

## LDMX: The Light Dark Matter eXperiment

The constituents of dark matter are still unknown, and the viable possibilities span a very large mass range. Specific scenarios for the origin of dark matter sharpen the focus to within about an MeV to 100 TeV. Most of the stable constituents of known matter have masses in this lower range, and a thermal origin for dark matter works in a simple and predictive manner in this mass range as well. If there is an interaction between light DM and ordinary matter, as there must be in the case of a thermal origin, then there necessarily is a production mechanism in accelerator-based experiments. The Light Dark Matter eXperiment (LDMX) is a planned electron-beam fixed-target missing-momentum experiment at SLAC that has unique sensitivity to light DM in the sub-GeV mass range. Although optimized for a missing momentum technique, LDMX is effectively a fully instrumented beam dump experiment, making it possible to search for visibly decaying signatures of dark sector particles. This would provide another outlet for LDMX to probe complementary regions of dark matter phase space for a variety of models. This contribution will give an overview of the theoretical motivation for LDMX, the main experimental challenges and how they are addressed, as well as projected sensitivities in comparison to other experiments.

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