

Results from the Auger Engineering Radio Array: investigating the elements making up ultra-high energy cosmic rays.

Wednesday, 17 May 2023 13:15 (1 minute)

The Auger Engineering Radio Array (AERA) is an array of 153 radio antennas spanning an area of 17 km², currently the largest of its kind, that probes the nature of ultra-high energy cosmic rays at energies around the transition from Galactic to extragalactic origin. It measures the MHz radio emission of extensive air showers produced by cosmic rays hitting our atmosphere. The elemental composition of cosmic rays is a crucial piece of information in determining what the sources of cosmic rays are and how cosmic rays are accelerated. We have measured the composition and show our method to be compatible and competitive with the established fluorescence method, opening up a new window to investigate the sources of cosmic rays at the highest energies and the interactions of particles at energies beyond LHC energies.

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Session Classification: Poster Prizes & closing