

Radio detection and interferometry at the Pierre Auger Observatory

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High-energy cosmic rays constantly bombard Earth's atmosphere from outer space, initiating particle cascades called air showers. The Pierre Auger Observatory is the largest observatory in the world dedicated to detecting these air showers. It consists of more than 1,600 surface detectors distributed over an area of 3,000 km². Recently, the surface detectors underwent a major upgrade, called AugerPrime, which enables, among other things, the detection of radio signals emitted by the air showers. Detection with radio waves opens up the possibility of using interferometry to reconstruct key parameters of the air showers with high precision, such as the shower axis and the depth of the shower maximum, X_{max} . Currently, the observatory is being prepared to implement this technique. In this presentation, we will show the AugerPrime upgrade and highlight the interferometry technique, as well as the plans and efforts that have been made to implement it in the Pierre Auger Observatory.

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