Erik Kalz

Curriculum Vitae

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ErikKalz

Education

since 09/2022 **PhD in Physics**, *University of Potsdam*, Supervisors: Ralf Metzler and Carsten Beta, topic: "Interaction effects in (non)equilibrium dissipative systems"

04/2020-09/2022 **Master of Physics**, *Technical University of Dresden*, Supervisors: Jens-Uwe Sommer, Abhinav Sharma, minor: philosophy. Master's thesis "Diffusion under the effect of Lorentz force" granted with top mark 1.0

10/2016-03/2020 **Bachelor of Physics**, *Technical University of Dresden & Norwegian University of Science and Technology, Trondheim*, Supervisors: Jens-Uwe Sommer, Abhinav Sharma, minor: philosophy. Bachelor's thesis "Entropy production in a non-equilibrium system of hard rods in confinement" granted with top mark 1.0

08/2010-07/2016 **Abitur**, *Max-Steenbeck Gymnasium Cottbus*, Abitur with top mark 1.0

Awards

Best Communication: At "New Trends in Nonequilibrium Statistical Mechanics - NES 2023", directed by A. Carollo, A. Lanzara, G. M. Palma, B. Spagnolo in Erice, Sicily

PRL Editors' Suggestion: Granted to: Collisions enhance self-diffusion in odd-diffusive systems. *Physical Review Letter*, 129(9):090601, 2022

Springer BestMasters: Springer Nature awards publication to the best master's theses which have been completed at renowned Universities in Germany, Austria, and Switzerland (2022)

Experience

Teaching: undergraduate teaching assistant: 1 semester mathematics for physicists, 4 semesters mathematics for engineers, 4 semesters logic for philosophy
graduate teaching assistant: 1 semester theoretical physics

since 09/2022 **research assistant**, *Institute for Physics & Astronomy, University of Potsdam*, Germany

06/2022-03/2023 **assistance of tax consultancy**, *Agency of Ramona Kalz*, Finsterwalde, Germany

01/2022-03/2022 **research assistant**, *Leibniz-Institute for Polymer Research Dresden*, Germany

09/2021-02/2022 **script-writing**, *Institute of Analysis, Technical University Dresden*, Germany

01/2020-10/2020 **internship**, *Leibniz-Institute for Polymer Research Dresden*, Germany

Academic Metrics

Publications: 1 preprint under review, 6 peer-reviewed journal articles (4 first-authored, 2 as corresponding author), 1 book

Citations: 125+ citations, h-index: 5 (Google Scholar)

Conferences and Talks: 10+ contributed talks, 5+ contributed posters at international conferences, 10+ invited talks

Organization: 4 semesters Metzler group seminar (45+ international speakers), DPG-SKM 2025 focus session "Broken symmetries in statistical physics: Dynamics of odd systems" with Ralf Metzler and Abhinav Sharma

Supervision: 6 Bachelor students (5 finished, 1 ongoing)

List of Publications

A Preprints

A1 **E. Kalz***, S. Ravichandir*, J. Birkenmeier, R. Metzler, and A. Sharma. Reversal of tracer advection and Hall drift in an interacting chiral fluid. *arXiv preprint*, arXiv:2503.04544, 2025

*equal contribution

B Journal Articles

B1 P. L. Muzzeddu*, **E. Kalz***, A. Gambassi, A. Sharma, and R. Metzler. Self-diffusion anomalies of an odd tracer in soft-core media. *New Journal of Physics*, 27(3):033025, 2025 **@open access**

B2 A. Langer, A. Sharma, R. Metzler, and **E. Kalz**. Dance of odd-diffusive particles: A Fourier approach. *Physical Review Research*, 6(4):043036, 2024 **@open access**

B3 **E. Kalz**, A. Sharma, and R. Metzler. Field theory of active chiral hard disks: A first-principles approach to steric interactions. *Journal of Physics A: Mathematical and Theoretical*, 57(26):265002, 2024 **@open access**

B4 **E. Kalz**, H. D. Vuijk, J.-U. Sommer, R. Metzler, and A. Sharma. Oscillatory force autocorrelations in equilibrium odd-diffusive systems. *Physical Review Letters*, 132(5):057102, 2024

B5 **E. Kalz***, H. D. Vuijk*, I. Abdoli, J.-U. Sommer, H. Löwen, and A. Sharma. Collisions enhance self-diffusion in odd-diffusive systems. *Physical Review Letters*, 129(9):090601, 2022 **@Editors' suggestion**

B6 I. Abdoli, **E. Kalz**, H. D. Vuijk, R. Wittmann, J.-U. Sommer, J. M. Brader, and A. Sharma. Correlations in multithermostat Brownian systems with Lorentz force. *New Journal of Physics*, 22(9):093057, 2020 **@open access**

*equal contribution

C Books

C1 **E. Kalz**. *Diffusion under the Effect of Lorentz Force*. Springer Spektrum Wiesbaden, 2022