
Testing Lorentz symmetry with MICROSCOPE

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Abstract

Investigations of Lorentz symmetry provide the opportunity to probe Planck-Scale physics with feasible experiments. A comprehensive framework for the investigation of Lorentz symmetry is provided by the gravitational Standard-Model Extension (SME). Lorentz violation in the matter sector of the SME would result in qualitatively unique signals in the MICROSCOPE experiment, with differential accelerations of the test masses occurring at additional frequencies. If appropriate analysis of MICROSCOPE data is performed, improvements of up to 8 orders of magnitude over existing published limits are possible for some combinations of SME coefficients. This talk will provide an introduction to the SME and present a proposal for the use of MICROSCOPE data in obtaining sensitivities to Lorentz violation.

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