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# Galactic contribution to the IceCube astrophysical neutrino signal

*Saturday 1 August 2015 15:30 (1 hour)*

Neutrino telescope IceCube has recently discovered astrophysical neutrinos with energies in the TeV-PeV range. We use the data of Fermi gamma-ray telescope to demonstrate that the neutrino signal has significant contribution from the Milky Way galaxy. Matching the gamma-ray and neutrino spectra we find that TeV-PeV Galactic cosmic rays form a powerlaw spectrum with the slope $p \simeq 2.5$. This spectral slope is harder than previously thought, but it is compatible with that of the locally observed spectra of cosmic ray nuclei in the same energy range. It is also consistent with the theoretical model of cosmic ray injection by diffusive shock acceleration followed by escape through the Galactic magnetic field with Kolmogorov turbulence. The locally observed cosmic ray proton spectrum is softer than the average Galactic cosmic ray spectrum. This could be explained by variability of injection of cosmic rays in the local interstellar medium over the past $10^7$ yr.

## Collaboration

– not specified –

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205

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