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PAMELA mission for solar-terrestrial physics (Solar cosmic rays)

Friday, 9 October 2015 09:05 (25)

The orbital spectrometer PAMELA is the first instrument allowing direct measurement of solar relativistic particles. Before such information was obtained from the ground-based installations – neutron monitors which detected the secondary particle component generated by the solar energetic particles (SEP) in the Earth's atmosphere. Moreover, the data in the SEP energy range of several hundred MeV was also scarce and mainly covered by balloon observations which spend at high altitudes only limited time intervals. Since its launch in 2006 PAMELA recorded 25 SEP events with protons above 80 MeV/nucleon. In several events the Helium nuclei were also detected. The solar proton spectra taken from PAMELA are in satisfactory agreement with the results in the adjacent energy ranges, such as of GOES and ARINA in the lower energies and of neutron monitors in the higher energy. The combined SEP energy spectra from ˜10 MeV to several hundred MeV or even several GeV demonstrate various and complicated forms which argue for numerous processes affecting SEPs in the course of acceleration and propagation on the Sun and interplanetary space.

Presentation type

Section talk (10+5 min)

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