

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Modulated superfluid phases of lattice bosons in a non-abelian gauge field¹ WILLIAM COLE, SHIZHONG ZHANG, NANDINI TRIVEDI, Department of Physics, The Ohio State University, Columbus OH 43210 — We consider the two-component Bose-Hubbard model subject to non-abelian gauge fields that give rise to spin-orbit coupling. We obtain the phase diagram based on an extended mean field theory and find many exotic superfluid phases (polarized, striped, checkerboard). We characterize the superfluid phases by finding their collective excitations within random phase approximation (RPA) and discuss the possibility of novel topological defects.

¹We acknowledge support from ARO W911NF-08-1-0338, DARPA OLE program (WC,SZ) and NSF DMR-0907275 (NT).

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Date submitted: 08 Nov 2011

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