

Federico Ghimenti

Postdoctoral Fellow, Department of Applied Physics
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Research Activity

- 2024–2027 **Postdoc**, *Stanford Institute of theoretical Physics*, Independent postdoctoral fellowship.
2021–2024 **PhD**, *Université Paris Cité*, Laboratoire Matière et Systèmes Complexes.
Supervisor: Frédéric van Wijland **Title**: *Irreversible sampling of glassy systems*

Education

- 2019–2021 **M. Sc.**, *ENS ICFP*.
Theoretical Physics, **Final Grade**: 17.2/20
2016–2019 **B. Sc.**, *Sapienza University of Rome*.
Physics, **Final grade**: 110/110 *cum laude*
2011–2016 **Diploma**, *Liceo Scientifico Taletè*, Rome.
High School education, **Final grade**: 100/100

Internships

- 2021 **M2 Internship**, *Laboratoire Matière et Systèmes Complexes, Université de Paris Cité*, **Supervision**: Frédéric Van Wijland. **Project**: *Accelerating Brownian Dynamics*.
2020 **M1 Internship**, *LPENS, Paris*.
Supervision: Giulio Biroli, Gilles Tarjus, Misaki Ozawa. **Project**: *Plastic flow of two-dimensional solids*

Teaching

- 2024 *Teaching assistant*, Logical Electronics (Bachelor, 1st year) IUT Université Paris Cité
2023 *Teaching assistant*, Electromagnetism (Bachelor, 2nd year) IUT Université Paris Cité
2023 *Teaching assistant*, Logical Electronics (Bachelor, 1st year), IUT Université Paris Cité
2022 *Teaching assistant*, Optics (Bachelor, 1st year) IUT Université Paris Cité
2022 *Teaching assistant*, Logical Electronics (Bachelor, 1st year), IUT Université Paris Cité

Publications

- 2025 Yoshihiko Nishikawa, Federico Ghimenti, Ludovic Berthier, and Frédéric van Wijland. Irreversible swap algorithms for soft sphere glasses. *arXiv preprint arXiv:2501.09932*, 2025.
2025 Cory Hargus, Federico Ghimenti, Julien Tailleur, and Frédéric van Wijland. Passive objects in a chiral active bath: from micro to macro. *arXiv preprint arXiv:2504.00811*, 2025.
2024 Cory Hargus, Federico Ghimenti, Julien Tailleur, and Frédéric van Wijland. Odd dynamics of passive objects in a chiral active bath. *arXiv preprint arXiv:2412.20689*, 2024.
2024 Federico Ghimenti, Misaki Ozawa, Giulio Biroli, and Gilles Tarjus. *Shear-induced phase behavior and topological defects in two-dimensional crystals*. *Physical Review B*, volume 109, page 104114. APS, 2024.

- 2024 Federico Ghimenti, Ludovic Berthier, and Frédéric van Wijland. Irreversible monte carlo algorithms for hard disk glasses: From event-chain to collective swaps. *Physical Review Letters*, volume 133, page 028202. APS, 2024.
- 2024 Federico Ghimenti, Ludovic Berthier, Grzegorz Szamel, and Frédéric van Wijland. Transverse forces and glassy liquids in infinite dimensions. *Physical Review E*, volume 109, page 064133. APS, 2024.
- 2024 Federico Ghimenti, Ludovic Berthier, Grzegorz Szamel, and Frédéric van Wijland. Irreversible boltzmann samplers in dense liquids: Weak-coupling approximation and mode-coupling theory. *Physical Review E*, volume 110, page 034604. APS, 2024.
- 2024 Federico Ghimenti, Ludovic Berthier, Jorge Kurchan, and Frédéric van Wijland. What do clever algorithms for glasses do? time reparametrization at work. *arXiv preprint arXiv:2409.17121*, 2024.
- 2024 Ludovic Berthier, Federico Ghimenti, and Frédéric van Wijland. Monte carlo simulations of glass-forming liquids beyond metropolis. *The Journal of Chemical Physics*, volume 161. AIP Publishing, 2024.
- 2023 Federico Ghimenti, Ludovic Berthier, Grzegorz Szamel, and Frédéric van Wijland. *Sampling efficiency of transverse forces in dense liquids*. *Physical Review Letters (Editors' Suggestion)*, volume 131, page 257101. APS, 2023.
- 2022 Federico Ghimenti and Frédéric van Wijland. *Accelerating, to some extent, the p -spin dynamics*. *Phys. Rev. E*, volume 105, page 054137. American Physical Society, May 2022.

Awards and fellowships

- 2024–2027 **SITP postdoctoral fellowship**, 247500 \$
- 2021–2024 **PhD fellowship** from Ecole Doctorale Paris Ile de France (EDPIF), 57600 €
- 2019–2021 **ICFP scholarship** for International students, 32000€
- 2016–2019 **Excellent Student** at *Sapienza University of Rome*.

Talks and Posters

- Jul 2025 Contributed Talk, *StatPhys29*, Florence, Italy
- Jul 2025 Poster, *Youth in high dimensions*, ICTP Trieste, Italy
- Jan 2025 Research seminar in the Theoretical Chemistry Department, UC Berkeley, California
- April 2024 Interview Talk at *Stanford Institute of Theoretical Physics*, Stanford, California
- January 2024 Short talk, *Journée de Physique Statistique*, Paris, France
- Sep 2023 Talk, *Probabilistic sampling for physics*, Paris, France
- June 2023 Seminar, *M. Michel's group*, Université Clermont - Auvergne, France
- May 2023 Poster, *Cecam workshop on Mesoscale modelling of driven disordered materials: from glasses to active matter*, Lausanne, Switzerland
- March 2023 Seminar, *K. Miyazaki's group*, Nagoya, Japan
- March 2023 Seminar, *A. Ikeda and H. Ikeda group*, Tokyo, Japan
- March 2023 Seminar, *H. Yoshino Lab*, Osaka, Japan
- Feb 2023 Seminar, *Yukawa Institute for Theoretical Physics*, Kyoto, Japan
- April 2022 Poster, *Cecam workshop on Numerical techniques for nonequilibrium steady states*, Mainz, Germany
- June 2022 Poster, *The Beg Rohu Summer School*, poster, Saint Pierre Quiberon, France

Computer Skills

Languages C, Python, HTML, Latex, Mathematica

Softwares Ovito, Excel, PowerPoint

Other

Languages **Italian** (Mothertongue), **English** (Fluent), **French** (fluent)

Interests Piano, hiking, climbing, music