Contribution ID: **1418** Type: **not specified**

Renormalizable models of flavor-specific scalars

Wednesday 26 May 2021 18:00 (15 minutes)

"Singlet scalar mediators have a wide phenomenological application and a variety of SM extensions have been based on them. In this work, we build upon the story of flavor-specific scalars, where the scalar dominantly couples to one specific SM fermion mass eigenstate. This hypothesis meshes well with absence of new flavor changing neutral currents at tree level. Earlier works were based on an EFT framework to implement this hypothesis and focused on the resulting low-energy phenomenology. In this study, we take a step up by describing two different renormalizable completions - one where we introduce a heavy vector-like quark, and another case where we have a second scalar doublet. We study the phenomenology of an "up-philic" scenario in depth, considering the various constraints coming from FCNC, EWPT, CKM and CP violation bounds. We also compare the effects of these limits for both the EFT parameters and the UV parameters, displaying the available parameter space for both the high energy (UV parameters) and the low energy (EFT) parameter space. "

Summary

Authors: RAI, Mudit (University of Pittsburgh); Prof. BATELL, Brian (University of Pittsburgh); Prof. FREITAS, Ayres (PITT-PACC); MCKEEN, David (TRIUMF); ISMAIL, Ahmed

Presenter: RAI, Mudit (University of Pittsburgh)

Session Classification: Higgs IV