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VERITAS throughput calibration

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Imaging Air Cherenkov Telescopes are continuously exposed to varying weather conditions that have short and long-term effects on their response to Cherenkov light from extensive air showers. This work presents the implementation of a throughput calibration method for the VERITAS telescopes taking into account changes in the optical response and detector performance over time. Different methods to measure the total throughput of the instrument, sum of optical response and detector performance, are discussed as well as the effect of its evolution on energy thresholds, effective collection areas, and energy reconstruction. The application of this calibration in the VERITAS reconstruction process is discussed, including the validation using Monte Carlo simulations and observations of the Crab Nebula

Keywords

Cherenkov light, throughput measurements, signal calibration, instrument response functions, VERITAS, photodetection

Collaboration

VERITAS

other Collaboration

Subcategory

Experimental Methods & Instrumentation

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