

A Search for Neutrinos From Decaying Dark Matter in Galaxy Clusters and Galaxies with IceCube

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When the lifetime of dark matter is much longer than the age of the Universe, the current abundance of dark matter can be explained with non-thermal, superheavy dark matter models. In these scenarios, dark matter decays can produce highly energetic neutrinos, along with other Standard Model particles. To date, the IceCube Neutrino Observatory is the world's largest neutrino telescope, located at the geographic South Pole. In 2013, the IceCube collaboration reported the first observation of high-energy astrophysical neutrinos. Since then, IceCube has collected a large amount of astrophysical neutrino data with energies up to tens of PeV, allowing us to probe the superheavy dark matter models using neutrinos. We search the IceCube data for neutrinos from decaying dark matter in galaxy clusters and galaxies. The targeted dark matter masses range from 10 TeV to 10 PeV, and the sources are stacked to optimize the sensitivity of the analysis. In this contribution, we present the method and sensitivities of the analysis.

Keywords

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Collaboration

IceCube

other Collaboration

Subcategory

Experimental Methods & Instrumentation

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