

Abstract Submitted
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Compressibility of a 3D Disordered Bose Lattice Gas¹ PHILIP RUSS, LAURA WADLEIGH, BRIAN DEMARCO, University of Illinois at Urbana-Champaign — Studying the behavior of quantum systems at the intersection of strong interactions and disorder has played a central role in advancing our understanding of fundamental concepts such as many-body localization. The disordered Bose-Hubbard model is a minimal model incorporating these ingredients that supports a disorder-driven phase transition between the Mott insulator and Bose glass phase at low temperature and for strong interactions. We study the evolution of a unit filling, finite temperature Mott insulator with increasing disorder by measuring compressibility. To increase our measurement resolution, we implement machine learning tools to analyze time-of-flight images of the atomic density profile.

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