



Contribution ID: 311

Type: **not specified**

Renormalizable models of flavor-specific scalars

Tuesday, 24 August 2021 20:40 (20 minutes)

New light singlet scalars with flavor-specific couplings represent a phenomenologically distinctive and flavor-safe alternative to the well-studied possibility of Higgs-portal scalars. However, in contrast to the Higgs portal, flavor-specific couplings require an ultraviolet completion involving new heavy states charged under the Standard Model gauge symmetries, leading to a host of additional novel phenomena. Focusing for concreteness on a scenario with up quark-specific couplings, we investigate two simple renormalizable completions, one with an additional vector-like quark and another featuring an extra scalar doublet. We consider the implications of naturalness, flavor- and CP-violation, electroweak precision observables, and direct searches for the new states at the LHC. These bounds, while being model-dependent, are shown to probe interesting regions in the parameter space of the scalar mass and its low-energy effective coupling, complementing the essential phenomenology of the low-energy effective theory at a variety of low and medium energy experiments.

Primary authors: ISMAIL, Ahmed; FREITAS, Ayres (University of Pittsburgh); BATELL, Brian Thomas; RAI, Mudit (University of Pittsburgh); MCKEEN, David (TRIUMF)

Presenter: RAI, Mudit (University of Pittsburgh)

Session Classification: Flavor Physics and CP Violation

Track Classification: Flavor Physics and CP Violation