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Chiral Effective Theory of Dark Matter Direct Detection

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The existence of dark matter is one of the few solid hints for physics beyond the standard model. If dark matter has indeed particle nature, then direct detection via scattering on atomic nuclei is one of the most promising discovery channels. In order to connect this nonrelativistic process with astrophysical and collider searches, as well as UV model building, a consistent setup of effective field theories for the different energy scales is necessary.

I will present our work on the explicit connection between these energy scales, from the UV down to the nuclear scale. I will, in particular, discuss previously neglected chiral effects that can change the cross section by more than an order of magnitude.

Author: BROD, Joachim (TU Dortmund)

Presenter: BROD, Joachim (TU Dortmund)

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