

LUCA FRESTA

CURRICULUM VITAE

General Information

Address: Mathematics Department, University of Roma Tre
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Webpage: <https://luca-fresta.github.io/index.html>
ORCID: <https://orcid.org/0000-0002-6177-7716>
Place of Birth: Gallarate, Italy
Nationality: Italian
Languages: Italian (native), English (fluent), German (advanced), Dutch (beginner)

Education

10.2016 - 09.2020: **Ph.D. in Mathematics**, University of Zurich
Thesis: Supersymmetry and Renormalization in the Theory of Random Schrödinger Operators
Advisors: Prof. M. Porta (SISSA Trieste), Prof. B. Schlein
09.2019 - 02.2020: Visiting Ph.D. candidate, University of Tübingen
10.2013 - 02.2016: **M.Sc. in Physics**, University of Milan
Advisors: Prof. V. Mastropietro, Prof. E. Langmann (KTH Stockholm)
Final Mark: 110/110 *cum laude*
04.2015 - 12.2015: Visiting student, KTH Stockholm
10.2010 - 10.2013: **B.Sc. in Physics**, University of Milan
Advisor: Prof. A. S. Sørensen (NBI Copenhagen)
Final Mark: 110/110 *cum laude*
02.2013 - 07.2013: Visiting student, NBI Copenhagen

Professional Experience

04.2025 - present: Marie Skłodowska Curie Postdoctoral Fellow, University of Roma Tre
07.2022 - 03.2025: Post-doctoral Researcher, University of Bonn
01.2021 - 06.2022: SNSF Early Post-doctoral Fellow, University of Bonn
09.2020 - 12.2020: Post-doctoral Researcher, University of Zurich
10.2016 - 09.2020: Doctoral Student, University of Zurich
with stays at the University of Tübingen (Advisor: Prof. M. Porta)

Awards and Fellowships

- Marie Skłodowska Curie Postdoctoral Fellowship (February 2024)
- SNSF Early Post-Doc mobility Fellowship (November 2020)
- Six-month stipend awarded by the University of Milan for master thesis abroad (January 2015)
- Scholarship assigned by Famiglia Legnanese Foundation to the best master students enrolled at the University of Milan (October 2014)

Research Interests

- Euclidean quantum field theories
- Random Schrödinger's Operators
- Effective dynamics for many-body fermions
- Non-commutative stochastic analysis
- Transport in 2d lattice fermionic systems

Publications

Publications in peer-reviewed journals

9. Spin transport and lack of quantisation in the AII class on the honeycomb structure, to appear in *Ann. Hen. Poinc.* (2026) with G. Marcelli
Avail. at <https://arxiv.org/abs/2505.22452>.
8. Effective Dynamics of Local Observables for Extended Fermi Gases in the High-Density Regime, *Comm. Math. Phys.* **406**, 247 (2025) with M. Porta and B. Schlein,
Avail. at <https://link.springer.com/article/10.1007/s00220-025-05393-4>.
7. Non-commutative L^p spaces and Grassmann stochastic analysis, *Prob. Theor. Rel. Fields.* **192**, 949 - 1029 (2025) with F. C. De Vecchi, M. Gordina and M. Gubinelli.
<https://doi.org/10.1007/s00440-025-01379-4>.
6. A stochastic analysis of subcritical Euclidean fermionic field theories, *Ann. Probab.* **53** (3): 906–966 (2025), with F. C. De Vecchi and M. Gubinelli.
<https://doi.org/10.1214/24-AOP1714>.
5. Effective Dynamics of Extended Fermi Gases in the High-Density Regime, *Commun. Math. Phys.* **401**, 1701–1751 (2023), with M. Porta and B. Schlein.
<https://doi.org/10.1007/s00220-023-04677-x>.
4. Supersymmetric Cluster Expansions and Applications to Random Schrödinger Operators, *Math. Phys. Anal. Geom.* **24**, 4 (2021).
<https://doi.org/10.1007/s11040-021-09375-5>.
3. Approaching off-diagonal long-range order for 1 + 1-dimensional relativistic anyons, *Phys. Rev. B* **103**, 085140 (2021), with P. Moosavi.
[DOI:/10.1103/PhysRevB.103.085140](https://doi.org/10.1103/PhysRevB.103.085140).
2. A Supersymmetric Hierarchical Model for Weakly Disordered 3d Semimetals, *Ann. Henri Poincaré* **21**, 3499-3574 (2020), with G. Antinucci and M. Porta.
<https://doi.org/10.1007/s00023-020-00909-1>.
1. Elementary test for nonclassicality based on the measurements of position and momentum, *Phys. Rev. A* **92**, 062111 (2015), with J. Borregaard and A. S. Sørensen.
[DOI:/10.1103/PhysRevA.92.062111](https://doi.org/10.1103/PhysRevA.92.062111).

Doctoral Dissertation

Supersymmetry and renormalization in the theory of random Schrödinger operators,
Dissertation Universität Zürich 2020.

Presentations

Workshops and Conferences

- Conference “QMath16” (Quantum Many-body Session), Munich - September 2025
- Workshop “Effective theories in classical and quantum particle systems”, SISSA - June 2025
- Workshop “Mathematics of Condensed Matter Systems”, Polimi - May 2025 (contributed talk)
- Workshop “Mini-Workshop on Condensed-Matter Physics”, Garmisch - October 2024
- ECM2024, Mini-Symposium “Collective Phenomena of Fermionic Systems”, Sevilla - July 2024
- ICMP2024, Strasbourg - July 2024 (contributed talk)
- SPQT2024, Pula - June 2024
- Mini-workshop “Mathematical Physics in the Heart of Germany” May 3 2024, Jena
- Workshop in the series “North-East and Midlands Stochastic Analysis Seminars”, Exeter college, Oxford University - September 2023
- Workshop “Young Researchers in Mathematical Physics”, IHK Akademie - July 2023
- Workshop “Stochastic Analysis meets QFT - critical theory”, University of Münster - June 2023
- Workshop “Mathematical Quantum Matter”, University of Milan - January 2023
- Workshop “The Renormalization Group”, MFO Oberwolfach - July 2022
- Conference “Archipelagic perspectives on mathematics and physics”, Stockholm - August 2021
- Young Researchers Symposium, Geneva - July 2021 (contributed talk)
- QMath14, Aarhus University - August 2019 (contributed talk)
- Tübingen–Zurich Meeting in Mathematical Physics, University of Tübingen - July 2019

Upcoming

- IMPMS 2026 - Contributed session “Singular stochastic analysis and stochastic quantisation”
- Lake Como school 2026 - Dynamics of Quantum Systems and Nonlinear Waves
- Workshop “The Mathematical Roads to QFT” - RIMS Kyoto - June 2026

Seminars

- Analysis and Mathematical Physics Seminar at Virginia Tech (Online) - October 2025
- One World IAMP Mathematical Physics Seminar (Online) - July 2025
- Probability Oberseminar, University of Darmstadt - May 2025
- Probability Seminar, University of Warwick - February 2025
- PDE and Mathematical Physics Seminar, University of Zürich - March 2024
- SMAQ Seminar, University of L’Aquila - February 2024
- Mathematical Physics Oberseminar, University of Paderborn - November 2023
- Mathematical Physics Seminar, SISSA - March 2023
- Mathematics Seminar, University of Milan - November 2022

- Analysis Oberseminar, University of Basel - June 2022
- Mathematical Physics Oberseminar, LMU Munich - June 2019
- Mathematical Physics Oberseminar, University of Tübingen - November 2017

Teaching Experience

- University of Bonn (joint with P. Rinaldi)
 - Spring 2024: Lecturer of graduate seminar on "Recent Developments in Stochastic Quantisation"
 - Fall 2023: Lecturer of "Statistical Mechanics of Lattice Systems"
 - Spring 2023: Lecturer of graduate seminar on "Singular Stochastic PDEs"
 - Fall 2022: Lecturer of graduate seminar on "Theory of Regularity Structures"
- University of Zürich
 - Fall 2020: Teaching assistant of "Stability of Quantum Mechanical Matter"
 - Spring 2020: Teaching assistant of "Introduction to Statistics"
 - Spring 2019: Teaching assistant of "Complex Analysis"
 - Spring 2018: Teaching assistant of "Complex Analysis"
 - Spring 2017: Teaching assistant of "ODE and Dynamical Systems"

Supervision Activity

PhD Students

- Javier Durán Fernández, 01.2025 - present (with Prof. M. Disertori)

Master Students

- Javier Valentin Martin, 11.2022 - 09.2023 (with Prof. M. Disertori)
- Lucas Ewert, 03.2023 - 04.2024 (with Prof. M. Disertori)
- Javier Durán Fernández, 11.2023 - 10.2024 (with Prof. M. Disertori)
- Anna Liza Schonlau, 11.2023 - 11.2024 (with Prof. M. Disertori)
- Piro Manco, 10.2024 - 11.2025
- Abelard Malvin, 04.2025 - present (with Prof. M. Disertori)

Service and Organization

- Co-organiser of: *Mathematical Challenges in Quantum Mechanics - Online Seminars* (2025-2026), *Oberseminar Mathematische Physik*, Bonn (2023-2025), Hausdorff school "Recent developments in disordered systems" (September 2024)
- Referee activity for: *Communications in Mathematical Physics*; *Annales Henri Poincaré*; *Proceedings of the London Mathematical Society*; *Forum of Mathematics*, Sigma; *Journal of Statistical Physics*; *Letters in Mathematical Physics*; *Journal of Mathematical Physics*;