Bastien Lapierre

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Google scholar
arXiv

Professional Experience

2023 – Now **Postdoctoral Fellow, Princeton University, USA**,
with Prof. Shinsei Ryu

2019 – 2023 **Research Assistant, University of Zürich, Switzerland**,
with Prof. Titus Neupert

Education

2019 – 2023 **Ph.D. Physics, University of Zürich, Switzerland**
Thesis title: *Inhomogeneous and Disordered Quantum Systems: From Dynamics to Topology*
Supervisors: Prof. Titus Neupert and Dr. Luka Trifunovic

2017 – 2019 **M.Sc. Physics, ETH Zürich, Switzerland**
Thesis title: *Heating Dynamics in Floquet Conformal Field Theory*
Supervisor: Prof. Titus Neupert
Honors: Diploma with distinction, 5.91/6.

2014 – 2017 **B.Sc. Physics, University of Geneva, Switzerland**
Honors: Prize for the best B.Sc. in Physics

Research Publications

Preprints

1. **Lapierre, B.**, Numasawa, T., Neupert, T., & Ryu, S. (2024). Floquet engineered inhomogeneous quantum chaos in critical systems.

Journal Articles

1. Oblak, B., **Lapierre, B.**, Moosavi, P., Stéphan, J.-M., & Estienne, B. (2024). Anisotropic quantum Hall droplets. *Phys. Rev. X*, *14*, 011030.
2. Datta, S., **Lapierre, B.**, Moosavi, P., & Tiwari, A. (2023). Marginal quenches and drives in Tomonaga-Luttinger liquids. *SciPost Phys.*, *14*, 108.
3. Molignini, P., **Lapierre, B.**, Chitra, R., & Chen, W. (2023). Probing Chern number by opacity and topological phase transition by a nonlocal Chern marker. *SciPost Phys. Core*, *6*, 059.
4. **Lapierre, B.**, Neupert, T., & Trifunovic, L. (2022). Topologically localized insulators. *Phys. Rev. Lett.*, *129*, 256401.
5. Choo, K., **Lapierre, B.**, Kuhlenkamp, C., Tiwari, A., Neupert, T., & Chitra, R. (2022). Thermal and dissipative effects on the heating transition in a driven critical system. *SciPost Physics*, *13*(5).
6. **Lapierre, B.**, Neupert, T., & Trifunovic, L. (2021). N-band Hopf insulator. *Phys. Rev. Research*, *3*, 033045.
7. **Lapierre, B.**, & Moosavi, P. (2021). Geometric approach to inhomogeneous Floquet systems. *Phys. Rev. B*, *103*, 224303.

8 **Lapierre**, **B.**, Choo, K., Tiwari, A., Tauber, C., Neupert, T., & Chitra, R. (2020). Fine structure of heating in a quasiperiodically driven critical quantum system. *Phys. Rev. Research*, *2*, 033461.

9 **Lapierre**, **B.**, Choo, K., Tauber, C., Tiwari, A., Neupert, T., & Chitra, R. (2020). Emergent black hole dynamics in critical Floquet systems. *Phys. Rev. Research*, *2*, 023085.

Teaching experience

Fall 2022	Teaching assistant for graduate course *General Relativity*, ETH Zürich
Spring 2022	Teaching assistant for graduate course *Advanced Field Theory*, ETH Zürich
Fall 2021	Teaching assistant for graduate course *Quantum Field Theory I*, ETH Zürich
Spring 2021	Teaching assistant for undergraduate course *Proseminar of Theoretical Physics*, University of Zürich
Fall 2020	Teaching assistant for undergraduate course *Analysis I*, University of Zürich
Spring 2020	Teaching assistant for undergraduate course *Linear Algebra II*, University of Zürich

Project supervision

2023	Supervision of graduate research project of ZhiXing Lin, Princeton University
2022	Supervision of M.Sc. thesis of Valerio Pagni, ETH Zürich
2021	Supervision of B.Sc. thesis of Johannes Christmann, University of Zürich
2020	Supervision of B.Sc. thesis of Fabian Jaeger, University of Zürich

Skills

Languages	French (mother tongue), English (fluent), German (intermediate), Spanish (basic)
Coding	Python, Qiskit, Mathematica

Awards and Achievements

2023 Swiss National Science Foundation Postdoc Mobility Fellowship

2017 Ch.-E. Guye Prize, rewards the best B.Sc. degree in physics each year at the University of Geneva

Conference talks

Jun. 2024	Workshop on Non-equilibrium Many-body Physics Beyond the Floquet Paradigm, Max Planck Institute for the Physics of Complex Systems, Germany, *"Fractal entanglement transitions in a quasiperiodic non- unitary circuit"*
Mar. 2024	APS March Meeting 2024, Minneapolis, USA, *"Anisotropic Quantum Hall Droplets"*
Jul. 2023	Workshop on Mathematical Aspects of Condensed Matter Physics, ETH Zürich, Switzerland, *"Topologically localized phases"*
Jun. 2022	Workshop on Out-of-equilibrium and collective dynamics of quantum many-body systems, ETH Zürich, Switzerland, *"Marginal quenches and drives in Tomonaga-Luttinger liquids"*
Jun. 2021	Workshop on Low dimensional quantum many-body systems, Heidelberg, Germany, *"Geometry and black holes in periodically driven critical quantum systems"*

Conference talks (continued)

Mar. 2021 APS March Meeting 2021, online, *"Geometry and black holes in periodically driven critical quantum systems"*

Invited Talks & Seminars

Jul. 2024 Institut Néel, Université Grenoble Alpes, France, host: A. Grushin

European Center for Quantum Sciences, Université de Strasbourg, France, host: J. Dubail

May 2024 Leeds-Loughborough-Nottingham Non-Equilibrium Seminar series, United Kingdom, host: J. Pachos (Youtube link)

Apr. 2024 Université de Montreal, Canada, host: W. Witczak-Krempa

Fev. 2024 Ecole Normale Supérieure de Lyon, France, host: J.M. Stéphan

Nov. 2023 Princeton University, USA, host: S. Ryu

Jan. 2023 Freie Universität Berlin, Germany, host: P. Brouwer

Nov. 2021 Speakers' Corner, online, host: A. Akhmerov (Youtube link)

May. 2021 IFW Dresden, Germany, host: J. van den Brink

Oct. 2019 University of Zürich, Switzerland, host: T. Neupert

Jun. 2019 ETH Zürich, Switzerland, host: R. Chitra

Scientific outreach

Mar. 2024 Outreach talk at Princeton Postdoctoral Council Seminar Series, "*Emergent Black Hole Dynamics in Quantum Matter*"
Audience: Postdocs from Princeton University across all departments
Awarded best talk of the semester

Nov. 2022 Outreach talk on the 2022 Physics Nobel prize, as part of the nanoTalks series from Reatch, Zürich, Switzerland