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## Laser Calibration of the Air Fluorescence Yield Experiment AIRLIGHT

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### Abstract content

The relative fluorescence efficiency for MeV electrons in nitrogen and air has been measured with high precision by the AIRLIGHT experiment. The range from 300nm to 400nm was spanned using a 300nm to 400nm broad-band (M-UG6) filter and 5 narrow-band filters. Fluorescence photons were detected by seven 2" PMTs in coincidence with the signals of a plastic scintillator which stopped the collimated beam from a  $^{90}\text{Sr}$  electron source. The main source of errors for the absolute scale of the fluorescence yield is the uncertainty of the efficiency of the PMTs for single photon detection in the UV domain. Therefore, using the original AIRLIGHT set-up, the  $^{90}\text{Sr}$  electron beam was substituted by a pulsed N<sub>2</sub> laser beam with a wavelength of 337nm and similar geometry. The scintillator at the beam stop was replaced by a calibrated power probe to measure the laser intensity in each pulse. The beam intensity is reduced by neutral density filters to achieve count rates from the Rayleigh scattering similar to the fluorescence measurements. A narrow-band filter (337nm), a M-UG6 broad-band filter, and a quartz window are applied to three original PMTs of the fluorescence measurements. The experimental procedures and first results are discussed.

**If this papers is presented for a collaboration, please specify the collaboration**

### Summary

### Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olive, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 5 (HE part 2), pages 905-908

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