



Contribution ID: 201

Type: Oral presentation (young scientists)

The SU(2)D lepton portals for muon $g-2$, W boson mass and dark matter

Monday 18 July 2022 17:20 (10 minutes)

We propose a novel model for lepton flavor and dark matter based on the SU(2)D gauge symmetry and vector-like leptons in its fundamental representations. We introduce a dark SU(2)D Higgs doublet and a Higgs bi-doublet for the mass mixing between the vector-like lepton and the lepton. As a result, the seesaw lepton masses are generated and there are sizable one-loop contributions to the muon $g-2$ via the SU(2)D gauge bosons and the relatively heavy vector-like lepton, as indicated in Fermilab E989. The tree-level mass mixing between the Z boson and the isospin neutral gauge boson of SU(2)D in our model accounts for the shift in the W boson mass, being consistent with Tevatron CDFII. Finally, we show that the isospin charged gauge boson of SU(2)D becomes a plausible candidate for dark matter with a small mass splitting tied up to the modified W boson mass, and there is a viable parameter space where the favored corrections to the muon $g-2$ and the W boson mass and the dark matter constraints are simultaneously fulfilled.

Authors: GUERRERO MENKARA, Adriana; Prof. LEE, Hyun Min (Chung Ang University); Dr YAMASHITA, Kimiko (Chung Ang University); Mr KIM, Seongsik (Chung Ang University)

Presenter: GUERRERO MENKARA, Adriana

Session Classification: Parallel 1D - Dark sector