Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Collective Excitations of Bose-Einstein Condensates In Isotropic and Slightly Anisotropic Traps[1] ANDREW BARENTINE, DAN LOBSER, HEATHER LEWANDOWSKI, ERIC CORNELL, JILA, National Institute of Standards and Technology and Department of Physics, University of Colorado, Boulder — Boltzmann proved that the monopole mode of a thermal gas in an isotropic, harmonic and 3D trap is undamped. Bose-Einstein Condensates (BECs) are not classical gases and their weakly interacting nature causes damping in a 3D monopole mode. The large parameter space of the TOP (Time-averaged Orbiting Potential) trap allows for precise control of the trap geometry. Exciting a monopole mode in a BEC as well as its canonical thermal cloud allows us to investigate damping effects in isotropic and slightly anisotropic traps for both hydrodynamic and collisionless regimes. We also hope to achieve a greater understanding of the frequency shifts due to anharmonicity in the trap in order to apply this to our research on quasi-2D monopole modes.

[1]Funding: NSF, NIST, ONR

Andrew Barentine
JILA, National Institute of Standards and Technology and
Department of Physics, University of Colorado, Boulder

Date submitted: 15 Nov 2013 Electronic form version 1.4