

Dark Matter search with the BDX-MINI experiment

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BDX-MINI is a beam dump experiment performed at Jefferson Lab, aimed at searching for Light Dark Matter in the MeV-GeV mass range. Dark Matter is expected to be produced by the interaction of CEBAF high-intensity 2.176 GeV beam with the Hall A beam dump at Jefferson Lab.

The detector, installed in a well located 22 m downstream of the Hall-A beam dump, consists of a PbWO₄ electromagnetic calorimeter surrounded by a hermetic veto system for background rejection. LDM detection is performed by measuring the energy released in the detector from electrons scattered by the impinging LDM particles. Despite the small interaction volume, the large accumulated charge of 2.56×10^{21} EOT allowed for the BDX-mini measurement to set competitive exclusion limits on the LDM parameters space, comparable to those reported by larger-scale efforts.

In this talk, after a brief introduction to the LDM physics case, I will show the results obtained from the BDX-mini experiment, focusing on few key aspects of the associated experimental campaign and data analysis effort.

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