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Forecasting dark matter searches at next-generation direct detection experiments in light of astrophysical uncertainties: Results

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The Non-Relativistic Effective Field Theory (NREFT) provides an economic parametrization of different possible interactions between dark matter (DM) and the target nucleus that could be probed by direct detection. We consider a diverse set of Galilean-invariant NREFT operators with different spin, momentum and velocity dependence, for both light and heavy mediators, and investigate the effect of astrophysical uncertainties on reconstruction of DM signal parameters using the Euclideanized signal method (which is discussed in the previous talk). We forecast the prospects for accurate parameter reconstruction at next-generation direct detection experiments. Focusing on models with light DM and light mediators, we also highlight parts of the parameter space where experiments won't be limited by astrophysical uncertainties.

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