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AMS-02 Monthly Proton Flux: Solar Modulation Effect and Short Time Scale Phenomena

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The Alpha Magnetic Spectrometer (AMS-02) is a high-energy particle detector designed to perform fundamental physics research in space. It was installed on the International Space Station (ISS) on May 19, 2011. During the first 30 months of operations, AMS-02 collected 41 billion events of primary cosmic rays between 1 GV and 1.8 TV.

In this work, we analyze the detailed time variation of the proton flux with a monthly time-based integration. While at high energy the spectra remains stable versus time, the low-energy range exhibits a decreasing general trend,

strongly reflecting the increase of the solar activity that recently reached its maximum. The monthly AMS-02 proton flux, below 10 GV, shows fluctuations related to strong Coronal Mass Ejections. This short time scale variation is consistent with the one measured by GOES-13.

Collaboration

AMS

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