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Mass composition analysis with the Pierre Auger Observatory: results and prospects

Thursday 12 October 2023 11:45 (25 minutes)

The Pierre Auger Observatory is the largest facility in the world devoted to the study of ultra-high-energy cosmic rays (UHERCs). Its hybrid design provides the ability to measure multiple mass-sensitive observables simultaneously as well as a calorimetric determination of the primary energy with unprecedented precision. With the completion of its Phase I, and after nearly 20 years of data collection, the Observatory has accumulated the world's largest exposure to UHERCs. In particular, mass-composition studies derived from data have played an important role in disentangling the origin and propagation of UHERCs. In this presentation, we provide an overview of the principal results of the composition analysis for energies from 0.1 EeV up to 100 EeV using data obtained by the fluorescence, surface, and radio detectors. Specific results are presented on mass trends from surface detector risetimes and the correlation between X_{max} and signal amplitudes at the ground. Finally, future composition measurements will be discussed in the context of AugerPrime, the upgrade of the Observatory that started collecting data in 2022.

Is this abstract from experiment?

Yes

Name of experiment and experimental site

Pierre Auger Observatory, Mendoza, Argentina

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

No

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