

# Large scale anisotropy of cosmic rays and directional neutrino signals from Galactic sources

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Quite recently the IceCube Collaboration has reported an observation of 26 neutrino candidates above  $\sim 50$  TeV. Including the two  $\sim 1$  PeV neutrinos reported earlier in 2013, these 28 events constitute a  $4.3\sigma$  excess compared to the atmospheric background. In this talk, I will explore the compatibility between the data and an unbroken power-law neutrino spectrum, for various values of spectral index  $\Gamma \geq 2$ . I will show that  $\Gamma \sim 2.3$  is consistent at the  $\sim 1.5\sigma$  level with the observed events up to 1 PeV and to the null observation of events at higher energies. I will then assume that the sources of this unbroken spectrum are Galactic, and deduce (i) an energy-transfer fraction from parent protons to pions, and (ii) a discriminating test between the two most popular models (“dip” and “ankle”) for the Galactic to extragalactic cosmic-ray transition. Future IceCube data will test the unbroken power law hypothesis, and, if the neutrino sources are Galactic, discriminate between the “dip” and “ankle” models of Galactic to extragalactic transition.

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