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Anisotropy in Cosmic Ray Arrival Directions Using IceCube and IceTop

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We provide an update on the continued observation of anisotropy in the arrival direction distribution of cosmic rays in the southern hemisphere. The IceCube neutrino observatory recorded more than 250 billion events between May 2009 and May 2014. Subtracting dipole and quadrupole fit maps, we can use these increased statistics to see significant small-scale structure that approaches our median angular resolution of 3° . The expanded dataset also allows for a more detailed study of the anisotropy for various cosmic-ray median energies. The large-scale structure observed at median eneries near 20 TeV appears to shift around 100 TeV, with the high-energy skymap showing a strong deficit also present in IceTop maps of similar energies.

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