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The Electron Calorimeter (ECAL) Long Duration Balloon Experiment

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Abstract content

Cosmic ray electrons with energies greater that about 300 GeV are of particular interest because, due to their high energy losses during interstellar propagation, there are likely to be only a small number of nearby sources contributing to the electron energy spectrum above several hundred GeV. It has been suggested that this may result in observable structure. Further, if the annihilation of exotic dark matter candidates produces electron and positron products, excesses may appear in the cosmic ray electron spectrum over the energy range 200 GeV to 1000 GeV. Here we describe a new long duration balloon experiment, ECAL, optimized to provide direct cosmic ray electron measurement at energies from ~50 GeV to greater than 1 TeV. ECAL will feature a double layer Silicon Matrix detector for precise charge determination, a six X-Y plane scintillating fiber tracker / sampling calorimeter to follow details of the initial shower development, a fully active BGO calorimeter to measure the electron total energy and a neutron detector to enhance discrimination between electron and hadron induced showers. Details of ECAL will be discussed along with its expected performance and flight expectations.

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

ECAL

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. 2 (OG part 1), pages 405-408

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