

Abstract Submitted
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Order-by-disorder of interacting bosons on the dice lattice under a synthetic gauge field¹ MATJAZ PAYRITS, RYAN BARNETT, Imperial College London — We consider a gas of interacting bosons in the two-dimensional dice lattice in the presence of a half-elementary magnetic flux threading each plaquette. The single particle spectrum of the system consists of three doubly-degenerate completely flat bands, which indicates a large ground state degeneracy. It is shown how this degeneracy is partially lifted in the superfluid regime at the mean-field level. Furthermore, it is shown how quantum and thermal fluctuations conclusively remove the remaining accidental degeneracy between the mean field states, thus selecting a unique state up to overall symmetries. This can be elegantly described by means of the distribution of condensate vortices in the Kagomé vortex lattice, which is dual to the dice lattice.

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