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Measurement of the Cosmic Ray Spectrum with the Pierre Auger Observatory's Surface Detector

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In this study, we measured the cosmic ray energy spectrum at the Pierre Auger Observatory using a surface detector array composed of Water-Cherenkov detectors, with the energy scale calibrated by a fluorescence detector. This contribution presents the spectrum measured with the 433 m array, which lowers the energy threshold from previous measurements to 63 PeV, enabling the characterization of the flux steepening around 230 PeV, a feature known as the “second knee.”

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