



Analysys of Helium fluxes and Helium Enhancement in 24th solar cycle with PAMELA Experiment

Matteo Mergé and the PAMELA Collaboration Team

I.N.F.N. Sezione Roma 2, Dipartimento di Fisica Universita' degli studi di Roma Tor Vergata, Rome, Italy
(matteo.merge@roma2.infn.it)

The properties of solar energetic particles (SEPs) have long been modeled to constrain the proposed scenarios for particle acceleration. The challenge, however, is that the signatures of acceleration gleaned from SEP observations are modified as a consequence of transport within interplanetary space. PAMELA (Payload for Antimatter Matter Exploration and Light-nuclei Astrophysics) is a space-borne experiment launched in a semi-polar orbit on 15 June 2006 and continuously collecting data since then. On-board instrumentation is built around a permanent magnet with a silicon microstrip tracker, providing charge and track deflection information. The unique observations from PAMELA provide an essential link between highest and lowest energy particles. Several events registered during the 24th solar activity cycle showed an increase in the helium particle density, those events are good candidates to study the helium enhancement phenomena (an increase in H to He ratio at low energies) and to address the charge/mass dependence of acceleration mechanisms.