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MEASUREMENT OF THE ISOTOPIC COMPOSITION OF HYDROGEN AND HELIUM NUCLEI IN COSMIC RAYS WITH THE PAMELA-EXPERIMENT

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The cosmic-ray hydrogen and helium ($1\text{H}, 2\text{H}, 3\text{He}, 4\text{He}$) isotopic composition between 100 MeV/n and 1.4 GeV/n has been measured with the satellite-borne experiment PAMELA. The rare isotopes 2H and 3He in cosmic rays are believed to originate mainly from the interaction of high energy protons and helium with the galactic interstellar medium. The energy spectrum of these components carries fundamental information regarding the propagation of cosmic rays in the galaxy which are competitive with those obtained from other secondary to primary measurements such as B/C. The isotopic composition was measured between 100 and 1100 MeV/n for hydrogen and between 100 and 1400 MeV/n for helium isotopes using two different detector systems over the 23rd solar minimum from July 2006 to December 2007.

Collaboration

– not specified –

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