

The end-to-end Calibration of LHAASO-WFCTA based on Nitrogen Laser System

The Wide Field-of-view Cherenkov Telescope Array (WFCTA) of Large High Altitude Air Shower Observatory (LHAASO) is designed to perform nearly calorimetric measurements of extensive air showers induced by cosmic rays with energies between 10^{13} eV - 10^{18} eV. In order to achieve an end-to-end calibration of WFCTA and investigate properties of the atmospheric aerosol, five laser systems have been operated at LHAASO, including 3 nitrogen and 2 Nd:YAG laser devices. This work presents an overview of the laser signals received by the telescope and the monitoring of geometric information related to nitrogen laser events. Additionally, it introduces the simulation method for the LHAASO-WFCTA laser calibration system. Through prolonged and stable operation, a substantial amount of data has been accumulated, requiring further data analysis for the calibration of the telescope's absolute gain and measurement of aerosol extinction coefficients.

Primary author: SUN, Qinning

Co-authors: Mrs ZHU, Fengrong; Mr LIU, Hu; Mr ZHANG, Shoushan; Mr MIN, Zhen

Presenter: SUN, Qinning