Contribution ID: **63** Type: **not specified**

DarkQuest - Searching for light dark matter at Fermilab's proton fixed-target experiment

Monday 9 May 2022 17:30 (15 minutes)

Accelerator-based dark matter searches provide a unique opportunity to expand the sensitivity to the sub-GeV mass regime. In this region, there are existing opportunities to search for dark sector signatures, mediators, and the dark matter itself, that are unconstrained. DarkQuest is a proton fixed-target experiment that would use a high-intensity beam of 120 GeV protons to produce dark sector mediators. These mediators will interact feebly with the SM and decay into visible states with displaced lepton, photon, and hadron signals. DarkQuest will exploit the short baseline and compact spectrometer of the current beam dump experiment at Fermilab, SpinQuest, to search for these decays. Since it builds on the existing accelerator and detector infrastructure, it offers a powerful yet low-cost experimental initiative that can be realized on a short timescale. In this talk, we will discuss the current detector design, proposed upgrades, and recent studies on the signal topology and detector acceptance.

Authors: TRAN, Nhan (Fermi National Accelerator Lab. (US)); FENG, Yongbin (Fermi National Accelerator Lab. (US))

Presenter: FENG, Yongbin (Fermi National Accelerator Lab. (US))

Session Classification: DM II