Abstract Submitted
for the FWS14 Meeting of
The American Physical Society

Searching for non-Newtonian gravity with optically levitated microsphere in vacuum[1] GAMBHIR RANJIT, DAVID ATHERTON, JORDAN STUTZ, MARK CUNNINGHAM, ANDREW GERACI, University of Nevada, Reno — In this talk, I will present our experimental approach [1] towards the search of deviations from Newtonian gravity at short range predicted by several theories beyond the Standard model- including supersymmetry and string theory. In our experiment, we use an optically levitated and cooled dielectric nanosphere in vacuum as a micromechanical sensor which can have extremely high sensitivity of $\sim 10^{-21} N/\sqrt{Hz}$. I will discuss our progress towards cooling of the center-of-mass motion of the trapped bead and the calibration of the sensor using known modulated electric fields.

[1] Andrew A. Geraci, Scott B. Papp, and John Kitching, Phys. Rev. Lett. 102, 101101 (2010)

[1]NSF grant PHY-1205994

Gambhir Ranjit
University of Nevada, Reno

Date submitted: 10 Oct 2014 Electronic form version 1.4