

On The Importance Of The Electrical And High-Energy Processes Monitoring In Troposphere

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The upcoming Cherenkov Telescope Array (CTA) project is expected to provide unprecedented sensitivity in the low-energy ($< \sim 100$ GeV) range for Cherenkov telescopes. In order to fully exploit the potential of the telescope systems it is meaningful to look for ways to further improve the available analysis methods and include possible biasness of the Cherenkov images due to the influence of the atmospheric electric processes. A LIDAR system for the continuous monitoring of the troposphere above the CTA site is proposed as a solution of mentioned above problem. The reflected from clouds return profiles will be sensitive to the polarization of the elastic backscattered signal. At present, the system is being tuned for measuring vertical atmospheric backscatter profiles of aerosols and hydrometeors, analyze the depolarization ratio of elastic backscattered laser beams and investigate the influence of external factors on the beam polarization. In this paper, we describe the first measurements of polarization separated LIDAR return profiles and depolarization ratio profile in the atmosphere and clouds by means of our LIDAR system.

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