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Computational Analysis of many-body localized phases beyond 1D BENJAMIN VILLALONGA CORREA, Department of Physics, University of Illinois at Urbana-Champaign, DAVID PEKKER, Department of Physics and Astronomy, University of Pittsburgh, BRYAN CLARK, Department of Physics, University of Illinois at Urbana-Champaign — Anderson localization can persist in the presence of finite interactions, giving rise to what is known as a many-body localized (MBL) phase. The need to access interior eigenstates makes their computational analysis hard for large system sizes. Recently, an MPS ansatz has been successfully applied to the study of long 1D chains in the MBL phase; however, higher dimensional systems remain largely inaccessible to computational methods. We explore a variational approach to overcome this limitation and report on two-dimensional MBL phases.

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