

# Light in the Dark – a Light Dark Matter eXperiment (LDMX)

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## Abstract content

The origin and observed abundance of Dark Matter can be explained elegantly by the thermal freeze-out mechanism, leading to a preferred mass range for Dark Matter particles in the  $\sim$ MeV-TeV region. The GeV-TeV mass range is being explored intensively by a variety of experiments searching for Weakly Interacting Massive Particles. The sub-GeV region, however, in which the masses of the building blocks of stable matter lie, is experimentally open territory. This mass range for particles and force carriers occurs naturally in Hidden Sector Dark Matter models. The Light Dark Matter eXperiment (LDMX) is a planned electron-beam fixed-target missing-momentum experiment that has uniquely broad and robust sensitivity to light Dark Matter in the sub-GeV range. This contribution will give an overview of the theoretical motivation, the main experimental challenges and how they are addressed, as well as projected sensitivities in comparison to other experiments.

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