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Neutrinos from the Sun can discover dark matter-electron scattering

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Dark matter (DM) particles can get captured inside the Sun due to DM-electron interaction. As the number of these captured DM particles increases, they can annihilate and produce different Standard Model (SM) final states. Neutrinos and anti-neutrinos produced from these final states can escape the Sun and reach ground-based neutrino telescopes. The latest data-sets from IceCube and DeepCore show no such excess of high energy neutrinos from the solar direction. Using these data-sets, we put stringent constraints on DM-electron scattering cross sections in the DM mass range 10 GeV to 10^5 GeV. Thus, near-future observations of the Sun by neutrino telescopes can potentially discover DM-electron interaction.

Track type

Dark Matter

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