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High Statistics Measurement of the Positron Fraction in Primary Cosmic Rays with the Alpha Magnetic Spectrometer on the International Space Station

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A precision measurement by AMS-02 of the positron fraction in primary cosmic rays will be presented. Over the last two decades, there has been a strong interest in the cosmic ray positron fraction which exhibit an excess of high energy positrons whose origin is still highly uncertain. The Alpha Magnetic Spectrometer (AMS-02) is a general purpose high-energy particle physics detector operational on the International Space Station since May 2011. During its unique long duration mission AMS-02 is collecting large amount of data to study the behavior of cosmic ray electrons and positrons with unprecedented precision. This measurement shows that the positron fraction exhibit a rapid decrease from 1 to ~8 GeV followed by a steady increase. We show that above ~275 GeV the positron fraction no longer exhibits an increase with energy.

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