Contribution ID: **506** Type: **Poster**

The atmospheric transparency of Telescope Array observation site by the CLF

Friday 16 July 2021 19:18 (12 minutes)

The Telescope Array (TA) experiment continues to observe Ultra High Energy Cosmic Rays (UHECRs) both with its original TA detectors as well as with the new TAx4 expansion detectors. These observations employ Fluorescence Detectors (FDs) to capture the air shower induced by the primary UHECRs. The FD observes fluorescence light emitted from atmospheric nitrogen molecules excited by air shower particles. The observation of the FD extends over tens of kilometers, and the fluorescence light is attenuated by scattering from atmospheric molecules and aerosols during the propagation process. Seasonal dependence was found when assessing the attenuation of fluorescence by aerosols. We also captured the weather characteristics. We report on the effect of aerosols on the atmospheric transparency of the TA sites.

Keywords

Atmospheric transparency, Calibration, Laser

Collaboration

Telescope Array

other Collaboration

Subcategory

Experimental Methods & Instrumentation

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Session Classification: Discussion

Track Classification: Scientific Field: CRI | Cosmic Ray Indirect