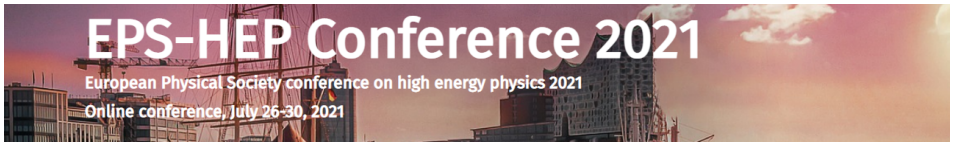

Contribution ID: **1132** Type: **Parallel session talk**

Flavorful leptoquarks at the LHC and beyond: Spin 1

Thursday 29 July 2021 10:30 (15 minutes)

Evidence for electron-muon universality violation that has been revealed in $b \to s\ell\ell$ transitions in the observables R_{K,K^*} by the LHCb Collaboration can be explained with spin-1 leptoquarks in $SU(2)_L$ singlet V_1 or triplet V_3 representations in the $calO(1-10)$ TeV range. We explore the sensitivity of the high luminosity LHC (HL-LHC) and future proton-proton colliders to V_1 and V_3 in the parameter space connected to R_{K,K^*}-data. Future sensitivity projections based on extrapolations of existing ATLAS and CMS searches are worked out. We find that for $\kappa = 1$ the mass reach for pair (single) production of V_1 can be up to 3 TeV (2.1 TeV) at the HL-LHC and up to 15 TeV (19.9 TeV) at the FCC-hh with $\sqrt{s} = 100$ TeV and 20 ab^{-1}. The mass limits and reach for the triplet V_3 are similar or higher, depending on flavor. While there is the exciting possibility that leptoquarks addressing the R_{K,K^*}-anomalies are observed at the LHC, to fully cover the parameter space pp-collisions beyond the LHC-energies are needed.

Collaboration / Activity

Ruđer Bošković Institute

First author

Email

Primary authors: HILLER, Gudrun (Technische Universität Dortmund); LOOSE, Dennis (Technische Universität Dortmund); NIŠANDŽIĆ, Ivan (Ruđer Bošković Institute)

Presenter: NIŠANDŽIĆ, Ivan (Ruđer Bošković Institute)

Session Classification: T10: Searches for New Physics

Track Classification: Searches for New Physics