Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Annular Bose metal from interacting Rashba Bosons ASHVIN VISHWANATH, Univ of California - Berkeley, ANDREAS RUEGG, Univ of California - Berkeley and ETH- Zurich — There has been much recent interest in realizing ultracold atoms with spin-orbit coupling. Here we study bosons in 2+1 dimensions with Rashba spin-orbit interactions. The dispersion minimum occurs along a circle in momentum space that frustrates Bose condensation and raises the possibility of a novel phase. Here we propose a'Bose metal' ground state, for which we construct a wavefunction and evaluate its properties using Variational Monte Carlo calculations. We show that this is an uncondensed state with a hidden Fermi surface and a ring like momentum distribution function – hence the name annular Bose metal. We also discuss the competition with an ordinary Bose condensate and related states.

Ashvin Vishwanath
Univ of California - Berkeley

Date submitted: 15 Nov 2013 Electronic form version 1.4