

Phase transitions and nonequilibrium dynamics in driven quantum matter

Thursday 5 September 2024 09:00 (40 minutes)

Subjecting a quantum system to a time-dependent Hamiltonian can generate a rich array of dynamics and phases of matter. I will discuss results from a sequence of recent cold-atom experiments on kicked and driven quantum matter, highlighting data on anomalous transport, nonequilibrium phase diagrams, quantum thermodynamics, and the interplay between dynamical localization and Anderson localization.

References

Short bio (50 words) or link to website

<https://web.physics.ucsb.edu/~weld/>

Relevant publications (optional)

Measuring a localization phase diagram controlled by the interplay of disorder and driving. P. Dotti, Y. Bai, T. Shimasaki, A.R. Dardia, and D.M. Weld, arXiv:2406.00214 (2024)

Anomalous localization in a kicked quasicrystal. T. Shimasaki, M. Prichard, H.E. Kondakci, J.E. Pagett, Y. Bai, P. Dotti, A. Cao, T.-C. Lu, T. Grover, and D.M. Weld, Nature Physics 20, 409–414 (2024).

Interaction-driven breakdown of dynamical localization in a kicked quantum gas. A. Cao, R. Sajjad, H. Mas, E.Q. Simmons, J.L. Tanlimco, E. Nolasco-Martinez, T. Shimasaki, H.E. Kondakci, V. Galitski, and D.M. Weld. Nature Physics 18, 1302–1306 (2022).

Career stage

Professor

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Track Classification: FINESS