

Abstract Submitted
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Lorentz invariance violations in the interplay of quantum gravity with matter¹ MARC SCHIFFER, Heidelberg University, ASTRID EICHHORN, University of Southern Denmark and Heidelberg University, ALESSIA PLATANIA, Heidelberg University — We explore the interplay of matter with quantum gravity with a preferred frame to highlight that the matter sector cannot be protected from the symmetry-breaking effects in the gravitational sector. Focusing on Abelian gauge fields, we show that quantum gravitational radiative corrections induce Lorentz-invariance-violating couplings for the Abelian gauge field. In particular, we discuss how such a mechanism could result in the possibility to translate observational constraints on Lorentz violation in the matter sector into strong constraints on the Lorentz-violating gravitational couplings.

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