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Large-scale anisotropies of ultra-high-energy cosmic rays measured at the Pierre Auger Observatory

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Measurements of anisotropies in the arrival directions of ultra-high-energy cosmic rays are crucial to pinpoint their sources, which are yet to be discovered. A dipolar anisotropy in right ascension above 8 EeV has been detected by the Pierre Auger Observatory with a significance of 6.9σ . The direction of the dipole suggests an extragalactic origin of ultra-high-energy cosmic rays above those energies. In this contribution, we provide an overview of the studies on large-scale anisotropies in the arrival directions of ultra-high-energy cosmic rays measured at the Pierre Auger Observatory with energy thresholds from ~ 0.03 EeV up to 32 EeV and we present and discuss the recent results achieved with the latest available dataset, which includes 19 years of operations - resulting in a total exposure of $123,000 \text{ km}^2 \text{ sr yr}$.

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