

Abstract Submitted
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Generation of Massive Entanglement Through Adiabatic Quantum Phase Transition in a spinor condensate ZHEN ZHANG, LUMING DUAN, university of michigan — We propose a method to generate massive entanglement in a spinor Bose-Einstein condensate from an initial product state through adiabatic sweep of magnetic field across a quantum phase transition induced by competition between the spin-dependent collision interaction and the quadratic Zeeman effect. The generated many-body entanglement is characterized by the experimentally measurable entanglement depth in the proximity of the Dicke state. We show that the scheme is robust to practical noise and experimental imperfection and under realistic conditions it is possible to generate genuine entanglement for hundreds of atoms.

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