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Searching for neutrinos from dark matter annihilations in (dwarf) galaxies and clusters with IceCube

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In many models, the self-annihilation of dark matter particles will create neutrinos which can be detected on Earth. An excess flux of these neutrinos is expected from regions of increased dark matter density, like (dwarf) galaxies and galaxy clusters. The IceCube neutrino observatory, a cubic-kilometer neutrino detector at the South Pole, is capable of detecting neutrinos down to energies of the order of 10 GeV and is therefore able to constrain the self-annihilation cross section as a function of the mass of the dark matter particle. This work will present the analysis method and results obtained from the first search for dark matter annihilations in (dwarf) galaxies and galaxy clusters with the complete IceCube detector.

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