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Boosted Dark Matter Directionality in Large Liquid Scintillators

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We propose detecting dark matter by using neutron capture events induced by Cosmic-Ray Boosted Dark Matter (BDM)-nucleon scattering. This approach leverages the directional preference of BDM originating from the Galactic Centre to suppress the background. We demonstrate that it is possible to statistically reconstruct the BDM direction through neutron capture events. Large liquid scintillator detectors with excellent energy and vertex resolution are well-suited for this approach. By incorporating directionality reconstruction, this method can improve constraints on DM-nucleon interactions.

Collaboration you are representing

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