

AMS-01 & -02 INVESTIGATING CHARGED COSMIC RAYS OUTSIDE THE ATMOSPHERE

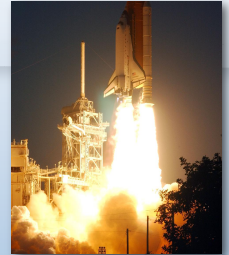


60 YEARS OF SWISS SCIENCE AT CERN

ALPHA MAGNETIC SPECTROMETER (AMS) FOR THE INTERNATIONAL SPACE STATION (ISS)

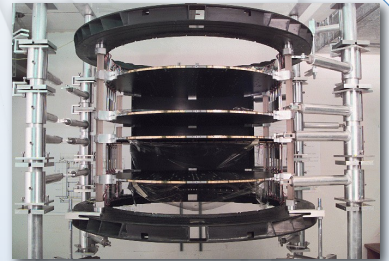
AMS is a very complex particle physics detector installed at the ISS. Its goal is to investigate the components of the charged cosmic ray with unprecedented precision. AMS-01 was a prototype detector flying in Space Shuttle mission STS-91 (1998) as a proof of concept. After long delay of the ISS, a highly improved AMS-02 was installed at the ISS in 2011 and is successfully taking data since then. It is planned that AMS-02 will take data as long as the ISS is operational.

UNIGE and ETHZ contributed significantly to the tracker system and also to the magnet.

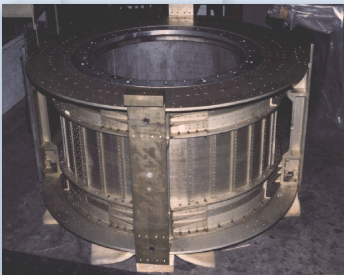


Tracker

The tracker consists of several layers of double-sided Si microstrip detectors. The majority of the ladders for AMS-01 and AMS-02 were produced by UNIGE and ETHZ.



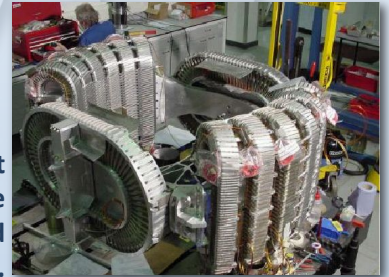
ETHZ also contributed the high precision support structure for the AMS-01 tracker. This was later modified by UNIGE for AMS-02.



Magnet

The exact field of the permanent magnet for AMS-01 was measured by ETHZ.

For AMS-02, a superconducting magnet was constructed. ETHZ contributed the superconducting cables and worked on the cryocooler electronics.



When it was decided to significantly extend the AMS-02 operation time, it was necessary to switch back to the permanent magnet.

Assembly

Assembly of the full AMS-01 was done at ETHZ ...

... and for AMS-02 at CERN

CERN is also hosting the main operation center for AMS-02.

