

Abstract Submitted
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Many-Body Localized Phase in Few-Body Systems S. GHARASHI,
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ogy — Motivated by recent progress with cold atoms in the field of many-body
localization, we investigate the effect of interaction on the localization of atoms in
few-body systems. We consider two cold atoms with short-range interaction in a
one-dimensional disordered lattice with finite number of lattice sites. We obtain
the exact time evolution of the wave function and monitor the structural properties
of the system such as atom imbalance and von Neumann entropy as functions of
time. In the limit of vanishing interaction we recover the few-body version of An-
derson localization. Our results confirm that localized phase survives even for finite
interaction strength, as we expect for the many-body localized phase.

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