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### **Experimental tests of the Einstein Equivalence Principle**

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The Einstein Equivalence Principle (EEP) is fundamental to General Relativity (GR) and the Standard Model (SM) of particle physics. Consequently, it has been long been subject to stringent experimental tests—first to verify the general validity of both models, and more recently to search for hints of new physics. This talk will review the current status of experimental constraints on modified gravity and EEP-violation in the context of the Standard Model Extension, a phenomenological framework that can consistently describe small EEP-violating deviations from GR and the SM. We will outline promising areas for future investigation, and describe some exciting new experiments using trapped ions which can test EEP for electrons with orders of magnitude more sensitivity than previous tests. Prepared by LLNL under Contract DE-AC52-07NA27344.