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Anisotropy of TeV cosmic rays in IceCube and IceTop

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The main background to the search for astrophysical neutrino sources with large volume telescopes is due to the muon component of extensive air showers produced in the interaction of high-energy cosmic rays with the Earth's atmosphere. This background, however a nuisance for neutrino-event searches, can be used to explore certain aspects of cosmic ray physics. The high rate of muon events in large neutrino detectors provides a high-statistics data sample that can be used to look for an anisotropy in the arrival directions of the parent cosmic ray particles at the per-mille level.

I will report on the observation of anisotropy in the cosmic ray data collected with the IceCube neutrino telescope in the 20-400 TeV energy range at multiple angular scales. New data from the IceTop air shower array, located on the ice surface above IceCube, shows an anisotropy that is consistent with the high-energy IceCube results. The sensitivity of IceTop to all the components of the extensive air shower will allow us to explore in more detail the characteristics of the primary cosmic rays associated with the observed anisotropy.

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