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Solar Neutrinos in Cryogenic Detectors

Friday, 21 June 2024 17:30 (2 hours)

Coherent elastic neutrino-nucleus scattering (CEνNS) poses an irreducible background for direct dark matter search experiments. In this work we discuss the scenario of low-threshold, high-exposure cryogenic solid state experiments optimized for the search of low-mass dark matter. We show that experiments with energy thresholds of $\mathcal{O}$(eV) and exposures of $\mathcal{O}$(tonne-years), using $CaWO_4$ or Al_2O_3 targets, have discovery potential for dark matter interaction cross sections below the conventional definition of the neutrino floor. Furthermore, in absence of any dark matter events, we treat solar neutrinos as the main signal of interest. We show that sensitivity to the flux of pp and ^{7}Be neutrinos, as well as CNO neutrinos can be achieved.

Poster prize

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