

Cosmic Rays observed with the Alpha Magnetic Spectrometer on board of the International Space Station

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More than 100 years after the discovery of cosmic rays by Victor Hess, our knowledge of their sources and transport is still rather rudimentary. This does not only concern the astrophysical phenomena, which create and accelerate charged particles, but also the potential role of particle physics and cosmological mechanisms. The Alpha Magnetic Spectrometer (AMS) is a powerful and sensitive particle physics spectrometer for the observation of cosmic rays in space. AMS is located on the exterior of the International Space Station (ISS). Since its installation on 19 May 2011 it has measured about 45 billion cosmic rays in the GeV to TeV energy range. Its permanent magnet and array of precision particle detectors collect and identify charged cosmic rays passing through. Over its long duration mission on the ISS, AMS will record signals from 16 billion cosmic rays every year and transmit them to Earth for analysis by the AMS Collaboration. The scientific subjects range from the spectra and composition of “ordinary” Cosmic Rays, which help to understand their origin, acceleration and propagation in the Milky Way, to the search for unconventional sources, like the self-annihilation or decay of Dark Matter and new stable particles.

