ICRC2015

ICRC
The Astroparticle Physics Conference
34th International Cosmic Ray Conference
July 30 - August 6, 2015
The Hague, The Netherlands

Contribution ID: **972** Type: **Poster contribution**

Local density spectra of electron and muon EAS components in primary energy range from 10^14 to 10^18 eV

Thursday, July 30, 2015 3:30 PM (1 hour)

The system of calibration telescopes (SCT) of the Cherenkov water detector (CWD) NEVOD is used as a shower array. SCT consists of two planes (80 m^2) with 40 scintillation counters (40×20×2 cm^3) in each. One plane is located on the roof of the CWD, and another one on its bottom. The distance between two planes is 9.45 m. Each registration channel of SCT is able to evaluate the counter response amplitude in the range from ~1 to ~50 relativistic particles, which corresponds to electron densities up to ~500 particles/sq.m.
The triggering system identifies three types of events in SCT. The telescope trigger allows selecting muon tracks for calibration of the CWD photomultipliers and scintillation counters themselves. Other two triggers provide registration of the multiparticle events in each plane of SCT. The top plane is used as a detector of electron component of EAS, and the bottom one provides registration of the EAS muon bundles. The technique of EAS investigations with the SCT is based on the phenomenology of local density of charged particles because each plane of the setup has an area much less than transverse sizes of EAS. We have measured the spectrum of charged particle local density in the range from 0.5 to 200 m^-2 with the top plane, and the spectrum of local muon density in the range from 0.2 to 56 m^-2 with the bottom plane. Comparison with EAS simulations shows that the primary particle energy range which can be investigated with the SCT extends from 10^14 to 10^18 eV. This energy range includes the interval of 10^14–10^15 eV which is still insufficiently studied both in satellite and EAS experiments.

Collaboration

– not specified –

Registration number following ”ICRC2015-I/”

51

Primary author: Mr AMELCHAKOV, Mikhail (National Research Nuclear University MEPhI (Moscow Engineering Physics Institute))

Co-authors: Dr BOGDANOV, Alexey (National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)); Prof. PETRUKHIN, Anatoly (National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)); Prof. YASHIN, Igor (National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)); Mr SHULZHENKO, Ivan (National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)); Prof. KOKOULIN, Rostislav (National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)); Dr KHOKHLOV, Semen (National Research Nuclear University MEPhI (Moscow Engineering Physics Institute))

Presenter: Mr AMELCHAKOV, Mikhail (National Research Nuclear University MEPhI (Moscow Engineering Physics Institute))

Session Classification: Poster 1 CR

Track Classification: CR-EX