

PHYSICS COLLOQUIUM.



Alpha Magnetic Spectrometer on the International Space Station

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The Alpha Magnetic Spectrometer (AMS) is a precision particle physics magnetic spectrometer on the International Space Station (ISS). Following a 16-year period of construction and testing and a precursor flight on the Space Shuttle in 1998, AMS was installed on the ISS on May 19, 2011. The physics objectives of the experiment include the precision search for the origin of dark matter, antimatter, and cosmic rays as well as to directly explore the universe for new phenomena. To date, AMS has collected more than 150 billion charged cosmic ray events. The latest AMS results on the fluxes of electrons, positrons, protons, anti-protons, and nuclei are presented. They provide precise and unexpected information, which cannot be explained by the current theoretical models. The accuracy and characteristics of the data, simultaneously from many different types of cosmic rays, provide unique input to the understanding of origins and evolution of cosmic rays.