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Solar and heliospherc cosmic ray observations with PAMELA experiment

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Abstract content

PAMELA was launched on June 15th 2006 in a pressurized container on board the Russian Resurs-DK1 satellite. The satellite is flying in high inclination (70°), low Earth Orbit (350-600 km), allowing measurements in various points and conditions of the geomagnetosphere. It is a multi-purpose apparatus composed of a permanent magnet spectrometer to provide particle charge, rigidity and incoming angle. A series of six scintillator counters arranged at its extremities provide redundant Time-of-Flight and charge data. Lepton/hadron identification is performed by a Silicon-Tungsten calorimeter and a Neutron detector placed at the bottom of the device. An Anticounter system is used offline to reject false triggers coming from the satellite. The device is capable of detecting protons (80 MeV- 700 GeV), antiprotons (80 MeV-190 GeV), electrons (50 MeV - 400 GeV), positrons (50 MeV - 270 Gev) and light nuclei ($\simeq 100 MeV/n 200GeV/nuc). For its characteristics PAMELA is capable of addressing various items of heliospheric physics. For instance it is capable of performing for the first time a very precise measurement of the high energy component in solar events and to detect directly positrons and neutrons produced in these events. Also long term solar modulation, charge dependent effects, trapped particles and Jupiter electrons will be studied in the three years of expected mission. We will describe the characteristics of the detector and the scientific objectives in light of its first months of data taking in space.

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. 1 (SH), pages 639-642

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