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Analysis on H and He production during the 2012 March 7 flare with the PAMELA experiment

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The satellite-borne PAMELA experiment has been continuously collecting data since 2006. This apparatus is designed to study charged particles in the cosmic radiation. The combination of permanent magnet, silicon strip spectrometer and silicon-tungsten imaging calorimeter, with the redundancy of instrumentation allows very precise studies on the physics of cosmic rays in a wide energy range and with high statistics. This makes PAMELA a very suitable instrument for Solar Energetic Particle (SEP) observations. Not only does it span the energy range between the ground-based neutron monitor data and the observations of SEPs from space, but also PAMELA carries out the first direct measurements of the composition for the highest energy SEP events, including those causing Ground Level Enhancements (GLEs). PAMELA has registered many SEP events in solar cycle 24 including the 2012 March 7 flare, offering unique opportunities to address the question of high-energy SEP origin. A preliminary analysis on proton and helium behaviour during this event is presented in this work.

Summary

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