## **Asymptotic Safety with Higgs and Flavor Portals**

Wednesday 23 September 2020 18:00 (15 minutes)

Standard Model extensions inspired by asymptotic safety generally contain vector-like fermions and singlet matrix scalar fields. Here we study several models where three generations of colorless vector-like fermions allow for portal Yukawa interactions

with leptons, leading to rich phenomenological implications. A novel feature is that the enlarged scalar sector, which also contains a Higgs portal, may spontaneously break lepton flavor universality. We discuss the phenomenology of the BSM sector, covering production at pp and lepton colliders, decay and fermion mixing. Further signatures of the models include lepton flavor violation, displaced vertices, electric dipole moments and anomalous magnetic moments, for which effects from scalar mixing and chiral enhancement are especially relevant. Furthermore, a two-loop renormalization group analysis of the running gauge, Yukawa, and quartic couplings reveals ultraviolet fixed points for which models remain well-behaved and predictive up to the Planck scale.

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