

Abstract

for the

13th Cosmic-Ray International Studies and Multi-messenger Astroparticle Conference

CRIS-MAC 2024

20 years of Arrival Direction Studies at the Pierre Auger Observatory

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The Pierre Auger Observatory is the largest detector for ultrahigh-energy astroparticles in the world. Located in the Argentinean pampa, it observes cosmic rays from approximately 80% of the sky, including the Galactic Center. The Observatory is sensitive to cosmic rays at energies of approximately 10 PeV up to 100 EeV, and has made significant discoveries in cosmic-ray research; for example, the discovery of a modulation in right ascension above 8 EeV with a current significance of 6.9σ confidence level, suggesting an extragalactic origin of ultrahigh-energy cosmic rays. Furthermore, searches for localized and intermediate-scale excesses are ongoing.

We present latest results of searches for anisotropy in the Auger data, and we outline future prospects utilizing novel analysis methods and Phase2 of the Observatory.