

Abstract Submitted
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Bosons with three-body interactions on optical lattices STEFAN WESSEL, Stuttgart University — Motivated by a recent proposal on using polar molecules in optical lattices driven by microwave fields to induce strong three-body interactions (H. P. Büchler et al., *Nature Physics* 3, 726 (2007)), we study the quantum phase diagram of the boson Hubbard model with nearest neighbor three-body repulsion using quantum Monte Carlo simulations. In particular, we consider the case of a one-dimensional system in the hard-core limit, and assess the nature of the phases that appear in this regime. Our exact numerical results are compared to analytical findings based on a bosonization approach to the same model. Extensions to higher-dimensional systems are mentioned.

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