

Swampland Constraints on small Dirac Neutrino Yukawa Couplings

Thursday, 27 June 2024 15:00 (15 minutes)

We study limits of vanishing Yukawa couplings in Quantum Gravity, using type IIA orientifolds as a laboratory. We show that in the limit $Y \rightarrow 0$ there are some towers (called gonions) which become asymptotically massless, while at the same time, the kinetic term of some chiral fields becomes singular. In addition, we study how tiny masses of Dirac neutrinos can arise consistent with experimental constraints on SM-type vacua in string theory. We find that two large hidden dimensions arise only perceived by the ν_R sector, while the string scale is around $M_{\text{string}} \sim 10^{-700}$ TeV. As a byproduct, independently of the neutrino issue, we argue that a single large dimension in the context of SM-like type IIA Calabi–Yau orientifolds leads to too small Yukawa couplings for quarks and charged leptons.

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Session Classification: Parallel session