

Abstract Submitted  
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**Disordered topological wires in a momentum-space lattice** ERIC MEIER, FANGZHAO AN, BRYCE GADWAY, Univ of Illinois - Urbana — One of the most interesting aspects of topological systems is the presence of boundary modes which remain robust in the presence of weak disorder. We explore this feature in the context of one-dimensional (1D) topological wires where staggered tunneling strengths lead to the creation of a mid-gap state in the lattice band structure. Using Bose-condensed  $^{87}\text{Rb}$  atoms in a 1D momentum-space lattice, we probe the robust topological character of this model when subjected to both site energy and tunneling disorder. We observe a transition to a topologically trivial phase when tailored disorder is applied, which we detect through both charge-pumping and Hamiltonian-quenching protocols. In addition, we report on efforts to probe the influence of interactions in topological momentum-space lattices.

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