

The high energy neutrino events at IceCube

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IceCube has published the observation of 37 events of TeV-PeV energies. We show that the angular distribution, the spectrum and the muon to shower ratio of these events can not be explained by atmospheric neutrinos. On the other hand, IceCube's interpretation in terms of a diffuse astrophysical flux with E^{-2} spectrum implies events at the Glashow resonance (6.4 PeV) that have not been observed yet. We obtain an excellent fit if cosmogenic neutrinos of ultrahigh energy experience new neutral current interactions that are very soft, with only a small fraction of energy being transferred to the target nucleon. We discuss models that may provide cross sections with the precise features required to fit the data.

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