

Low energy IceCube data and Dark Matter

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IceCube evidence for extraterrestrial neutrinos poses the intriguing puzzle concerning their origin. The 4-years IceCube HESE data show a 2-sigma excess at low energy (60 - 100 TeV) with respect to an astrophysical power-law with spectral index -2, predicted by the standard Fermi mechanism. Moreover, the IceCube MESE data exhibit an excess located in the same energy range in both southern and northern hemispheres. A statistical analysis on the neutrino energy spectrum and on the angular distribution of neutrino arrival directions is performed in order to shed light on the origin of such an excess. The scenario of a dark matter signal is studied and constrained. A combined analysis of different data samples and a multi-messenger analysis can confirm the presence of such a low energy excess and its explanation in terms of dark matter.

Summary

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