Luca Fresta
Curriculum Vitae

General Information

Address:	Hausdorff Center for Mathematics, University of Bonn
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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)

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

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

7. Non-commutative L^p spaces and Grassmann stochastic analysis,
   with F. C. De Vecchi, M. Gordina and M. Gubinelli.
   Sub. to Probability and Related Fields, available at https://arxiv.org/abs/2305.08497.
6. A stochastic analysis of subcritical Euclidean fermionic field theories,
   with F. C. De Vecchi and M. Gubinelli.
   Sub. to Annals of Probability (under revisions), available at https://arxiv.org/abs/2210.15047.

Doctoral Dissertation

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

Presentations

Workshops and Conferences

- 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

- SPQT2024 (Symmetry and Perturbation in Quantum Theory) June 2-8 2024, Pula
- ECM2024 (Mini-Symposium "Collective Phenomena of Fermionic Systems") July 15-19, Sevilla

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"

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)

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)
- Anna Liza Schonlau, Master Thesis, 11.2023 - present (with Prof. M. Disertori)
- Javier Durán Fernández, Master Thesis, 11.2023 - present (with Prof. M. Disertori)

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.

Bonn, 02.04.2024