

Abstract Submitted  
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**Probing Topological Order in the Hard-Core Bose-Haldane Model**<sup>1</sup> CHRISTOPHER VARNEY, Georgetown University / Joint Quantum Institute, KAI SUN, VICTOR GALITSKI, University of Maryland, MARCOS RIGOL, Georgetown University — Recent years have seen the observation of topological phases of matter characterized by robust conducting edge states with the bulk of the material remaining an insulator. To investigate the physical mechanism inherent in these topological insulators beyond the more commonly studied noninteracting fermionic case, here we consider the Haldane model with interacting hard-core bosons. We probe the existence of topological order in this model using exact diagonalization, Gutzwiller mean field, and quantum Monte Carlo. As topological insulators are not described by a local order parameter, we contrast the conducting properties of the bulk of the system and its edge and investigate new possible signatures of topological order.

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