Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Structure and Collapse of a Dipolar Bose-Einstein Condensate[1]
RYAN WILSON, SHAI RONEN, JOHN BOHN, JILA and Department of Physics, University of Colorado, Boulder, Colorado 80309-0440, USA — A Bose-Einstein condensate formed of dipolar particles is known to be unstable against collapse if the attractive part of the dipolar interaction is strong enough. Here we explore the limits of this stability, with special attention to the possibiliity of the condensate collapsing locally rather than collapsing as a whole toward the center of the trap. We explicitly connect local collapse to the presence of low-energy "roton-like" modes, and we propose experiments that could probe this local collapse.

[1]We acknowledge the financial support of the DOE and the NSF.

Ryan Wilson
JILA and Department of Physics, University of Colorado, Boulder, Colorado 80309-0440, USA

Date submitted: 27 Jan 2009 Electronic form version 1.4