

Precision Measurement of Cosmic Ray Deuterons with the Alpha Magnetic Spectrometer

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The Alpha Magnetic Spectrometer (AMS-02) has been operating aboard the International Space Station (ISS) since May 2011. Deuterons represent about 1% of the single-charged cosmic-ray nuclei. They are mainly produced by fragmentation reactions of primary cosmic 4He nuclei on the interstellar medium and represent a very sensitive tool to verify and constrain CR propagation models in the galaxy. Given the smaller cross-section for $4\text{He} \rightarrow \text{D}$ with respect to $\text{C} \rightarrow \text{B}$, the deuteron flux provides additional information about the propagation of cosmic rays compared to the cosmic B/C ratio. Precise particle rigidity and velocity measurements and a large acceptance enable separating deuterons from abundant protons in the rigidity range from 1.92 to 21.1 GV. Precision measurements of the deuteron flux obtained with a high-statistics data sample collected by the AMS-02 during its 8.5 years of operation on the International Space Station will be presented.

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Collaboration

AMS

other Collaboration

Subcategory

Experimental Results

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