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Antimatter-Gravity Couplings, and Lorentz Symmetry

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Sensitive tests of CPT and Lorentz symmetry performed at presently accessible energy scales provide the opportunity to probe Planck-scale physics. The gravitational Standard-Model Extension (SME) provides a comprehensive theoretical framework for these investigations. Gravitational couplings in the SME yield implications for antimatter-gravity experiments. A general theoretical overview of gravity and antimatter will be provided along with a discussion of SME-based predictions for antimatter-gravity experiments. Predictions for nongravitational tests, such as antihydrogen spectroscopy and trapped-antiparticle experiments will also be summarized.

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