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Improved methods for solar Dark Matter searches with the IceCube neutrino telescope

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Gravitationally captured Dark Matter in the form of Weakly Interacting Massive Particles (WIMPs) can annihilate into standard-model particles, such as neutrinos. The IceCube neutrino detector at the South Pole is an excellent instrument to search for such a neutrino signal from the Sun. We present an alternative analysis approach which improves on previous ones, in background-dominated regions in particular. Newly developed techniques based on hit clustering and hit-based vetos allow a more accurate reconstruction and identification of events in the detector and thereby a stronger rejection of background. These techniques are applicable also to other IceCube analyses and event filters.

Collaboration

IceCube

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