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Reducing the solar neutrino background in dark matter searches using polarized helium-3

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Future dark matter detectors plan to have sensitivities such that solar neutrinos will start to become a problematic background. In this work, we show that a polarized helium-3 detector would, in principle, be able to eliminate 98% of these events when the orientation of the polarization axis is antiparallel to the direction of the Sun. We comment on the possible improvement in sensitivity of dark matter direct detection experiments due to this effect and the feasibility of building such a detector.

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