

Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Creation of spin monopoles in a ^{87}Rb BEC AZURE HANSEN, JUSTIN T. SCHULTZ, NICHOLAS P. BIGELOW, University of Rochester — The study of and search for magnetic monopoles is of fundamental interest across many fields. Monopole-like excitations have been achieved experimentally in solid-state spin ice and polariton systems. Monopole spin textures in BECs have been described theoretically [1, 2]. A coherent, two-photon Raman technique allows us to engineer the phase and amplitude of a ^{87}Rb Bose-Einstein condensate and create spin textures of topological interest [3]. A spin monopole has singular local spin and radial vorticity, which we can create using vector vortex laser beams. Optical imprinting permits multiple monopoles to exist in a single BEC, making the technique well-suited to studying monopole-antimonopole dynamics.

- [1] J.J. Garcia-Ripoll, J.I. Cirac, J. Anglin, V.M. Berez-Garcia, and P. Zoller. PRA 61, 053609 (2000)
- [2] V. Pietilä and M. Möttönen. PRL 103, 030401 (2009)
- [3] K. C. Wright, L. S. Leslie, A. Hansen, and N. P. Bigelow. PRL 102, 030405 (2009)

Azure Hansen
University of Rochester

Date submitted: 27 Jan 2014

Electronic form version 1.4