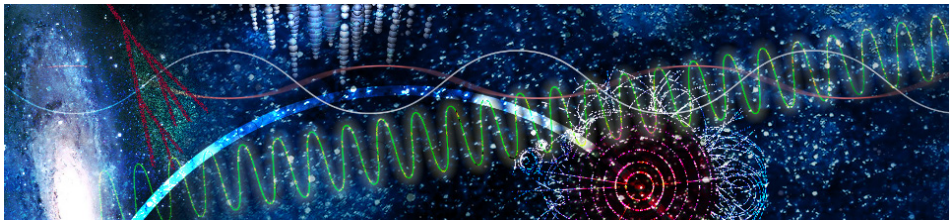

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A Novel Tool for the Absolute End-to-End Calibration of Fluorescence Telescopes –The XY-Scanner

At the highest energies, it is not feasible to measure cosmic rays directly and therefore we measure cosmic rays indirectly by observing a cascade of secondary particles (air shower) induced by interactions of the primary cosmic ray with the atmosphere of the Earth.
The Pierre Auger Observatory uses 27 large-aperture wide-angle Schmidt telescopes to measure the longitudinal profile of air showers using the air-fluorescence technique. In the past, these telescopes were absolutely calibrated by illuminating the whole aperture with a uniform, large-diameter light source.
This absolute calibration was performed roughly once every three years, while a relative calibration was performed on a nightly basis.
In this contribution, a new technique for the absolute end-to-end calibration of the fluorescence telescopes is presented.
For this technique, a portable calibrated light source mounted on a rail system is moved across the aperture of each telescope, instead of illuminating the whole aperture at once.
A dedicated setup for the absolute calibration of the light source has been built, which uses a combination of NIST traceable photodiodes to measure the mean intensity and PMTs for pulse-to-pulse stability tracking.
The analysis of the readout of the telescope PMT-camera at each position of the light source together with the knowledge of the light source emission provides an absolute end-to-end calibration of the telescope.
We will give a brief overview of this novel calibration method and its current status, as well as preliminary results from the measurement campaigns performed so far.

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