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# Solar Energetic Particle Studies with PAMELA

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The origin of the high-energy solar energetic particles (SEPs) may conceivably be found in composition signatures that reflect the elemental abundances of the low corona and chromosphere vs. the high corona and solar wind. The presence of secondaries, such as neutrons and positrons, could indicate a low coronal origin of these particles. Velocity dispersion of different species and over a wide energy range can be used to determine energetic particle release times at the Sun. Together with multi-wavelength imaging, in- situ observations of a variety of species, and coverage over a wide energy range provide a critical tool in identifying the origin of SEPs, understanding the evolution of these events within the context of solar active regions, and constraining the acceleration mechanisms at play. The *Payload for Antimatter Matter Exploration and Light-nuclei Astrophysics* (PAMELA)instrument, successfully launched in 2006 and expected to remain operational until at least the beginning of 2012, measures energetic particles in the same energy range as ground-based neutron monitors, and lower energies as well. It thus bridges the gap between low energy in-situ observations and ground-based Ground Level Enhancements (GLE) observations. It can measure the charge (up to Z=6) and atomic number of the detected particles, and it can identify and measure positrons and detect neutrons—an unprecedented array of data channels that we can bring to bear on the origin of high-energy SEPs. We present prelimiary results on the for the 2006 December 13 solar flare and GLE and the 2011 March 21 solar flare, both registering proton and helium enhancements in PAMELA. Together with multi- spacecraft contextual data and modeling, we discuss the PAMELA results in the context of the different acceleration mechanisms at play.