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The Second Level Trigger of the PAMELA Space Experiment

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Abstract content

PAMELA is a satellite-borne experiment designed to study the charged component of the cosmic radiation of galactic, solar and trapped nature. The main scientific objective is the study of the antimatter component of cosmic rays over a wide range of energies. PAMELA is mounted on the Resurs DK1 satellite that was launched on June 15th 2006 and is orbiting the Earth on a semipolar (70°) elliptical ($350 \times 600 \text{ km}^2$) orbit. The experiment has a foreseen lifetime of at least 3 years. PAMELA is built around a permanent magnet silicon spectrometer, surrounded by a plastic scintillator anticoincidence shield. An electromagnetic calorimeter is used for particle identification and energy measurements.

If PAMELA data exceed the storage allowance on the satellite or the daily downlink quota (now $\sim 20\text{GB}$), a second level trigger may be activated by uplink from ground. Information from the anticoincidence system and from the calorimeter will be included in the second level trigger condition, providing a selective reduction of data. The data reduction and the systematic uncertainties in the proton and electron spectra are evaluated with in-orbit data and compared to simulations.

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

PAMELA 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. 2 (OG part 1), pages 487-490

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