

Dark Interactions workshop
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Results of a search for sub-GeV dark matter using 2013 LUX data

Sub-GeV dark matter (DM) is usually difficult to probe using liquid xenon detectors due to a small energy transfer in DM-nucleus interactions and a finite detector threshold. Considering photons from Bremsstrahlung or electrons from the Migdal effect that irreducibly accompany the DM-nucleus scattering allow liquid xenon detectors to overcome this limitation since at low energies electronic recoils have higher detection efficiency than nuclear recoils. Thus both the S1 and the S2 signals can be used in the analysis where the nuclear recoil signal would not be visible otherwise, extending the reach of liquid xenon detectors to lower masses of dark matter particles than has been achieved previously. This talk will present constraints on spin-independent DM-nucleon scattering for four different classes of mediators for dark matter particles with masses of 0.4-5 GeV/ c^2 using data acquired in 2013 by the Large Underground Xenon (LUX) experiment.