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Indirect search for dark matter with neutrino telescopes

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Extraterrestrial messengers can probe the presence of dark matter in the Milky Way and beyond. Among others, sizable anomalous fluxes of high-energy neutrinos expected from pair annihilation and decay of dark matter particles, giving neutrino telescopes a role in indirect searches. The energy features and space distribution of dark matter overdensity regions are used to characterise a signal to be discriminated from an atmospheric neutrino background. Other than in the main gravitational reservoir at the Galactic Centre, dark matter can be trapped in the Sun by losing energy in interaction with baryons. Its annihilation into neutrinos offers a unique opportunity when searching for a signal from the Sun, for which neutrino telescopes have almost no competitors. This lecture gives a review of experimental methods and results on the cross section for dark matter pair annihilation and dark matter-nucleon scattering obtained with neutrino telescope data.

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