

Abstract Submitted  
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**Dynamics and evaporation of defects in Mott clusters** DOMINIK MUTH, Fachbereich Physik und Forschungszentrum OPTIMAS, TU Kaiserslautern, 67663 Kaiserslautern, Germany, DAVID PETROSYAN, IESL - FORTH, 71110 Heraklion, Greece, MICHAEL FLEISCHHAUER, Fachbereich Physik und Forschungszentrum OPTIMAS, TU Kaiserslautern, 67663 Kaiserslautern, Germany — Strongly interacting pairs of atoms in a lattice can form tightly bound dimers [1]. In turn, such dimers interact with each other via attractive nearest-neighbor interaction mediated by virtual (second order) hopping [2]. In the case of bosons, the dimers can form a stable, incompressible cluster corresponding to a finite-size Mott insulator. Unpaired bosons in such a cluster represent highly mobile defects. We study the dynamics of these defects in 1D clusters using analytical techniques and t-DMRG simulations. We discuss how the quasi-thermalization of the defects mediated by their collisions, followed by evaporation through the boundary of the cluster, can purify the Mott insulator.

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