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Boosted Dark Matter from Supernova

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Core-collapse supernovae (SNe), among the universe's most energetic events, offer a novel window into the dark sector by potentially producing a flux of boosted dark matter (BDM). This study investigates the detectability of such supernova-induced BDM, focusing on fermionic BDM candidates that interact via a dark gauge boson portal. We examine the expected BDM flux at Earth, considering contributions from both the diffuse background of all galactic supernovae and potentially strong signals from individual nearby events.

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