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Searches for Light Dark Matter with DarkSide-20k and DarkSide-LowMass

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Liquid argon, with its relatively light atomic mass and low energy threshold in the ionisation channel, has proven to be a promising target medium for the direct detection of dark matter candidates with masses below 10 GeV/c^2.

The Global Argon Dark Matter Collaboration (GADMC) is currently constructing the DarkSide-20k detector, which is primarily focused on high mass WIMP detection. We propose a new detector, DarkSide-LowMass, building on the experience from DarkSide-50 and the ongoing development of DarkSide-20k. DarkSide-LowMass is specifically optimised for low-threshold, electron-counting measurements, and its sensitivity to light dark matter is explored under various energy thresholds and background conditions.

In this talk, I will present the latest developments in the search for low-mass dark matter using the proposed DarkSide-LowMass detector, along with recent sensitivity studies for light dark matter detection with DarkSide-20k.

Collaboration you are representing

DarkSide-20k

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