Contribution ID: **491** Type: **Poster**

Searching for Dark Matter Neutrino Scattering in the Galactic Centre with IceCube

Friday 16 July 2021 19:18 (12 minutes)

While there is evidence for the existence of dark matter, its properties have yet to be discovered. Simultaneously, the nature of high-energy astrophysical neutrinos detected by IceCube remains unresolved. If dark matter and neutrinos are coupled to each other, they may exhibit a non-zero elastic scattering cross section. Such an interaction between an isotropic extragalactic neutrino flux and dark matter would be concentrated in the Galactic Centre, where the dark matter column density is greatest. This scattering would attenuate the flux of high-energy neutrinos, which could be observed in IceCube. Using the seven-year Medium Energy Starting Events (MESE), we perform an unbinned likelihood analysis, searching for a signal based on four possible DM-neutrino interaction scenarios. We search for a suppression of the high-energy astrophysical neutrino flux in the direction of the Galactic Centre, and compare these constraints to complementary low-energy information from large scale structure surveys and the cosmic microwave background.

Keywords

Dark matter, neutrino, scattering, bayesian analysis, emcee, markov chain monte carlo,

Collaboration

IceCube

other Collaboration

Subcategory

Theoretical Results

Primary authors: MCMULLEN, Adam; VINCENT, Aaron (Queen's University and Perimeter Institute for Theoretical Physics); ARGUELLES, Carlos (Harvard University)

Presenter: MCMULLEN, Adam

Session Classification: Discussion

Track Classification: Scientific Field: DM | Dark Matter