

# Latest Results on Ultra-High Energy Cosmic Rays from the Pierre Auger Observatory

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Our understanding of the characteristics of the highest energy cosmic rays has improved enormously with the operation of the Pierre Auger Observatory, situated in western Argentina. Its extremely large collecting area (3000 square kilometres), coupled with the layers of cross-checks provided by two fundamentally different detection techniques (surface and fluorescence detectors) has led to large numbers of events at high energies with well-understood measurement uncertainties. In this talk I will describe the state of our understanding of the highest energy cosmic rays with a variety of results from the Auger Observatory, including new features of the energy spectrum, and strong hints of directional anisotropy at the highest energies. This time marks the end of "Phase 1" of the life of the experiment, as we move to the completion of a major upgrade known as AugerPrime.

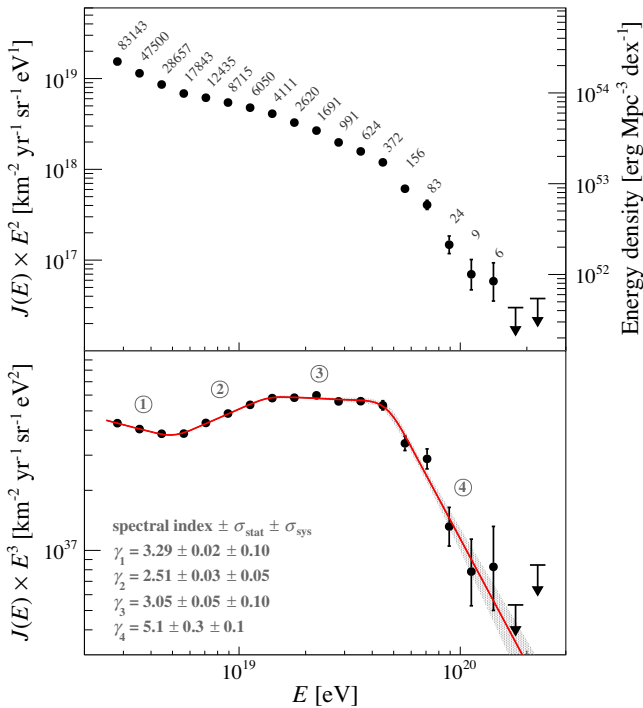


Fig. 1: Energy spectrum at the highest energies [1].

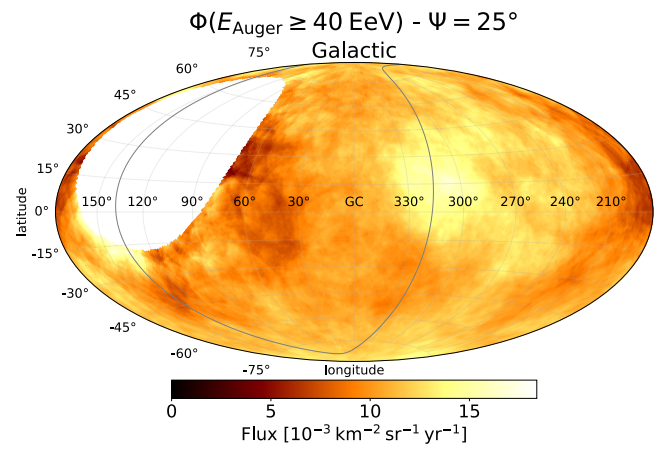


Fig 2.: Arrival direction map for cosmic ray energies greater than  $4 \times 10^{19} \text{ eV}$  [2].

[1] A. Aab et al., *Physical Review Lett.* **125** 121106 (2020).

[2] A. Aab et al., *Astrophysical J. Suppl.* (in press) (2022).