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New results of the digital radio interferometer LOPES

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LOPES was a digital, phased antenna array located at the site of KASCADE-Grande in Karlsruhe, Germany. Triggered by the particle-detector array of KASCADE, LOPES measured the radio signal of air showers. By an interferometric, offline combination of the signals measured by different antennas, LOPES was able to enhance the signal-to-noise ratio. This lowered the detection threshold significantly close to 0.1 EeV, despite the high human-made radio background at the experimental site. While LOPES already is dismantled, data analysis is still continued. Recent progress concerns the amplitude calibration of the existing data, and the incorporation of detector effects in air-shower simulations. This enables a better comparison of measurements with theoretical predictions. Moreover, we will present and compare the latest results on the reconstruction of the energy and the shower maximum based on two different methods: the reconstruction of the hyperbolic radio wavefront relying on time measurements, and the reconstruction of the lateral distribution relying on amplitude measurements.

Collaboration

LOPES

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