

UHECR arrival directions in the latest data from the original Auger and TA surface detectors and nearby galaxies

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The distribution of ultra-high-energy cosmic-ray arrival directions appears to be nearly isotropic except for a dipole moment of order $6 \times (E/10 \text{ EeV})$ per cent. Nonetheless, at the highest energies, as the number of possible candidate sources within the propagation horizon and the magnetic deflections both shrink, smaller-scale anisotropies might be expected to emerge. On the other hand, the flux suppression reduces the statistics available for searching for such anisotropies. In this work, we consider two different lists of candidate sources: a sample of nearby starburst galaxies and the 2MRS catalog tracing stellar mass within 250 Mpc.

We combine surface-detector data collected at the Pierre Auger Observatory and the Telescope Array until 2019, and use them to test models in which UHECRs comprise an isotropic background and a foreground originating from the candidate sources and randomly deflected by magnetic fields. The free parameters of these models are the energy threshold, the signal fraction, and the search angular scale. The results will be presented at the conference.

Keywords

UHECR; arrival directions; anisotropies; starburst galaxies; galaxies

Collaboration

Auger

other Collaboration

Telescope Array

Subcategory

Experimental Results

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