

APR21-2021-020018

Abstract for an Invited Paper
for the APR21 Meeting of
the American Physical Society

A Fourier-Bessel Test of the Gravitational Inverse-Square Law¹

JOHN LEE, University of Washington

Theoretical attempts to explain dark energy or unify gravity with the other fundamental interactions include new phenomena such as extra spatial dimensions, chameleons, or string theory moduli which would also violate the gravitational inverse-square law at small separations. In our most recent search for such violations, we used a stationary torsion-pendulum suspended above a rotating attractor to measure highly-resolved gravitational torques at separations between 3 mm and 52 μm . The pendulum and attractor test-masses featured an optimized Fourier-Bessel geometry with 18-fold and 120-fold symmetric annular sections cut from 50 μm thick platinum foils. I will present a description of our instrument, analysis, and the results from these most recent measurements.

¹PHY-1912514