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Lateral distribution of charged particles measured in air showers by the ARGO-YBJ experiment.

Abstract content

The ARGO-YBJ experiment, installed at the YangBaJing Cosmic Ray Laboratory (4300 m a.s.l., Tibet, P.R. China), is an air shower array exploiting the full coverage approach at very high altitude. Signals from each RPC are picked-up by strips 6 cm wide and 62 cm long, thus allowing to sample the Extensive Air Showers (EAS) with an unprecedented granularity. In order to extend the dynamic range up to PeV energies, a charge read-out has been implemented by instrumenting every RPC also with two large size pads of dimension 140×125 cm² each. As a consequence, for the first time the topological characteristics of EAS and the geometric structure of shower cores can be investigated with a great detail over more than two energy decades, up to the knee region.

In this work we report a measurement of the lateral distribution of charged particles in EAS performed by the ARGO-YBJ carpet. The sensitivity to the primary mass at energies higher than 10^{14} eV will be discussed. A procedure to select events characterized by unusual distributions of charged particles (multicore events, aligned structures, "halo" events, etc.) will be also presented.

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

ARGO-YBJ

Summary

Reference

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