

Abstract Submitted
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Macroscopic quantum phenomenon in a spin-orbit coupled Bose-Einstein condensate SHIZHONG ZHANG, TIN-LUN HO, Department of Physics, the Ohio-State University — It is well-known in electron physics in semiconductors that the spin-orbit coupling gives rise to many exciting new physics, for example, the topological insulator that is now being actively studied. With the advent of artificial gauge field that can be generated using Raman lasers for neutral bosonic atoms, we can now study the corresponding effects in the boson system. In this talk, I shall discuss the structure of the spinor condensate with spin-orbit coupling. In particular, we show that the system develops stripe structure in each spin component, as a result of the fact that the ground state consists of two dressed states carrying different momentum. We also work out the phase diagram of the system, which compares well with the recent experiment.

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