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Measuring the cosmic ray mass composition with LOFAR

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The LOFAR radio telescope measures the radio emission from air showers with unprecedented precision. In the dense core individual air showers are detected by hundreds of dipole antennas. The complicated radio pattern on the ground is accurately reproduced by modern radio simulation codes and contains information about the longitudinal shower development. With a hybrid reconstruction technique, we measure the depth of the shower maximum with an accuracy of <20 g/cm^2.
We will present the latest LOFAR results of cosmic-ray mass analysis in the energy regime of 10^{17} eV to 10^{18} eV. This range is of particular interest as it may harbor the transition from a Galactic to an extragalactic origin of cosmic rays.

Collaboration

– not specified –

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