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A Neutron Detector for the Electron Calorimeter (ECAL) Long Duration Balloon Experiment

Abstract content

The highest energy measurements of cosmic ray electrons extend just beyond 1 TeV. High energy electrons are of particular interest because energy losses during interstellar propagation insure that they arrive primarily from nearby sources. This may produce observable structure in their spectrum. Further, it is predicted that electrons and positrons result from the annihilation of many exotic particles posited as dark matter candidates. These electrons may appear as excesses in the cosmic ray electron spectrum from 200 GeV to 1000 GeV. A new long duration balloon experiment, ECAL, is being planned to provide direct cosmic ray electron measurements from ˜50 GeV to >1 TeV. To make these measurements ECAL must discriminate strongly against showers from protons and heavier ions. One of the techniques used to make this discrimination may be based on measuring the secondary neutrons produced by events in the instrument. The neutron detector configuration and technique will be discussed along with its expected performance based on Monte Carlo simulations.

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

Summary

Reference

Primary author(s) :   Dr. ADAMS, james (NASA Marshall Space Flight Center, Huntsville, AL, USA)

Co-author(s) :   BASHINDZHAGYAN, G (Skobeltysn Institute, Moscow State University, Moscow, Russia); PANASYUK, M (Skobeltysn Institute, Moscow State University, Moscow, Russia); PANOV, A (Skobeltysn Institute, Moscow State University, Moscow, Russia); SOKOLSKAYA, N (Skobeltysn Institute, Moscow State University, Moscow, Russia); WATTS, J (NASA Marshall Space Flight Center, Huntsville, AL, USA); WEFEL, J (Louisiana State University, Baton Rouge, LA, USA); ZATSEPIN, V (Skobeltysn Institute, Moscow State University, Moscow, Russia); BINNS, W (Washington University, St. Louis, MO, USA); CHANG, J (Purple Mountain Observatory, China); CHERRY, M (Louisiana State University, Baton Rouge, LA, USA); CHRISTL, M (NASA Marshall Space Flight Center, Huntsville, AL, USA); GUZIK, T (State University, Baton Rouge, LA, USA); ISBERT, J (State University, Baton

Rouge, LA, USA); ISRAEL, M (Washington University, St. Louis, MO, USA); KOROTKOVA, N (Skobeltysn Institute, Moscow State University, Moscow, Russia)

Presenter(s) : Dr. ADAMS, james (NASA Marshall Space Flight Center, Huntsville, AL, USA)

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