



Contribution ID: 174

Type: Oral

The Lesson of PAMELA

Thursday, 6 September 2018 09:30 (30 minutes)

PAMELA is a medium-sized space experiment for the detection of cosmic rays that took data for 10 years from 2006 to 2016. Composed of a magnetic spectrometer and several auxiliary detectors it has been completely realized, at a very reasonable cost, by the collaboration: its different parts at Physics Departments in Italy, Russia, Sweden and Germany and finally the integration in the clean rooms of INFN at Rome Tor Vergata University. The reduced dimensions of the instrument required high performance of the individual detectors to obtain high-precision measurements over a range of energy from tens of MeV/n to 1 TeV/n.

In ten years of data taking in space, the experiment PAMELA has shown very interesting features in cosmic rays, namely in the fluxes of protons, helium, electrons, that might change our basic vision of the mechanisms of production, acceleration and propagation of cosmic rays in the Galaxy. In particular, remarkable and stimulating have been the measurements of cosmic antiproton and positron fluxes that have allowed the nature of dark matter to be probed in a new way, suggesting new ideas and setting strong constraints to the models. The continuous particle detection allowed for a constant monitoring of the solar activity and detailed study of the solar modulation for a long period, giving important improvements to the comprehension of the heliosphere mechanisms.

PAMELA also measured the radiation environment around the Earth, and discovered an antiproton radiation belt.

Primary author: PICOZZA, Piergiorgio (INFN and University of Rome Tor Vergata)

Presenter: PICOZZA, Piergiorgio (INFN and University of Rome Tor Vergata)

Session Classification: GW and CR measurements