

The first results from the AMS experiment on the International Space Station

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The Alpha Magnetic Spectrometer, AMS, is a general purpose high energy particle physics detector. It was installed on the International Space Station, ISS, on 19 May 2011 to conduct a unique long duration mission (~20 years) of fundamental physics research in space. The first AMS results are based on the data collected during the initial 18 months of operations on the ISS, from 19 May 2011 to 10 December 2012. This constitutes 8% of the expected AMS data sample. The positron fraction, that is, the ratio of the positron flux to the combined flux of positrons and electrons, is presented in the energy range from 0.5 to 350 GeV. Over the last 2 decades, there has been strong interest in the cosmic ray positron fraction in both particle physics and astrophysics. The very accurate data show that the positron fraction is steadily increasing from 10 to ~250 GeV, but, from 20 to 250 GeV, the slope decreases by an order of magnitude. The positron fraction spectrum shows no fine structure.