

Contribution ID: 17

Type: **not specified**

Muon density measurements for the light and heavy mass groups of cosmic rays at the KASCADE-Grande observatory

Friday, 8 July 2016 10:20 (30 minutes)

KASCADE-Grande was an air-shower experiment aimed to investigate cosmic rays between 10^{16} and 10^{18} eV. The instrument was located at the site of the Karlsruhe Institute of Technology, Germany at an altitude of 110 m a.s.l. and covered an area of 0.5 km^2 . KASCADE-Grande consisted of several detector systems dedicated to measure different components of the cosmic ray induced air showers, e.g. the muon content ($E_{\text{th}} > 230 \text{ MeV}$) and the number of charged particles ($E_{\text{th}} > 3 \text{ MeV}$) at ground, which are the basis for several energy and composition studies of cosmic rays. In this contribution, using these observables, the KASCADE-Grande data is divided into light and heavy mass groups and their respective muon densities are reconstructed at different zenith angle intervals. The results are compared with the expectations of the post-LHC hadronic-interaction models, EPOS-LHC and QGSJET-II-04, in order to test the validity of the model predictions.

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Session Classification: Tuning Models & Fundamental Interactions