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Simulation studies for muon charge ratio measured with WILLI in coincidence with a mini-array

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Abstract content

The WILLI calorimeter, installed in NIPNE Bucharest, is operated since several years for measuring low energy (E<1GeV) charge ratio of atmospheric muons, including its directional dependence. Recently a project was proposed to combine WILLI with a mini-array of 12 scintillators in order to measure muon charge ratio in EAS. This experiment could provide further information on shower development and maybe on hadronic interaction models. As part of the proposed project, in this work a study of the ratio of mu+ to mu- fluxes that enter into WILLI angular acceptance is reported. The study is based on CORSIKA simulated showers induced by H, He and Fe ions in the energy range 10^13-10^15 eV. The mu+ and mu- fluxes were studied as a function of WILLI position with respect to the shower core i.e. distance to the core and geographical location of WILLI with respect to core. Especially the latter dependence is very pronounced. Implications on an optimal design of the extended experiment 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'Olivo, 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 1569-1572

Primary author(s) : Mr. MITRICA, Bogdan (Nationa Institute of Physics and Nuclear Engineering - "Horia Hulubei")

Co-author(s): Prof. SIMA, Octavian (University of Bucharest, Faculty of Ohysics); Dr. BRANCUS, Iliana Magdalena (Nationa Institute of Physics and Nuclear Engineering - "Horia Hulubei"); Prof. REBEL, Heinigerd (Forschungszentrum Karlsruhe); Dr. HAUNGS, Andreas (Forschungszentrum Karlsruhe)

Presenter(s) : Mr. MITRICA, Bogdan (Nationa Institute of Physics and Nuclear Engineering - "Horia Hulubei")

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