

LUCA FRESTA

CURRICULUM VITAE

General Information

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ORCID: <https://orcid.org/0000-0002-6177-7716>
Place of Birth: Gallarate, Italy
Nationality: Italian
Languages: Italian (native), English (fluent), German (intermediate)

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

07.2022 - present: 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

6. A stochastic analysis of subcritical Euclidean fermionic field theories, *Annals of Probability* (accepted), with F. C. De Vecchi and M. Gubinelli. Avail. at <https://arxiv.org/abs/2210.15047>.
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.
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.

Preprints, submitted to peer-reviewed Journals

8. Effective Dynamics of Local Observables for Extended Fermi Gases in the High-Density Regime, with M. Porta and B. Schlein, Avail. at <https://arxiv.org/abs/2409.14841>.
7. Non-commutative L^p spaces and Grassmann stochastic analysis, with F. C. De Vecchi, M. Gordina and M. Gubinelli. Sub. to *Probability Theory and Related Fields*, Avail. at <https://arxiv.org/abs/2305.08497>.

Doctoral Dissertation

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

Presentations

Workshops and Conferences

- 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

Seminars

- 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

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

Service and Organization

- Co-organiser of: *Oberseminar Mathematische Physik*, Bonn (2023-2024), Hausdorff school "Recent developments in disordered systems" (September 2024)
- Referee activity for: Journal of Statistical Physics; Journal of Mathematical Physics; Communications in Mathematical Physics; Annales Henri Poincaré; Letters in Mathematical Physics; Forum of Mathematics, Sigma.

The statements made in the curriculum are made in accordance with Articles 46 and 47 of the DPR No. 445/2000. I hereby authorize the use of my personal data in accordance to the DPR No. 679/16.

Bonn, 26.11.2024

