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Long-term scaler and histogram analysis

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The low energy modes of the Surface Detector array of the Pierre Auger Observatory record variations in the flux of low energy secondary particles with extreme detail. In these modes, the rate of signals above a very low threshold (scalers) and the calibration charge histograms of the individual pulses detected by each water-Cherenkov detector are used. Previous work has studied the flux of galactic cosmic rays on short and intermediate time scales (i.e. from minutes to weeks) using these low energy modes. In this work, after including a long-term correction to the response of the detectors, we present the first long-term analysis of the flux of cosmic rays using scalars and the calibration histograms. We show its sensitivity to the solar cycle variation and its relation to the solar modulation of cosmic rays for a 9-year period of the last solar cycle.

Collaboration

Pierre Auger

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