Contribution ID: **639** Type: **Poster**

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

Friday 16 July 2021 19:18 (12 minutes)

The nature of Dark Matter remains one of the most important unresolved questions of fundamental physics. Many models, including the Weakly Interacting Massive Particles (WIMPs), assume Dark Matter to be a particle and predict a weak coupling with Standard Model matter. If Dark Matter particles can scatter off nuclei in the vicinity of a massive object, such as a star or a planet, they may lose kinetic energy and become gravitationally trapped in the center of such objects, including Earth. As Dark Matter accumulates in the center of the Earth, self-annihilation of WIMPs into Standard Model particles can result in an excess of neutrinos which are detectable at the IceCube Neutrino Observatory, situated at the geographic South Pole. A search for excess neutrinos from these annihilations has been performed on 8 years of IceCube data, and results have been interpreted in the context of a number of WIMP annihilation channels (χχ→τ+τ-/W+W-/bb̄) and masses ranging from 10 GeV to 10 TeV. We present the latest results from this analysis and compare the outcome with previous analyses by IceCube and other experiments, showing competitive results, which are even world-leading in some parts of the phase space.

Keywords

dark matter; WIMPs; Earth; neutrinos; IceCube; scattering; self-annihilation;

Collaboration

IceCube

other Collaboration

Subcategory

Experimental Results

Primary author: RENZI, Giovanni (Université Libre de Bruxelles)

Presenter: RENZI, Giovanni (Université Libre de Bruxelles)

Session Classification: Discussion

Track Classification: Scientific Field: DM | Dark Matter