

Investigations of Forbush Decreases in the PAMELA experiment

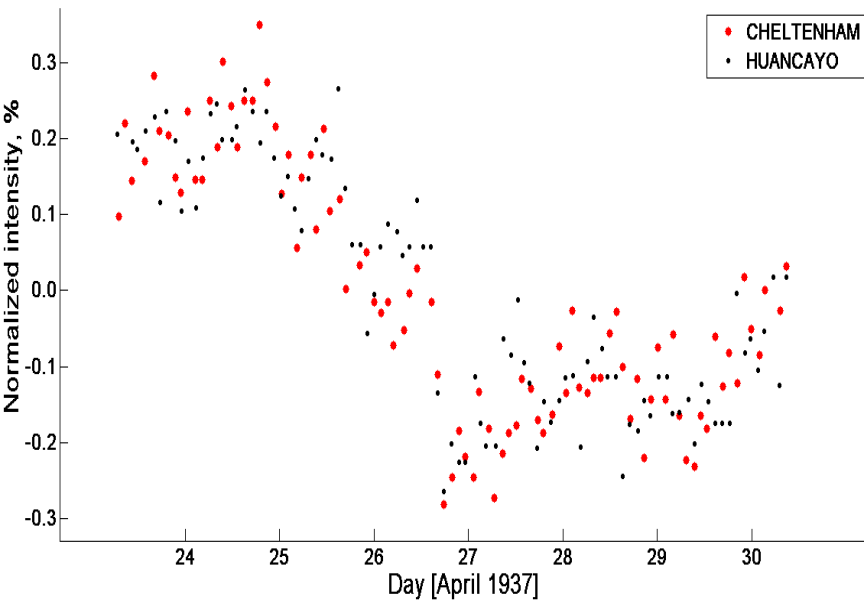
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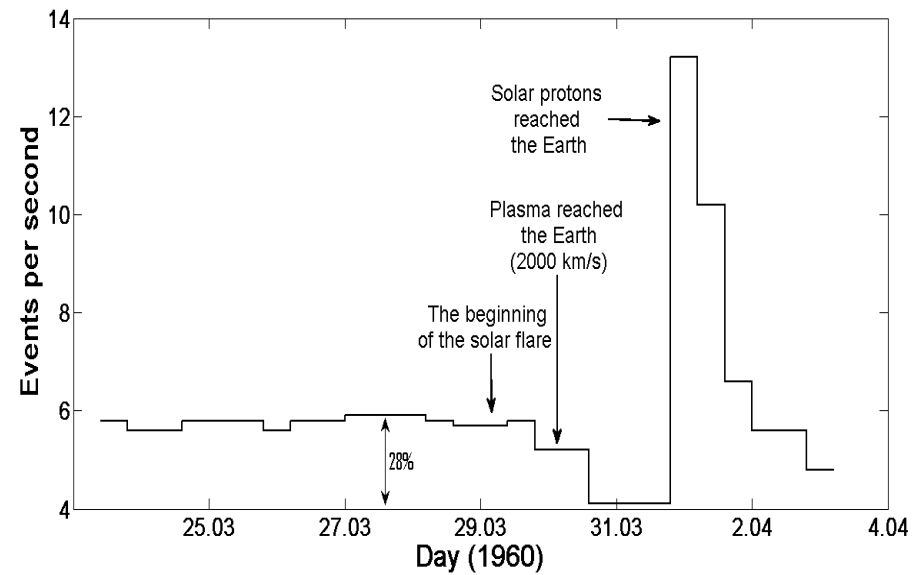
Moscow (Russia)

Discovery


- FD was firstly observed by S. Forbush during the magnetic storm on April 25 to 30, 1937, simultaneously at two stations [1].



- Forbush decrease observed by Cheltenham and Huancayo stations on April, 1937



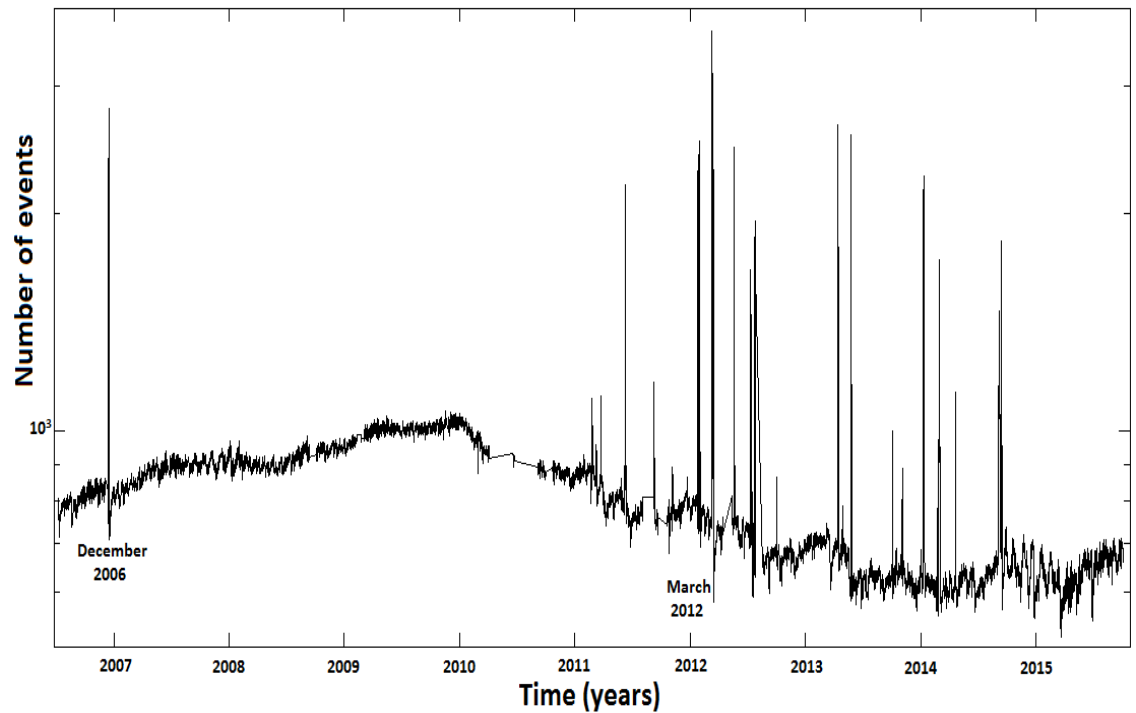
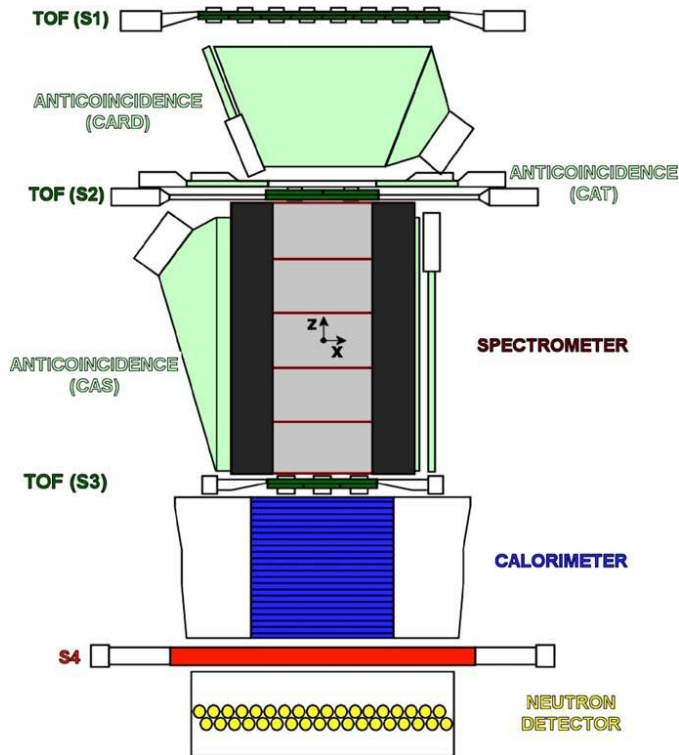
- Protons with energies in excess of 75 MeV by Pioneer V satellite



PAMELA

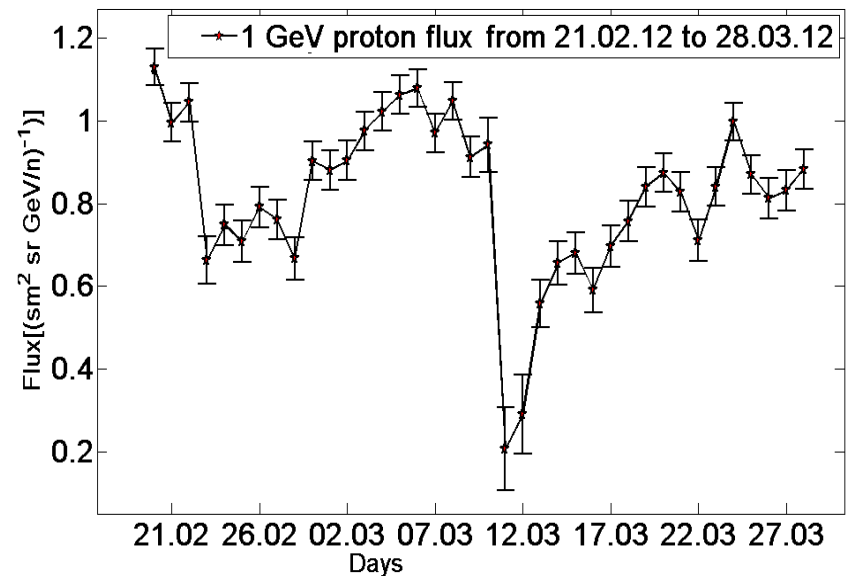
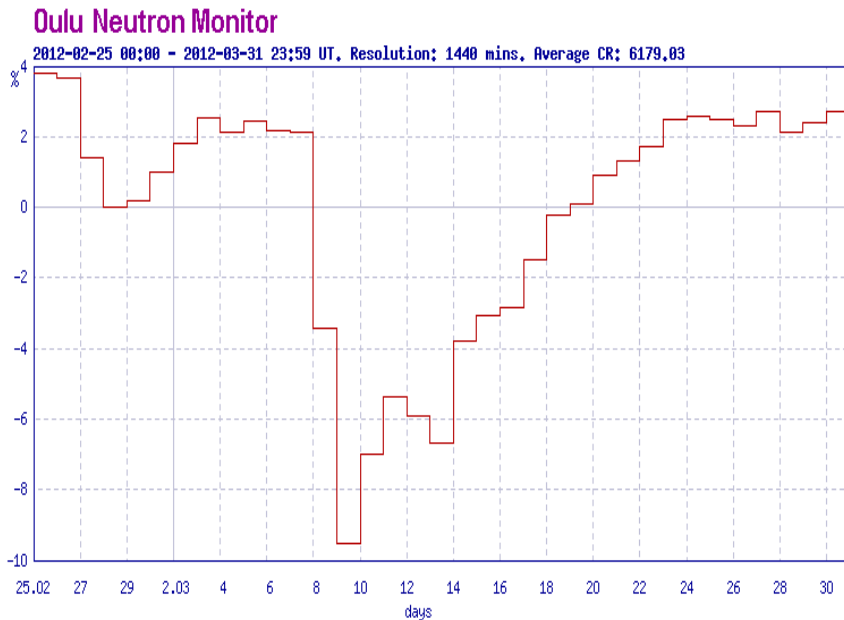
a Payload for **A**ntimatter **M**atter **E**xploration
and **L**ight-nuclei **A**strophysics

- The PAMELA telescope was launched on the 15 of June 2006, onboard the Resurs DK1 satellite
- Continuously monitoring of galactic cosmic rays fluxes for different particles (p, He, n, e⁺, e⁻) in the wide energy range from several hundreds MeV to several hundreds GeV

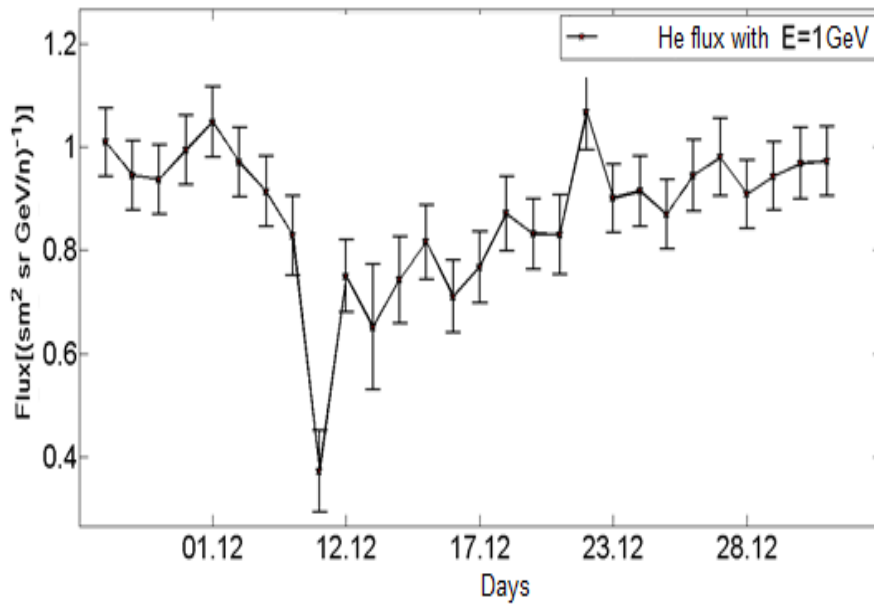


Investigations

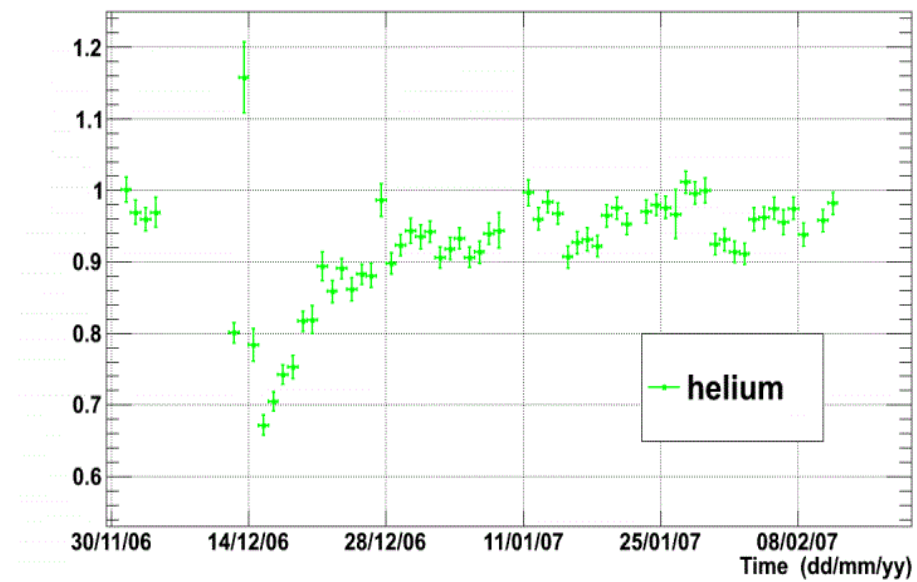
- Today, this effect is studied mostly by the neutron monitors (NM) and other ground base detectors, which are located on the Earth's surface. However these monitors can detect only products of GCR interaction with the Earth atmosphere. Satellite detectors allow to obtain more accurate information about the characteristics of FD



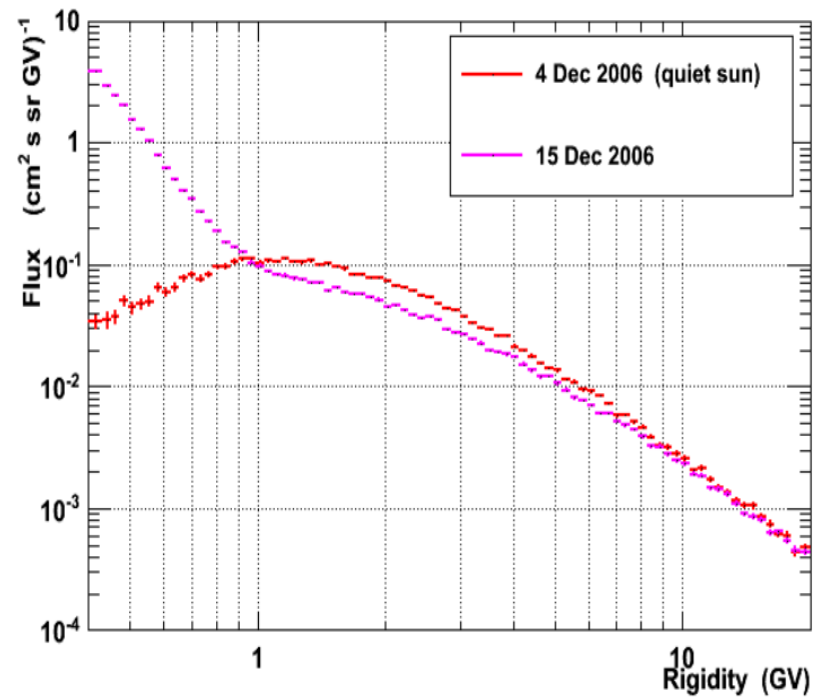
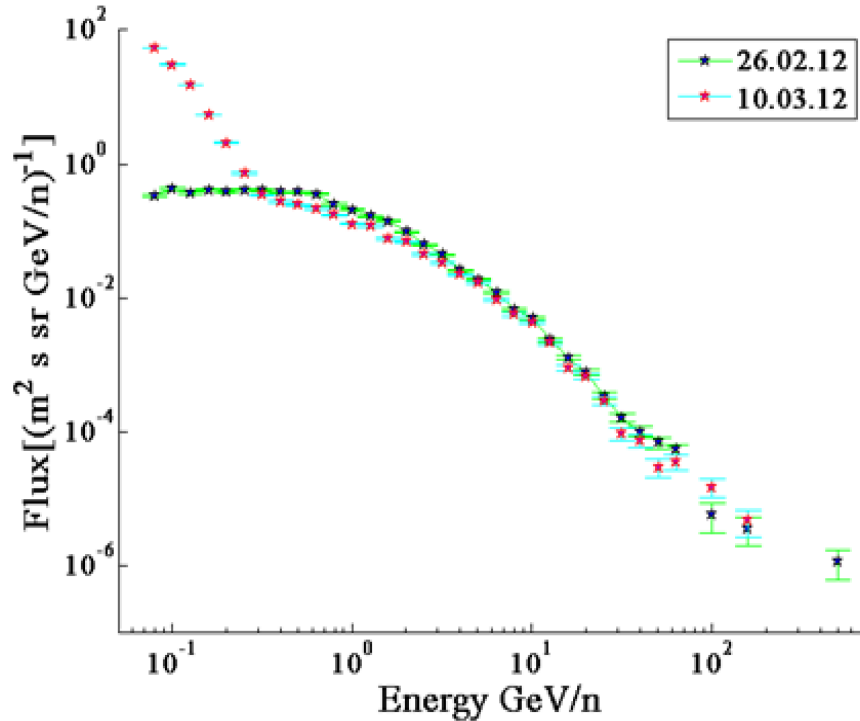
Forbush decreases in the He fluxes



Rigidity from 1.57 to 5.70 GV



Energy dependence of amplitude of FD



At present, we can use PAMELA experimental data for:

- Analysis and studies of FD for different particles.
- Research energy spectra of this effect.

20 events with an amplitude more than 5% have been registered.