

Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

Test of Newtonian gravity at short range using pico-precision displacement sensor¹ TAKASHI AKIYAMA, MAKI HATA, KAZUFUMI NINOMIYA, HIRONORI NISHIO, NARUYA OGAWA, YUTA SEKIGUCHI, KENTARO WATANABE, JIRO MURATA — Recent theoretical models of physics beyond the standard model, including attempts to resolve the hierarchy problem, predict deviations from the Newtonian gravity at short distances below millimeters. Present NEWTON project aims an experimental test of the inverse-square law at the millimeter scale, using a torsion pendulum with a pico-precision displacement sensor, which was originally developed for the micron precision optical alignment system (OASys) for the PHENIX muon tracking chambers at RHIC, using digital image analysis technique. In order to examine the gravitational force at short range scale around micrometers, we have developed a new apparatus NEWTON-III, which can determine the local gravitational acceleration by measuring the motion of the torsion pendulum. In this presentation, the development status and the results of the NEWTON-experiment will be reported.

¹This work was supported by Grant-in-Aid for Exploratory Research (20654024).

Takashi Akiyama
Department of Physics, Rikkyo University, Tokyo, JAPAN

Date submitted: 01 Jul 2009

Electronic form version 1.4