ID de Contribution: **15** Type: **Ordinary**

A new physics interpretation of the IceCube data

lundi 16 mars 2015 09:35 (15 minutes)

IceCube has recently published the observation of 37 events of TeV-PeV energies. It is apparent that their angular distribution, spectrum and muon to shower ratio can not be explained assuming standard interactions of atmospheric neutrinos. We obtain an excellent fit, however, if a diffuse flux of ultrahigh energy (cosmogenic) neutrinos experiences collisions where only a small fraction of the energy is transferred to the target nucleon. We show that consistent models of TeV gravity provide cross sections with these precise features. An increased statistics could clearly distinguish our interpretation from the one assumed by IceCube (a diffuse flux of astrophysical neutrinos with a $\propto E^{-2}$ spectrum).

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Classification de Session: VHE and Dark Matter

Classification de thématique: Theory