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Indications for particle physics from asymptotic safety

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There is growing theoretical evidence for the existence of an interactive UV fixed point in the renormalization group flow of the dimensionless couplings of the gravitational effective action. In the Standard Model and/or in models of New Physics embedded in the framework of trans-Planckian asymptotic safety, the presence of such a fixed point imposes Planck-scale boundary conditions on the gauge, Yukawa and scalar couplings. The ensuing fixed-point analysis often allows one to derive specific predictions for the IR phenomenology. Interestingly, it can also lead to the dynamical generation of arbitrarily small quantities, like for example the Yukawa couplings of Dirac neutrinos. In my talk I will review a set of phenomenological predictions obtained in recent years in the framework of trans-Planckian asymptotic safety and discuss possible experimental signatures of such scenarios.

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