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Results from the PAMELA Experiment after nine years of cosmic ray investigation.

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PAMELA is taking data in Space since nine years, heralding a new era in precision cosmic ray physics. The measurements of both particle and antiparticle components of cosmic rays, is providing interesting information concerning the origin and propagation of both galactic and solar cosmic rays.

The measured antiparticle component 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, electrons, as well as of their arrival distribution challenges our basic vision of the mechanisms of production, acceleration and propagation of cosmic rays.

Moreover, PAMELA measurements 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. Furthermore, providing pitch angle measurements, it allows the study of the effects of particle transport within interplanetary space over a broad range in energy. Besides, by sampling the particle radiation in different regions of the magnetosphere, PAMELA data provide a detailed study of the Earth's magnetosphere. This contribution reviews the most recent scientific results obtained by the PAMELA experiment.

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