

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

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Solar modulation of proton LIS with spacecrafts, balloons and neutron monitors

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Galactic cosmic rays (GCRs) entering the heliosphere are disturbed by the magnetic field of the Sun, which varies with a period of 11 years. The solar modulation affects the GCR fluxes up to few tens of GeV, modifying the shape and the intensity of the local interstellar spectrum (LIS). The time variation of the galactic cosmic protons at Earth can be studied indirectly on ground with the neutron monitors (NMs) and directly from space with AMS-02 (2011-now), PAMELA (2006-2010) and BESS (1993-2007). A new parametrization of the LIS will be presented, based on the latest data from AMS-

02 and Voyager 1. Using the framework of the force-field approximation, the solar modulation parameter will be extracted from the time-dependent proton fluxes measured by PAMELA and BESS. The results will be compared with the modulation parameter inferred by NMs.

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