

Leonardo Tolomeo

PERSONAL DATA

BIRTHDATE: 14 November 1991
NATIONALITY: Italian
ADDRESS: School of Mathematics,
The University of Edinburgh,
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United Kingdom
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WORK EXPERIENCE

<i>Current</i> SEP 2022	Lecturer (tenured Assistant Professor), University of Edinburgh, UK
AUG 2022	Hausdorff Postdoc, Hausdorff Center for Mathematics, University of Bonn, Germany
SEP 2019	

EDUCATION

JUN 2019	Ph.D. in Mathematics, University of Edinburgh
SEP 2015	Thesis: Stochastic dispersive PDEs with additive space-time white noise Supervisor: Professor Tadahiro Oh
SEP 2015	Diploma di licenza, Scuola Normale Superiore
OCT 2010	
JUL 2015	M.Sc. summa cum laude in Mathematics, Università di Pisa
OCT 2013	Thesis: Plancherel measures associated to sublaplacians on Lie groups ¹ Supervisor: Professor Fulvio Ricci
JUL 2013	B.Sc. summa cum laude in Mathematics, Università di Pisa
OCT 2010	Thesis: Paley - Wiener type theorems for locally compact abelian groups ¹ Supervisor: Professor Fulvio Ricci

PRIZES AND AWARDS:

- Bernoulli Society New Researcher Award, 2024.
- Edinburgh Mathematical Society Ph.D. Thesis Prize, 2021.
Prize awarded for the best Ph.D. Thesis in Scotland of the years 2019/2020.
- Dr Laura Wisewell Travel Scholarships, University of Edinburgh, 2018.
- Dr Laura Wisewell Travel Scholarships, University of Edinburgh, 2017
- Balkan Mathematical Olympiad, Bronze Medal, 2010.
- Italian Mathematical Olympiad, Gold Medal, 2010.
- Italian Physics Olympiad, Silver Medal, 2010.

¹In Italian.

- Italian Mathematical Olympiad, Silver Medal, 2009.

GRANTS

- Coordinator for the LMS (London Mathematical Society) Harmonic Analysis & PDE Network, since September 2023s.
- Staff member for Cooperative Research Centre “The Mathematics of Emergent Effects” (SFB 1060), under project C03. Project C03 budget: €288,000.

PAPERS

Accepted/published papers

1. (with A. Martini, F. Ricci) *Convolution kernels versus spectral multipliers for sub-Laplacians on groups of polynomial growth*, **J. Funct. Anal.** 277 (2019), no. 6, 1603–1638.
2. (with A. Amenta) *A dichotomy concerning uniform boundedness of Riesz transforms on Riemannian manifolds*, **Proc. Amer. Math. Soc.** 147 (2019), no. 11, 4797–4803.
3. *Unique ergodicity for a class of stochastic hyperbolic equations with additive space-time white noise*, **Comm. Math. Phys.** 377, 1311–1347 (2020)
4. *Global well-posedness of the two-dimensional stochastic nonlinear wave equation on an unbounded domain*, **Ann. Probab.** 49: 1402–1426 (May 2021).
5. (with M. Gubinelli, H. Koch, T. Oh) *Global dynamics for the two-dimensional stochastic nonlinear wave equations*, **Int. Math. Res. Not. IMRN** (2021), rnab084.
6. (with V. Cavina, P.A. Erdman, P. Abiuso, V. Giovannetti) *Maximum power heat engines and refrigerators in the fast-driving regime*, **Phys. Rev. A** 104, 032226 (2021).
7. (with T. Oh, P. Sosoe) *Optimal integrability threshold for Gibbs measures associated with focusing NLS on the torus*, **Invent. Math.** 227, 1323–1429 (2022).
8. (with T. Oh, M. Okamoto) *Focusing Φ_3^4 -model with a Hartree-type nonlinearity*, [arXiv:2009.03251](#), to appear in **Mem. Amer. Math. Soc.**
9. (with J. Forlano) *On the unique ergodicity for a class of 2 dimensional stochastic wave equations*, [arXiv:2102.09075](#), **Trans. Amer. Math. Soc.** 377 (2024), no. 1, 345–394.
10. (with T. Robert, K. Seong, Y. Wang) *Focusing Gibbs measures with harmonic potential*, [arXiv:arXiv:2212.11386](#), to appear in **Ann. Inst. Henri Poincaré Probab. Stat.**
11. (with T. Oh, K. Seong) *A remark on Gibbs measures with log-correlated Gaussian fields*, [arXiv:2012.06729](#), **Forum Math. Sigma** 12 (2024), Paper No. e50, 40 pp.
12. (with T. Oh, M. Okamoto) *Stochastic quantization of the Φ_3^3 -model*, [arXiv:2108.06777](#), to appear in **Mem. Eur. Math. Soc.**
13. (with J. Forlano) *Quasi-invariance of Gaussian measures of negative regularity for fractional nonlinear Schrödinger equations*, [arXiv:2205.11453](#), to appear in **J. Eur. Math. Soc. (JEMS)**.

Preprints

14. (with M. Romito) *Yet another notion of irregularity through small ball estimates*, [arXiv:2207.02716](#), submitted to Stochastic Processes Appl.
15. (with T. Oh, Y. Wang, G. Zheng) *Hyperbolic $P(\Phi)_2$ -model on the plane*, [arXiv:2211.03735](#), submitted to Comm. Math. Phys.

16. (with H. Weber) *Phase transition for invariant measures of the focusing Schrödinger equation*, [arXiv:2306.07697](#), submitted to Comm. Math. Phys.
17. *Ergodicity for the hyperbolic $P(\Phi)_2$ -model*, [arXiv:2310.02190](#), submitted to J. Eur. Math. Soc. (JEMS).
18. (with V. D. Dinh, N. Rougerie, Y. Wang) *Statistical mechanics of the radial focusing nonlinear Schrödinger equation in general traps*, [arXiv:2312.06232](#), submitted to Comm. Math. Phys.
19. (with J. Coe) *Sharp quasi-invariance threshold for the cubic Szegő equation*, [arXiv:2404.14950](#), submitted to Anal. PDE.
20. (with J. Forlano) *Quasi-invariance of the Gaussian measure for the two-dimensional stochastic cubic nonlinear wave equation*, [arXiv:2409.20451](#), submitted to Stoch. Partial Differ. Equ. Anal. Comput., special volume in honour of G. da Prato.

In preparation

21. (with A. Hocquet, M. Romito) *About Some Notions of irregularity of paths*, in preparation.

ORGANISATION OF CONFERENCES AND WORKSHOPS

1. Co-organiser of “LMS Harmonic Analysis and PDE network meeting”, University of Edinburgh, December 2023.
2. Co-organiser of the 5-day workshop “Deterministic and Probabilistic Dynamics of Non-linear Dispersive PDEs”, University of Edinburgh, June 2023.
3. Co-organiser of the 5-day workshop “Singular SPDEs and Related Topics”, Hausdorff Institute for Mathematics (Bonn), October 2019.

INVITED TALKS

Mini-courses

1. Summer School on Stochastic Analysis, EPFL, Lausanne, Switzerland, Aug 2023.

Talks

2. Scottish-Basque meeting on analysis, Maxwell Institute, Edinburgh, UK, October 2024.
3. Young researchers in deterministic and probabilistic dispersive equations, Bernoulli Centre, EPFL, Switzerland, October 2024.
4. Séminaire EDP, University of Nancy, France, September 2024.
5. Bernoulli-ims 11th World Congress in Probability and Statistics, Bernoulli Society New Researchers Award Session, Ruhr University Bochum, Germany, August 2024.
6. Harmonic and Stochastic Analysis of Dispersive PDEs, University of Bielefeld, June 2024.
7. Probability Seminar, University of Leeds, April 2024.
8. Probability Seminar, University of Pisa, February 2024.
9. Webinar on stochastic analysis 2023, Beijing Institute of Technology, China, November 2023.
10. Workshop: Random dispersive PDEs 2023, University of Birmingham, UK, July 2023.
11. Harmonic Analysis and Partial Differential Equations, in honour of prof. H. Koch’s 60th birthday, University of Bonn, Germany, May 2023.
12. Analysis and Probability Seminar, University of Warwick, UK, May 2023.
13. Harmonic Analysis, Stochastics and PDEs, ICMS, Edinburgh, UK, June 2022.
14. Dispersive Day 2022, plenary talk, University of Edinburgh, UK, June 2022.
15. Deterministic Dynamics and Randomness in PDE, MFO Oberwolfach, Germany, May 2022. Listed in the workshop report as one of the “highlights of the workshop”.

16. Analysis Seminar, Princeton University, USA, November 2022.
17. Analysis Seminar, University of Edinburgh, UK, October 2021.
18. North British Probability Seminar, University of Edinburgh, UK, September 2021.
19. Hamiltonian Methods in Dispersive and Wave Evolution Equations, ICERM, Providence, RI, USA, November 2021.
20. Singular and Random PDEs, IECL, Nancy, France, December 2021.
21. Probability Seminar, Illinois Institute of Technology, Chicago, USA, October 2021.
22. Analysis Seminar, University of Bath, UK, October 2021.
23. PDE and Randomness, University of Bath, UK, September 2021.
24. HCM Symposium, University of Bonn, Germany, August 2021.
25. SPDEs and their friends, TU Berlin, Germany, June 2021.
26. Brats in Stochastic Analysis, University of Pisa, Italy, May 2020.
27. Seminar in rough paths, stochastic PDEs and related topic, TU Berlin, Germany, April 2020.
28. Graduate Seminar on Advanced Topics in PDE, University of Bonn, Germany, December 2019.
29. Workshop in Harmonic Analysis and Rough Paths, HIM, Bonn, Germany, November 2019.
30. HIM Junior Trimester program in Randomness, PDEs and Nonlinear Fluctuations, HIM, Bonn, Germany, October 2019.
31. Nonlinear effects in PDEs and related topics, École Polytechnique, Paris, May 2019.
32. Random Partial Differential Equations, CIRM, Marseille, France, April 2019.
33. Analysis Seminar, UCLA, Los Angeles, USA, March 2019.
34. Nonlinear Evolution Equations: Analysis and Numerics, MFO Oberwolfach, Germany, February 2019.
35. Videoseminar in PDE and Mathematical Physics, University of Bonn, Germany, streamed to University of Zurich, Switzerland, and UC Berkeley, USA, January 2019.
36. Quantum Vortices and Nonlinear Waves, Tokyo University of Science, Japan, December 2018.
37. Workshop in Stochastic Analysis, Australian National University, Canberra, Australia, November 2018.
38. Kyoto University NLPDE Seminar, Kyoto University, Japan, November 2018.
39. Kyoto University NLPDE Seminar, Kyoto University, Japan, November 2018.
40. Harmonic Analysis and PDE Day, University of Birmingham, UK, September 2018.
41. Stochastic nonlinear wave and Schrödinger equations and applications, Conference on Mathematics of Wave Phenomena, Karlsruhe Institute of Technology, Germany, July 2018.
42. Mathematical Finance and Stochastic Analysis Seminar, University of York, UK, June 2018.
43. UK Network on Hyperbolic Equations and Related Topics, ICMS, Edinburgh, UK, April 2018.
44. Gibbs Measures for Nonlinear Dispersive Equations, MFO Oberwolfach, Germany, April 2018.
45. Dispersive equations with random initial data, School of Mathematics, University of Bristol, UK, January 2018.
46. Hausdorff School: Dispersive Equations, Solitons, and Blow-up, Hausdorff Center for Mathematics, Bonn, Germany, September 2017.
47. Probabilistic Perspectives in Nonlinear PDEs, ICMS, Edinburgh, June 2017.
48. Workshop in Analysis, British Mathematical Colloquium, University of Durham, UK, April 2017.

STUDENT SUPERVISION

2023 - current	University of Edinburgh	Supervising Ph.D. thesis of N. Nikov.
2022 - current	University of Edinburgh	Supervising Ph.D. thesis of J. Coe.
2022-2023	University of Edinburgh	Supervised MMath project of E. Eriksson.
2022-2023	Universität Bonn	Supervised Master thesis of F. Höfer.
2021-2022	Universität Bonn	Supervised Master thesis of R. Wegner.
2021-2022	Universität Bonn	Supervised Master thesis of N. Bullerjahn.
2020	Universität Bonn	Co-supervised Bachelor thesis of B. Peterseim.

REFeree ACTIVITY

I have been a peer reviewer for Invent. Math., Comm. Math. Phys., Probab. Theory Related Fields, J. Funct. Anal., Comm. Partial Differential Equations, SIAM J. Math. Anal., Ann. Inst. H. Poincaré Probab. Statist., Dyn. Partial. Differ. Equ., Commun. Contemp. Math., Stat. Probab. Lett.