

Abstract Submitted
for the APR10 Meeting of
The American Physical Society

Current and future tests of Lorentz symmetry in gravitational systems QUENTIN BAILEY, Embry-Riddle Aeronautical University — Recently, there have been a growing number of experiments searching for tiny violations of Lorentz symmetry. These tests are motivated by the possibility of uncovering experimental signals from an underlying unified theory of physics at the Planck scale. The Standard-Model Extension (SME) is a theoretical framework describing general Lorentz violation for known matter and fields, including gravity. In this talk, I will discuss the theoretical and experimental work on gravitational experiments testing Lorentz symmetry, including recent solar system and Earth-based laboratory tests, as well as possible future tests.

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Date submitted: 23 Oct 2009

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