

Abstract Submitted
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Variational Monte Carlo Study of Anderson Localization in the Hubbard Model¹ WILLIAM ATKINSON, AVID FARHOODFAR, Trent University, ROBERT J. GOODING, Queen's University — We have studied the effects of interactions on persistent currents in half-filled and quarter-filled Hubbard models with weak and intermediate strength disorder. Calculations are performed using a variational Gutzwiller ansatz that describes short range correlations near the Mott transition. A persistent current is induced with an Aharonov-Bohm flux, and the Anderson localization length is extracted from the scaling of the current with system size. We find that, at half filling, the localization length grows monotonically with interaction strength, even though the current itself is suppressed by strong correlations. This supports earlier dynamical mean field theory predictions that the elastic scattering rate is reduced near the Mott transition.

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William Atkinson
Trent University

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