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Anisotropy searches at the highest energy cosmic rays with the Pierre Auger Observatory

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The Pierre Auger Observatory is the largest and most important hybrid detector designed to investigate the origin and the nature of ultra-high-energy cosmic rays. The Observatory has been continuously operated since 2004, and has achieved a total detection exposure of approximately 122000 km2sr yr. During over 18 years of research, the Pierre Auger Observatory has collected a huge amount of high-quality data, which gave us knowledge about the origin of the most energetic particles ever observed in the universe. In this contribution, we will
present the main and most recent results of the arrival direction studies obtained with the Auger Phase I dataset, i.e., the one before the installation of the upgrade AugerPrime, currently under completion. These include the searches for possible sources from small to large scale: studies of dipolar and multipolar anisotropies, the search for excesses of the order of the scale of tens of degrees at the highest energies, and the search for excesses of the order of the angular resolution (~ 1°) to look for neutral particles.

Internet talk

Yes

Is this an abstract from experimental collaboration?

Yes

Name of experiment and experimental site

The Pierre Auger Observatory

Is the speaker for that presentation defined?

Yes

Details

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