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Search for dark matter annihilation in the center of the Earth with 8 years of IceCube data

Dark matter particles in the galactic halo can scatter off particles in celestial bodies such as stars or planets, lose energy and become gravitationally trapped. In this process, an accumulation of dark matter in the center of celestial bodies is expected, for example, at the center of the Earth. If dark matter self-annihilates into Standard Model particles, the end products of these annihilations include neutrinos. The IceCube Neutrino Observatory at the geographic South Pole can detect the resulting flux of neutrinos originating from dark matter annihilation in the center of the Earth. A search for this signal has been performed using 8 years of IceCube data and probing different annihilation channels. Here the new analysis is presented, showing significant sensitivity improvements with respect to the previous analyses from IceCube and other experiments.

Mini-abstract

The analysis produces significant sensitivity improvements with respect to past analyses.

Experiment/Collaboration

IceCube Collaboration

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