

DPF-PHENO 2024

Contribution ID: 644

Type: **not specified**

New Physics searches via scattering at DarkQuest

Thursday 16 May 2024 16:45 (15 minutes)

We explore the possibility of probing new physics particles that scatter into visible particles at DarkQuest, such as neutrino tridents, Bethe-Heitler scattering, etc. The DarkQuest setup consists of a 120 GeV proton beam that impinges on a 5 m iron block with the detector placed 25 m away from the proton source. We find that the closeness of the detector to this high-energy proton source is advantageous in probing new physics that appear through scattering at the large iron dump. We take the $L_\mu - L_\tau$ gauge bosons as an example where we look at muon-antimuon signals that are produced through neutrino tridents via the gauge boson. We see that DarkQuest can probe a major region in the parameter space that explains the $g - 2$ anomaly.

Mini Symposia (Invited Talks Only)

Authors: KARTHIKEYAN, Aparajitha (Department of Physics and Astronomy, Texas A&M University); DUTTA, Bhaskar; KIM, Hyunyoung (Texas A & M University (US)); RAI, Mudit (University of Pittsburgh)

Presenter: KARTHIKEYAN, Aparajitha (Department of Physics and Astronomy, Texas A&M University)

Session Classification: Physics Beyond the Standard Model

Track Classification: Other BSM