

Abstract Submitted
for the APR05 Meeting of
The American Physical Society

Equivalence Principle Tests at the University of Washington

KI-YOUNG CHOI, CENPA, University of Washington, STEPHAN SCHLAM-MINGER, ERIC ADELBERGER, JENS GUNDLACH, BLAYNE HECKEL, CHRISTOPHER SPITZER, ERIK SWANSON — We are using a rotating torsion balance to test the equivalence principle for Yukawa ranges from 1 m to inf . A sensitive torsion balance is mounted on a turntable rotating with constant angular velocity. On the torsion pendulum beryllium and titanium test bodies are installed in a composition dipole configuration. A violation of the equivalence principle would yield to a differential acceleration of the two materials towards a source mass. In a three months long data run, we measured this acceleration with a sensitivity of $3 \times 10^{-15} m/s^2$. We analyzed the differential acceleration data for a variety of sources such as local topological features (a hill), the Earth, the Sun or the center of our galaxy. Since 25% of the differential acceleration towards the center of our galaxy is caused by galactic dark matter, it allows us to test the equivalence principle for an ordinary matter falling towards galactic dark matter.

Ki-Young Choi
CENPA, University of Washington

Date submitted: 13 Jan 2005

Electronic form version 1.4