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Unique Properties of Cosmic Li and Be isotopes

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Lithium and Beryllium nuclei in cosmic rays are expected to be secondaries produced by the fragmentation of primary cosmic rays during their propagation in the Galaxy. Therefore, their fluxes contain essential information on cosmic ray propagation and sources. Secondary-to-primary flux ratios provide measurements of the material traversed by cosmic rays in their journey through the Galaxy. The Li and Be isotopic compositions provide crucial complementary information. In particular, the $^{10}\text{Be}/^9\text{Be}$ ratio measures the cosmic ray propagation volume in the Galaxy, and the $^6\text{Li}/^7\text{Li}$ ratio tests the existence of primordial lithium. Current measurements of the $^6\text{Li}/^7\text{Li}$ and $^{10}\text{Be}/^9\text{Be}$ ratios are limited to energies below 1 GeV/n and 2 GeV/n, respectively, and are affected by large uncertainties. Individual fluxes of ^6Li and ^7Li , and of ^7Be , ^9Be and ^{10}Be , have only been measured below 0.3 GeV/n and 0.4 GeV/n, respectively. In this contribution, we present the measurement of the ^6Li and ^7Li fluxes and their ratio, and of the ^7Be , ^9Be , ^{10}Be fluxes and their ratios, in the uncharted energy region ranging from 0.4 GeV/n to 12 GeV/n based on data collected by AMS during its first 10 years of operation on the International Space Station.

Submitted on behalf of a Collaboration?

Yes

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