UNL Department of Physics and Astronomy presents:

Accelerator Searches for Sub-GeV Dark Sectors

PRESENTED BY
CAMERON BRAVO
SLAC

THURSDAY
OCTOBER 12
4:00 PM
IN JH 136

ABSTRACT

A new generation of dark matter experiments focusing on sub-GeV Dark Sectors capable of explaining the observed relic abundance have attracted increasing interest over the last decade. One of the most general models with a sub-GeV mediator is a Dark Sector which introduces a new U(1) gauge symmetry, with a corresponding boson called a "dark photon", "heavy photon", or A' (read A prime). The Heavy Photon Search (HPS) is one of the first experiments dedicated to the search for dark photons, specifically in the case that they decay to standard model charged leptons. HPS has successfully completed two physics runs in 2019 and 2021. I will present an estimate of the sensitivity of this data for dark photons and discuss other models the data could also be sensitive to. Meanwhile, a recently proposed project called the Light Dark Matter eXperiment (LDMX) will be sensitive to the production of sub-GeV dark matter particles, such as those with interactions mediated by dark photons. The LDMX detector concept, its rejection of key backgrounds, and sensitivity to new physics will be presented.