

Studies of cosmic-ray solar modulation with the PAMELA experiment

Tuesday, 26 July 2022 17:00 (15 minutes)

The launch of the satellite-borne PAMELA instrument on the 15th June 2006 opened a new era of high-precision studies of cosmic rays. Thanks to its low detection energy threshold and its long operativity, PAMELA was able to accurately measure the fluxes of several cosmic-ray species over a large energy range and study their time variations below a few tens of GeVs. In this presentation we will review PAMELA results on the time-dependent proton, helium and electron fluxes measured between a few tens of MeV/n and few tens of GeV/n from 2006 to 2014. Moreover, preliminary results of yearly energy spectra of deuterons, helium-3 and helium-4 nuclei below 1 GeV/n will be discussed. These measurements covered a time including the minimum phase of the 23rd solar cycle and the 24th solar maximum including the polarity reversal of the solar magnetic field. The PAMELA measurements have allowed to significantly improve the understanding of the charged-particle propagation through the Heliosphere, the charge-sign effect due to the drift motions of these particles and to calibrate state-of-the-art models of cosmic-ray transport in the Heliosphere.

Primary authors: LENNI, Alex (INFN); BOEZIO, Mirko; MUNINI, Riccardo; MARCELLI, Nadir; POTGIETER, Marius; NGOBENI, Donald

Co-author: PAMELA COLLABORATION

Presenter: LENNI, Alex (INFN)

Session Classification: Parallel 2

Track Classification: SH