THE ALPHA MAGNETIC SPECTROMETER AMS-02: SOON IN SPACE

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ON BEHALF OF AMS-02 COLLABORATION

AMS-02 is a magnetic spectrometer designed to perform accurate and long duration measurements of cosmic radiation on the International Space Station. With its large acceptance (0.45 m2sr), the long duration (3 years) and the state of the art of the particle identification techniques, AMS will accurately measure charged cosmic rays spectra and high energy photons in the hundreds MeV to few TeV energy range. It will provide the most sensitive search for the existence of primordial anti matter and multi-channel indirect search for dark matter. AMS-02 integration has been started at CERN in September 2007 and after the final space qualification test at ESTEC (ESA) the whole apparatus will be moved to KSC (NASA) and it will be ready to be launched in 2010.

AMS-02 physics goals:

- Primordial anti-matter
- Indirect search for Dark Matter signal
- High statistics measurement of cosmic rays in GeV-TeV energy range till Z=26
- Gamma ray astrophysics till 300 GeV energies

AMS-02 Schedule:

- 05/2009 magnetic field mapping @CERN
- 06/2009 flight integration @CERN
- 10/2009 test beam @CERN
- 11/2009 thermal vacuum and electromagnetic interference test @ESA
- 04/2010 preparation for the space shuttle lunch @NASA KSC
- 09/2010 AMS flight to ISS @NASA KSC
- First 3 months: AMS remote control from NASA Center
- 3 years: AMS remote control and data acquisition from CERN

AMS-02 detector:

- Size approx 3mX3mX3m
- Weigh approx 7 t
- Power consumption: 2.3 KWatt
- Acceptance = 0.5 m^2sr
- Duration: 3 yrs operation with magnetic field
- magnetic field 0.8 T
- Trigger rate max 3KHz
- Data rate ~ 2 Mbyte/s

0.3 TeV	e⁻	P	He	C	Fe	γ
TRD						
TOF						
Tracker (magnet on)						
RICH						
Calorimeter