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Anisotropy studies of ultra-high-energy cosmic rays measured at the Pierre Auger Observatory

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Measurements of anisotropic arrival directions for ultra-high-energy cosmic rays provide important information for identifying their sources. On large scales, cosmic rays with energies above 8 EeV reveal a dipolar flux modulation in right ascension with a significance of more than 5σ , with the dipole direction pointing 125° away from the Galactic center. This observation is explained by extragalactic origins. Also, model-independent searches for small- and intermediate-scale overdensities have been performed in order to unveil astrophysically interesting regions. On these scales, no significant features could be detected. However, intermediate-scale analyses comparing the measured arrival directions with potential source catalogs show indications for a coincidence of the measured arrival directions with catalogs of starburst galaxies and the Centaurus A region.

In this contribution, an overview of the studies regarding anisotropies of the arrival directions of ultra-high-energy cosmic rays measured at the Pierre Auger Observatory on different angular scales is presented and the current results are discussed.

Submitted on behalf of a Collaboration?

Yes

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