

Abstract Submitted
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Alternative theories of gravity and Lorentz violation RUI XU,
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V. ALAN KOSTELECKY, INDIANA UNIVERSITY — General relativity has
achieved many successes, including the prediction of experimental results. How-
ever, its incompatibility with quantum theory remains an obstacle. By extending
the foundational properties of general relativity, alternative theories of gravity can
be constructed. In this talk, we focus on fermion couplings in the weak-gravity limit
of certain alternative theories of gravity. Under suitable experimental circumstances,
some of these couplings match terms appearing in the gravitational SME, which is a
general framework describing violations of local Lorentz invariance. Existing limits
on Lorentz violation can therefore be used to constrain certain Lorentz-invariant
alternative theories of gravity.

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