Phenomenology 2021 Symposium



Contribution ID: 1380 Type: BSM

Unified Framework for B-Anomalies, Muon g-2, and Neutrino Masses

Tuesday 25 May 2021 17:30 (15 minutes)

We present a model of radiative neutrino masses which also resolves anomalies reported in B-meson decays, $R_{D^{(\star)}}$ and $R_{K^{(\star)}}$, as well as in muon g-2 measurement, Δa_{μ} . Neutrino masses arise in the model through loop diagrams involving TeV-scale leptoquark (LQ) scalars R_2 and S_3 . Fits to neutrino oscillation parameters are obtained satisfying all flavor constraints which also explain the anomalies in $R_{D^{(\star)}}$, $R_{K^{(\star)}}$ and Δa_{μ} within $1\,\sigma$. An isospin-3/2 Higgs quadruplet plays a crucial role in generating neutrino masses; we point out that the doubly-charged scalar contained therein can be produced in the decays of the S_3 LQ, which enhances its reach to 1.1 (6.2) TeV at $\sqrt{s}=14$ TeV high-luminosity LHC ($\sqrt{s}=100$ TeV FCC-hh). We also find that the same Yukawa couplings responsible for the chirally-enhanced contribution to Δa_{μ} give rise to new contributions to the SM Higgs decays to muon and tau pairs, with the modifications to the corresponding branching ratios being at (2–6)\% level, which could be tested at future hadron colliders, such as HL-LHC and FCC-hh.

Summary

Authors: THAPA, Anil; Prof. DEV, Bhupal (Washington University in St. Louis); BABU, Kaladi (Oklahoma

State University); JANA, SUDIP (OKLAHOMA STATE UNIVERSITY)

Presenter: THAPA, Anil

Session Classification: BSM IX