

Abstract Submitted
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Current Advancements on Short-range Tests of Gravity at Humboldt State University.¹ DARIAN KARADJOV, ADAM TURK, ALYSSA JOHNSON, BERLIN DEL AGUILA, EMILY ORD, FRANK TROMBETTA, KASSANDRA WEBER, C.D. HOYLE, Humboldt State University — As a result of discrepancies between the Standard Model and General Relativity, gravitational experiments have remained at the forefront of experimental physics research in an effort to unify these models. Theories which attempt this unification often include features that violate the Weak Equivalence Principle (WEP) and/or the gravitational Inverse-Square Law (ISL), potentially bringing our fundamental understanding of gravity into question. Therefore, students, faculty and Humboldt State University have constructed an apparatus that will measure the effects of gravity at a submillimeter scale. This experiment measures the twist of a torsion pendulum as an attractor mass is oscillated nearby, providing a time-varying torque on the pendulum. In the experiment, the size and distance dependence of the torque are measured, thereby providing means to determine deviations from accepted models of gravity on untested distance scales. As with all gravitational experiments, characterization of systematic effects due to environmental fluctuations is paramount. This talk will focus on the improvements made to the physical apparatus as well as a brief discussion involving work done to compare the experimental model to a theoretical model.

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