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

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Dark matter (DM) particles may scatter onto nuclei in the vicinity of the Earth, lose velocity and become gravitationally trapped in the center of the planet. If the DM can self-annihilate to standard model particles, an accumulation of DM can trigger this process. Primary annihilation products will produce a flux of neutrinos that can be detected by the IceCube Neutrino Observatory at the Geographical South Pole.

The Earth is a unique source to probe the spin-independent DM-nucleon cross-section, because of the relative abundances of heavy elements.

A dedicated event selection has been developed and the latest sensitivities for three channels ($\chi\chi \rightarrow \tau^{+}\tau^{-} / W^{+}W^{-} / \quad b\bar{b}$) and DM masses from 10 GeV to 10 TeV are presented in this work.

Sensitivities are promising very competitive results with respect to past analyses on the same subject, world leading for masses from ~100 GeV.