

Abstract Submitted
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Many-body ground states for bosons with Rashba spin-orbit coupling¹ WILLIAM COLE, Department of Physics, the Ohio State University, SHIZHONG ZHANG, Department of Physics and Center of Theoretical and Computational Physics, the University of Hong Kong, ZHENHUA YU, Institute for Advanced Study, Tsinghua University, NANDINI TRIVEDI, Department of Physics, the Ohio State University — The ground state of N non-interacting bosons with a Rashba dispersion is macroscopically degenerate. It is of fundamental interest—and also relevant to current experiments in cold atomic gases with synthetic spin-orbit coupling—to determine whether a unique ground state is stabilized by interactions and what the properties of such a state might be. Motivated by exact solutions for the two-body problem, we construct many-body bosonic wave functions that saturate the kinetic energy and minimize the interaction energy, and compare with other recently proposed trial ground states.

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