Abstract Submitted
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Novel Tests of Gravity Below Fifty Microns[1] ANTHONY SANCHEZ, NOAH DUNKLEY, NICHOLAS HERNANDEZ, GABRIELA MARTINEZ, HILDE ISACHSEN, JEREMY JOHNSON, ZANE CODEN, DUNCAN SHAW, CHARLES HOYLE, Humboldt State University — The effort to unify the Standard Model and General Relativity often involves theories which contain features that may violate the Weak Equivalence Principle (WEP) and gravitational Inverse-Square Law (ISL). A violation of either the WEP or ISL at any length scale would bring into question our fundamental understanding of gravity. Undergraduates and faculty at Humboldt State University are running an experiment to probe gravitational interactions below the 50-micron length scale. The experiment employs a torsion pendulum with equal masses of different material arranged as a 'composition dipole.' The experiment measures the twist of the torsion pendulum as an attractor mass is oscillated nearby in a parallel-plate configuration, providing a time varying torque on the pendulum. The size and distance dependence of the torque variation will provide a means to determine any deviation from the WEP or ISL at untested scales. This talk will focus on the current state of our experiment and we will cover several updates to our equipment, models and recent data taken in the lab.

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