

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 Tante, 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** (Mother tongue), **English** (Fluent), **French** (fluent)

Interests Piano, hiking, climbing, music