Muon Anomalies Workshop (MAW)

Report of Contributions

https://indico.cern.ch/e/1038781

Contribution ID: **1** Type: **not specified**

Muon g-2 and/or B anomaliles in some gauge extensions of the SM

Friday 21 May 2021 15:40 (20 minutes)

In this talk, I will discuss a few gauge extensions of the SM where one can accommodate the muon g-2 and/or B anomalies.

Presenter: Prof. KO, Pyungwon (KIAS)

Session Classification: Theory

Contribution ID: **2** Type: **not specified**

Neutrino mass and muon g-2 with dark U(1) symmetry

Friday 21 May 2021 16:00 (20 minutes)

We propose an extension of the Standard Model (SM) for radiative neutrino mass by introducing a dark U(1) gauge symmetry. We show that the tiny neutrino mass and dark matter candidates are naturally accommodated. Motivated by the recent measurement of muon (g−2) indicating 4.2 deviation from the SM prediction, we examine how this deviation can be explained in this model.

Presenter: Prof. PARK, Myeonghun (University of Seoul, Department of Physics (KR))

Session Classification: Theory

Contribution ID: **3** Type: **not specified**

Leptophilic pseudoscalar and muon g-2 in 2HDM

Friday 21 May 2021 16:20 (20 minutes)

The type-X 2HDM is known to explain the long-standing muon g-2 anomaly due to the presence of a light CP-odd Higgs boson which becomes leptophilic at large tanbeta. The model can be extended with an even lighter singlet boson contributing to the muon g-2. We discuss the current experimental limits on the model and the discovery potential of the extra (Higgs) bosons at lepton and proton colliders.

Presenter: Prof. CHUN, Eung Jin (Korea Institute for Advanced Study)

Session Classification: Theory

Contribution ID: **4** Type: **not specified**

Type-X two Higgs doublet model in light of muon g-2: confronting the Higgs and collider data

Friday 21 May 2021 16:40 (20 minutes)

The recent Fermilab measurement of the muon anomalous magnetic moment yields about 4.2 sigma deviation from the SM prediction. In the Type-X two Higgs doublet model with the Higgs alignment, we study the consequence of imposing the observed muon g-2, along with the theoretical stabilities, electroweak oblique parameters, Higgs precision data, and direct searches at the LEP and LHC. We found that the constraints are very strong, restricting other new scalar boson masses below about 300 GeV. We also show that the observed electron anomalous magnetic moment is consistent with the model prediction and the associated production of a pseudoscalar boson and CP-even scalar boon at the LHC has a high potential to probe the whole surviving parameter space.

Presenter: Prof. SONG, Jeonghyeon (Konkuk University)

Session Classification: Theory

Contribution ID: **5** Type: **not specified**

Leptoquark option for B-meson anomalies and leptonic signatures

Friday 21 May 2021 17:00 (20 minutes)

We entertain the option of scalar leptoquarks to explain the anomalies in the semi-leptonic decays of B-mesons and the discrepancies in the lepton (g−2)l's including the recent results at Fermilab E989. The RK(∗) and RD(∗) anomalies can be accommodated by the specific couplings for triplet and singlet leptoquarks, respectively, subject to the bounds from B⟶Kνν¯. We discuss the correlation between the leptonic signatures from leptoquarks such as μ⟶eγ and the electric dipole moment of electron and show that desirable neutrino masses can be generated dominantly by top-quark loops in the extension of the model with several doublet leptoquarks.

Presenter: Prof. LEE, Hyun Min (CAU - Chung-Ang University (KR))

Session Classification: Theory

Contribution ID: **6** Type: **not specified**

A comprehensive study of vector leptoquark on the B-meson and Muon g-2 anomalies

Friday 21 May 2021 17:20 (20 minutes)

Recently reported anomalies in various B meson decays and also in the anomalous magnetic moment of muon (g − 2) motivate us to consider a particular extension of the standard model incorporating new interactions in lepton and quark sectors simultaneously. Our minimal choice would be leptoquark. In particular, we take vector leptoquark (U1) and comprehensively study all related observables.

Presenter: Prof. PARK, Seong Chan (Yonsei University)

Session Classification: Theory

Contribution ID: **7** Type: **not specified**

Lepton Flavor Violation at Belle II

Friday 21 May 2021 13:00 (30 minutes)

Presenter: Prof. KWON, Youngjoon (Yonsei University)

Session Classification: Experiments

Contribution ID: **8** Type: **not specified**

Anomalous dimuon production inside b-jet at CMS

Friday 21 May 2021 14:10 (20 minutes)

Presenter: Prof. YANG, Un Ki (Seoul National University (KR))

Session Classification: Experiments

Contribution ID: **9** Type: **not specified**

Lepton Flavor Violation in Z+b-jet at CMS

Friday 21 May 2021 14:30 (20 minutes)

Presenter: Prof. MOON, Chang-Seong (Kyungpook National University (KR))

Session Classification: Experiments

Contribution ID: **10** Type: **not specified**

Search for Lepton Flavor Violation in the top quark sector at CMS

Friday 21 May 2021 14:50 (20 minutes)

Presenter: Prof. KIM, Tae Jeong (Hanyang University (KR))

Session Classification: Experiments

Contribution ID: **11** Type: **not specified**

Search for Leptoquarks at CMS

Friday 21 May 2021 13:30 (20 minutes)

Presenter: Dr OH, Young Do (Kyungpook National University (KR))

Session Classification: Experiments

Contribution ID: **12** Type: **not specified**

Search for dark photon in dilepton channel at CMS

Friday 21 May 2021 13:50 (20 minutes)

- Z'search (including comparison between ee and mumu channels): EXO-19-019, + new analysis with dilepton+(b-)jets
- DY differential x-section measurement: low mass dilepton resonance sensitivity with scouting dataset
- EFT interpretation of Drell-Yan
- other dark photon searches (as mediator particles

Presenter: Prof. YOO, Hwi Dong (Yonsei University (KR))

Session Classification: Experiments