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SOLAR ENERGETIC PARTICLE EVENTS: TRAJECTORY ANALYSIS AND FLUX RECONSTRUCTION WITH PAMELA

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The PAMELA satellite experiment is providing the first direct measurements of Solar Energetic Particles (SEPs) with energies from about 80 MeV to several GeV in near-Earth space, bridging the low energy data from space-based instruments and the Ground Level Enhancement (GLE) data from the worldwide network of neutron monitors. Its unique observational capabilities include the possibility of measuring the flux angular distribution and thus investigating possible anisotropies related to SEP events. This work reports the analysis methods developed to estimate SEP energy spectra as a function of the particle asymptotic pitch angle. The crucial ingredient is provided by an accurate simulation of the asymptotic exposition of the PAMELA apparatus, based on a realistic reconstruction of particle trajectories in the Earth's magnetosphere. Results for the 2006 December 13 and the 2012 May 17 events are presented.

Collaboration

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