

Solar Energetic Particles (SEP), Solar Modulation and Space Radiation: New Opportunities in the AMS-02 Era #2

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EPAMELA observations of solar modulation effects in cosmic ray protons and helium nuclei

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The satellite-borne experiment PAMELA (A Payload for Antimatter-Matter Exploration and Light-nuclei Astrophysics) has been continuously collecting data since June 15th of 2006, when it was launched from the Baikonur cosmodrome. Its main scientific goal is the detection of the charged component of the cosmic radiation over a wide energy range and with high precision. The apparatus design is well suited for the particle and antiparticle identification and optimized for searching antimatter. Moreover, thanks to the satellite quasi-polar orbit, a low rigidity threshold of about 400 MV for protons and about 800 MV/n for Helium is achieved. This makes the instrument also well suited for the investigation of phenomena related to galactic cosmic ray modulation by the Sun in the inner heliosphere. We present hereby data for light hadrons, namely protons and Helium nuclei, collected between 2006 and 2015, during both the 23rd and 24th solar cycles. The time and rigidity dependence of galactic cosmic ray intensities are presented.

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