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**Anomalous Diffusion in the Integrable Fermi-Hubbard Chain** BRAYDEN WARE, ROMAIN VASSEUR, Department of Physics, University of Massachusetts Amherst, SARANG GOPALAKRISHNAN, Department of Physics and Astronomy, CUNY College of Staten Island — Recent theoretical developments derived from the generalized hydrodynamics framework have predicted anomalous transport in integrable spin chains with non-Abelian rotation symmetry, such as the Heisenberg chain and the Fermi-Hubbard chain. For the Fermi-Hubbard chain, spin and charge transport is predicted to show superdiffusion with dynamical exponent $z = 3/2$ at finite temperatures. Using matrix product operator-based simulations of time evolution, we verify these predictions numerically and investigate whether the anomalous transport is robust enough to be seen in cold atom experiments, considering the effects of finite size and integrability breaking perturbations. We show that signatures of the anomalous diffusion are robust and accessible at time scales, system sizes, and temperatures reachable by current experiments.

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