis**: Teoria Spettrale di una Passeggiata Aleatoria Ipoellittica e Convergenza all'Equilibrio (thesis advisor: Prof. Alberto Parmeggiani).

○ **Bachelor Science in Mathematics: 110/110 cum laude**
University of Bologna

September 2017 – September 2020

- **Thesis**: Coomologia di De Rham e Forme Differenziali Armoniche (thesis advisor: Prof. Bruno Franchi).

Publications

○ **Publications**

- On the propagation of isotropic Sobolev singularities (with M. Malagutti and A. Parmeggiani). To appear in Bruno Pini Mathematical Analysis Seminar.
- Propagation of Shubin-Sobolev Singularities of Weyl-quantizations of Complex Quadratic Forms (with M. Malagutti and A. Parmeggiani). Mathematische Annalen (2025). *https://arxiv.org/abs/2503.20955* ↗

○ **Preprints**

- The metaplectic semigroup and its applications to time-frequency analysis and evolution operators (with G. Giacchi and L. Rodino). Preprint (2026). *https://arxiv.org/abs/2601.22252* ↗
- On the microlocal phase-space concentration of Wigner distributions associated with Schrödinger evolutions (with G. Giacchi). Preprint (2025). *https://arxiv.org/abs/2511.19733* ↗
- Subelliptic random walks on Riemannian manifolds and their convergence to equilibrium. Preprint (2025). *https://arxiv.org/abs/2506.22869* ↗
- Smoothing effect for third order operators with variable coefficients (with S. Federico). Preprint (2025). *https://arxiv.org/abs/2503.08656* ↗

Research Visits

○ **Visiting researcher** at Université Sorbonne Paris Nord, Paris (France). Hosted by: Prof. Francis Nier. January '26.

○ **Visiting Researcher** at Queen Mary University of London, London (UK). Hosted by: Prof. Claudia Garetto. November '25.

- ○ **Visiting Researcher** at Queen Mary University of London, London (UK). Hosted by: Prof. Claudia Garetto. September '25.

- ○ **Visiting Graduate Student** at Northwestern University, Evanston (USA). Mentor: Prof. Jared Wunsch. September '24 - November '24.

Scientific Activities

- ○ **Co-Founder of 'ASK - Analysis Students Kernel'**

  [ASK - Analysis Students Kernel](#) 🔗

  ASK is a group of young researchers in Mathematical Analysis and Probability at the University of Bologna, founded in 2024 with the aim of sharing their research through periodic seminars.

- ○ **Conferences Organized**

  – ASK Conference 2024: Interaction between different areas of Mathematical Analysis and Probability - December 18-20, '24 (University of Bologna).

  – Symposium in Harmonic and Complex Analysis, Microlocal and Geometrical Analysis and Applications, for PhD students (SHaCAMIGA) – January 24-26, '24 (University of Bologna).

Future Events

- ○ Organizer of the Conference *New Perspectives on Evolution Equations and Related Topics* - July 13-17, '26 (Queen Mary University of London).

- ○ Participant in the Conference *MAMA26: Modern Applications of Microlocal Analysis* - February 16-20, '26 (London).

Events

- ○ **Invited Talks**

  – Invited Speaker at *Anomalies in PDEs 2026* - February 2-6, '26 (Ferrara).

  – Invited Speaker at *Analysis seminar* - January 23, '26 (Bordeaux).

  – Invited Speaker at *ADG seminar* - January 21, '26 (Paris).

  – Invited Speaker at *LAGA Analysis Seminar* - January 20, '26 (Paris).

  – Invited Speaker at *5th Young Researchers Workshop in Harmonic Analysis* - January 14-16, '26 (Torino).

  – Invited Speaker at *XMaths Workshop 2025* - December 18-19, '25 (Bari).

  – Invited Speaker at *Bruno Pini Mathematical Analysis Seminar* - December 11, '25 (Bologna).

  – Invited Speaker at *Junior Analysis Seminar at Imperial College* - November 5, '25 (London).

  – *Geometry, Analysis and Gravitation seminar*, Queen Mary University of London, September 16, '25 (London).

  – *ECR seminar*, University College London, September 12, '25 (London).

  – *15th ISAAC Congress* International Society for Analysis, its Applications and Computation - July 21-25, '24 (Astana).

- ○ **Conferences and Schools Attended**

  – Semiclapp: Semiclassical analysis and applications – May 13-17, '24 (Nice).

  – Dispersion and Geometry in Padova - May 06-07, '24 (Padova).

  – Modern Aspects of Analysis on Lie Groups - April 02-05, '24 (Göttingen).

  – Pseudo-Differential Operators and Related Topics – January 29 – February 02, '24 (Ghent).

  – More Anomalies in Partial Differential Equations – September 17-22, '23 (Bertinoro).

  – Spectral theory and geometry of ergodic Schrödinger operators - July 31 - August 04, '23 (Potsdam).

  – Harmonic Analysis, PDEs, and GMT in Bilbao 2023 - June 12-16, '24 (Bilbao).

Grants

○ **INdAM-GNAMPA 2025 Research Projects**: 'Studio di Invarianti Conformi tramite Teoria dello Scattering' CUP: E5324001950001 01/2025–12/2025. (Amount: 2500 euro).

Teaching

○ **A.A 2025/2026**

– Teaching assistant for the course 'Analisi Matematica', Corso di Laurea Triennale in Astronomia, University of Bologna. Instructor: Prof. Alberto Parmeggiani.

○ **A.A 2024/2025**

– Teaching assistant for the course 'Analisi Superiore ed EDP', Corso di Laurea Magistrale in Matematica, University of Bologna. Instructor: Prof. Alberto Parmeggiani.

○ **A.A 2023/2024**

– Teaching assistant for the course 'Analisi Superiore ed EDP', Corso di Laurea Magistrale in Matematica, University of Bologna. Instructor: Prof. Alberto Parmeggiani.

– Teaching assistant for the course 'Analisi Superiore e Geometria Differenziale', Corso di Laurea Magistrale in Matematica, University of Bologna. Instructor: Prof. Loredana Lanzani.

○ **A.A 2022/2023**

– Teaching assistant for the course 'Analisi Matematica 1 A – Classe A-L', Corso di Laurea Triennale in Matematica, University of Bologna. Instructor: Prof. Giovanni Cupini.

– Teaching assistant for the course 'Analisi Matematica 1 A – Classe M-Z', Corso di Laurea Triennale in Matematica, University of Bologna. Instructor: Prof. Giovanni Cupini.

– Teaching assistant for the course 'Analisi Matematica 1 B', Corso di Laurea Triennale in Matematica, University of Bologna. Instructor: Prof. Giovanni Dore.

Skills

○ **Languages**

– Italian: native.

– English: fluent.

○ **Computer Skills**

– Matlab, Python, Latex, Word, Excel.