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## Search for interactions of dark matter with high-energy neutrinos from extragalactic sources using the IceCube Neutrino Observatory

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The recent observation of neutrino signals from extragalactic sources, TXS 0506+056 and NGC 1068, provide opportunities for searching for rare neutrino interactions. One scenario of interest is the interaction between neutrinos and dark matter (DM). Assuming dark matter is a new elementary particle described by the extensions of the Standard Model of particle physics (SM), a direct interface between SM particles and DM particles can exist. From these interactions with DM, the flux of high-energy neutrinos from extragalactic sources could be suppressed at specific energy ranges leading to a distortion of the neutrino spectrum. For a certain range of dark matter parameters, distorted neutrino spectra can be measured on Earth with large neutrino telescopes such as the IceCube Neutrino Telescope. An analysis has been performed to search for interactions of high-energy neutrinos from the IceCube-identified astrophysical neutrino sources with the DM in sub-GeV masses. Two benchmark interaction models assuming different mediators are introduced, and 10.4 years of the through-going track-like neutrino events from the Northern Sky are used. This contribution presents the first experimental search results for the interaction of DM and high-energy neutrinos from distant sources.

## **Collaboration(s)**

The IceCube Collaboration

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