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Cosmic-ray mass composition with LOFAR

Thursday 9 June 2016 09:00 (30 minutes)

In the dense core of LOFAR individual air showers are detected by hundreds of dipole antennas simultaneously. We reconstruct Xmax by using a hybrid technique that combines a two-dimensional fit of the radio profile to CoREAS simulations and a one-dimensional fit of the particle density distribution. For high-quality detections, the statistical uncertainty on Xmax is <20 g/cm^2.

We present results of cosmic-ray mass analysis in the energy regime of 10^{17} - $10^{17.5}$ eV. This range is of particular interest as it may harbor the transition from a Galactic to an extragalactic origin of cosmic rays.

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