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PAMELA: 9 years in orbit

Friday, 9 October 2015 10:30 (30)

The nine years of data taking in space of the experiment PAMELA are providing interesting information concerning the origin and propagation of both galactic and solar cosmic rays. The measured antiparticle component of the cosmic radiation shows features that can be interpreted in terms of dark matter annihilation or pulsar contribution. The precise measurements of the energy spectra of protons, helium and light nuclei and their isotopes, electrons, as well as of their arrival distribution challenges our basic vision of the mechanisms of production, acceleration and propagation of cosmic rays in the galaxy. The study of the time dependence of the various components of the cosmic radiations clearly shows solar modulation effects as well as charge sign dependence of these effects. PAMELA measurement of the energy spectra during solar energetic particle events fills the existing energy gap between the highest energy particles measured in space and the ground-based domain. Furthemore, providing pitch angle measurements, it allows the study of the effects of particle transport within interplanetary space over a broad range in energy. Furthermore, by sampling the particle radiation in different regions of the magnetosphere, PAMELA data provide a detailed study of the Earth's magnetosphere. This talk illustrates the most recent scientific results obtained by the PAMELA experiment.

Presentation type

Plenary (25+5 min)

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