

Abstract Submitted
for the DAMOP19 Meeting of
The American Physical Society

Exploring many-body-localization in the presence of local thermal bath SOOSHIN KIM, MATTHEW RISPOLI, ALEXANDER LUKIN, ROBERT SCHITTKO, JOYCE KWAN, JULIAN LEONARD, MARKUS GREINER, Harvard University — We study the behavior of a many-body-localized (MBL) system when it is coupled locally with a quantum bath. Our system is a one-dimensional Bose-Hubbard chain in an optical lattice with an additional potential that provides both the disordered (MBL) and non-disordered (bath) regions that are coupled via a single-site. The microscopic access afforded by our quantum gas microscope allows us to obtain the site-resolved density correlations, von Neumann entropy, and penetration depth of the bath into the MBL region. We further investigate how these observables change for various bath sizes and disorder strengths. These studies allow us to characterize how many-body localization is affected by local contact with a quantum bath.

Sooshin Kim
Harvard University

Date submitted: 01 Feb 2019

Electronic form version 1.4