



Contribution ID: 507

Type: **Poster contribution**

Automated procedures for the Fluorescence Detector calibration at the Pierre Auger Observatory

Thursday, 30 July 2015 15:30 (1 hour)

The quality of the physics results, derived from the analysis of the data collected at the Pierre Auger Observatory depends heavily on the calibration and monitoring of the components of the detectors. It is crucial to maintain a database containing complete information on the absolute calibration of all photomultipliers and their time evolution. The low rate of the physics events implies that the analysis will have to be made over a long period of operation. This requirement imposes a very organized and reliable data storage and data management strategy, in order to guarantee correct data preservation and high data quality.

The Fluorescence Detector (FD) consists of 27 telescopes with about 12,000 phototubes which have to be calibrated periodically. A special absolute calibration system is used. It is based on a calibrated light source with a diffusive screen, uniformly illuminating photomultipliers of the camera. This absolute calibration is performed every few years, as its use is not compatible with the operation of the detector. To monitor the stability and the time-behavior, another light source system operates every night of data taking. This relative calibration procedure yields more than 2×10^4 raw files each year, about 1 TByte/year.

In this paper we describe a new web-interfaced database architecture to manage, store, produce and analyze FD calibration data. It contains the configuration and operating parameters of the detectors at each instant and other relevant functional parameters that are needed for the analysis or to monitor possible instabilities, used for the early discovery of malfunctioning components. Based on over 10 years of operation, we present results on the long term performance of FD and its dependence on environmental variables. We also report on a check of the absolute calibration values by analyzing the signals left by stars traversing the FD field of view.

Collaboration

Pierre Auger

Registration number following "ICRC2015-I"

463

Primary author: SALINA, Gaetano (Istituto Nazionale di Fisica Nucleare)**Presenter:** SALINA, Gaetano (Istituto Nazionale di Fisica Nucleare)**Session Classification:** Poster 1 CR**Track Classification:** CR-IN