

# The PAMELA Experiment: A decade of Cosmic Rays Physics in space

*Tuesday, 11 October 2016 09:00 (30)*

It was the 15th of June of 2006 when the PAMELA satellite-borne experiment was launched from the Baikonur cosmodrome in Kazakstan. Since then, PAMELA has been making high-precision measurements of the charged component of the cosmic radiation opening a new era of precision studies in 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 measurements of the energy spectra of protons, electrons, helium and light nuclei and their isotopes 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.

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. Finally, by sampling the particle radiation in different regions of the magnetosphere, PAMELA data provide a detailed study of the Earth magnetosphere.

In this talk we will review the PAMELA experiment and its scientific results.

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**Session Classification :** Cosmic rays - plenary session I

**Track Classification :** Cosmic rays