

Recent results of the AMS-02 experiment

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In four years of data taking on the International Space Station, the AMS-02 detector has collected more than 65 billion cosmic rays. The high acceptance and resolution of AMS-02 provide a precision measurement of the fluxes of galactic protons, electrons, positrons, antiprotons and nuclei up to TeV energies.

The matter component of these cosmic rays is believed to primarily originate from supernova explosions within the Milky Way, while the antimatter component is partially produced in secondary cosmic ray interactions during propagation. Other antimatter sources, like pulsars or the annihilation of dark matter, may contribute.

Precise measurements of the rare antimatter components (positrons and antiprotons) in cosmic rays suggest the presence of a yet unexplained mechanism producing an excess of antiparticles at high energy. Simultaneously, many nuclei spectra exhibit a progressive hardening at high rigidities, which is not expected in the standard paradigm of galactic cosmic rays.

The latest results from AMS-02 will be summarized and discussed.