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**Disordered wires and quantum chaos in a momentum-space lattice** ERIC MEIER, FANGZHAO AN, JACKSON ANGONGA, BRYCE GADWAY, Univ of Illinois - Urbana — We present two topics: topological wires subjected to disorder and quantum chaos in a spin-J model. These studies are experimentally realized through the use of a momentum-space lattice, in which the dynamics of  $^{87}\text{Rb}$  atoms are recorded. In topological wires, a transition to a trivial phase is seen when disorder is applied to either the tunneling strengths or site energies. This transition is detected using both charge-pumping and Hamiltonian-quenching techniques. In the spin-J study we observe the effects of both linear and non-linear spin operations by measuring the linear entropy of the system as well as the out-of-time order correlation function. We further probe the chaotic signatures of the paradigmatic kicked top model.

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