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Cosmic Ray Shower Profile Track Finding for Telescope Array Fluorescence Detectors

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A simple cosmic ray track finding pattern recognition analysis (PRA) method for fluorescence detectors (FD) has been developed which significantly improves X_{\max} resolution and its dependence on energy. Events which have a clear rise and fall in the FD view contain information on X_{\max} that can be reliably reconstructed. Shower maximum must be extrapolated for events with X_{\max} outside the field of view of the detector, which creates a systematic dependence on the fitting function. The PRA method is a model and detector independent approach to removing these events, by fitting shower profiles to a set of triangles and applying limits on the allowable geometry.

Collaboration

Telescope Array

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