

LUX Sensitivity to Effective Field Theory Interactions

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The past two decades have seen a tremendous increase in the sensitivity of direct detection experiments. In the absence of a definitive dark matter detection, the Large Underground Xenon (LUX) campaign (which ran underground at the Sanford Underground Research Facility from 2013 to 2016) has worked to constrain a far broader set of dark matter interactions than the spin-independent and spin-dependent results that are typically reported. Here we review a non-relativistic effective field theory framework that describes a rich set of momentum-and-velocity dependent dark matter-nucleon interactions in a model-independent way. We comment on complementarity between experimental targets and techniques. Finally, we discuss LUX's sensitivity to this class of interactions both in isolation and in the case of interference between interactions.

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