Abstract Submitted
for the APR07 Meeting of
The American Physical Society

**An apparatus for measuring short-range deviations from Newtonian gravity including a magnetic force calibration** ANDREW GERACI, Dept. of Physics, Stanford University, DAVID WELD, Dept. of Physics, Massachusetts Institute of Technology, SYLVIA SMULLIN, Dept. of Physics, Princeton University, JOHN CHIAVERINI, Los Alamos National Laboratory, AHARON KAPITULNIK, Dept. of Physics and Dept. of Applied Physics, Stanford University — Several recent theories suggest that new physics related to gravity may appear at short length scales. For example, light moduli or particles in "large" extra dimensions could mediate macroscopic forces of(super)gravitational strength at length scales below a millimeter. We have built an apparatus utilizing cryogenic micro-cantilevers capable of measuring atto-Newton forces [1] which now includes a magnetic analog for force calibration. Our most recent experimental constraints on Yukawa-type deviations from Newtonian gravity will be presented. References: [1] J. Chiaverini, S. J. Smullin, A. A. Geraci, D. M. Weld, A. Kapitulnik, Phys.Rev.Lett. **90**, 151101 (2003). S. J. Smullin, A.A.Geraci, D.M.Weld, J.Chiaverini, S.Holmes, and A. Kapitulnik, Phys. Rev. **D 72**, 122001 (2005).

Andrew Geraci
Stanford University

Date submitted: 15 Jan 2007 Electronic form version 1.4