

Naturally small neutrino mass from asymptotic safety

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I will discuss the possibility of dynamically generating arbitrarily small Yukawa couplings in the framework of trans-Planckian asymptotic safety. This effective mechanism may provide an interesting alternative to other dynamical means to generate small neutrino masses, e.g., the see-saw mechanism, and can be applied to various new physics scenarios requiring feeble Yukawa interactions (freeze-in dark matter, etc). I will show that this mechanism can be consistent with first-principle calculations in quantum gravity using the functional renormalization group. Finally, I will discuss possible gravitational-wave signals arising from the connection between these extreme UV and IR sectors.

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