

Abstract Submitted
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Correlated phases of bosons in tilted, frustrated lattices¹ SUBIR SACHDEV, Harvard University, SUSANNE PIELAWA, Weizmann Institute of Science, TAKUAYA KITAGAWA, EREZ BERG, Harvard University — We study the “tilting” of Mott insulators of bosons into metastable states. These are described by Hamiltonians acting on resonant subspaces, and have rich possibilities for correlated phases with non-trivial entanglement of pseudospin degrees of freedom measuring the boson density. We extend a previous study (Phys. Rev. B **66**, 075128 (2002)) of cubic lattices to a variety of lattices and tilt directions in 2 dimensions: square, triangular, decorated square, and kagome, while noting the significance of three-body interactions. We find quantum phases with Ising density wave order, with superfluidity transverse to the tilt direction, a sliding Luttinger liquid phase, and quantum liquid states with no broken symmetry. Some cases map onto effective quantum dimer models.

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