

The Alpha Magnetic Spectrometer on the International Space Station

AMS mission duration:
Entire ISS lifetime (up to 2028-2030)

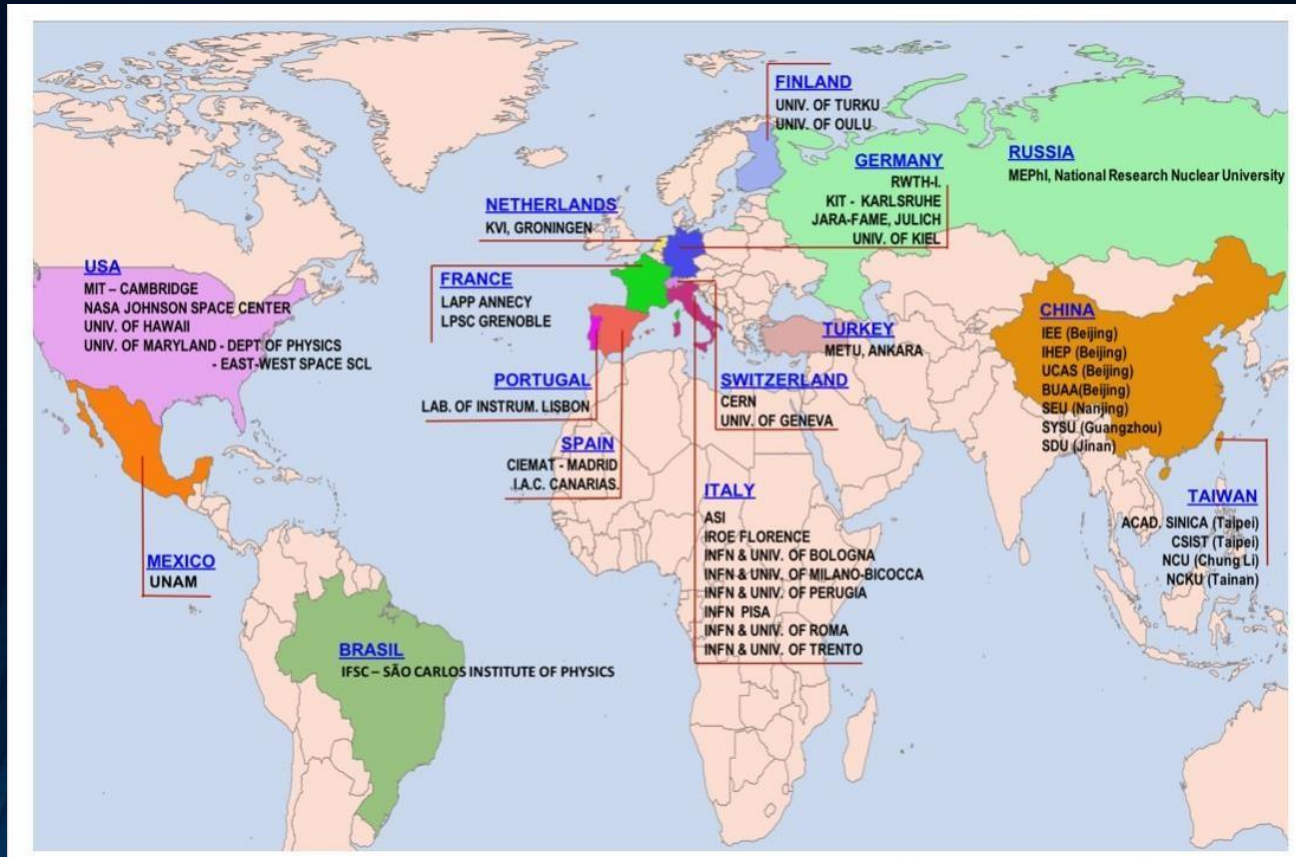
Near Earth Orbit:
altitude 400 Km
period 92 min
speed 28 800 km/h

AMS



AMS-02 webpage:
<https://amso2.space>

It uses the unique environment of space to study the universe and its origin by searching for antimatter, dark matter while performing precision measurements of cosmic rays composition and flux.



The AMS collaboration

(<http://ams02.space>)

An international collaboration made of 44 Institutes

from America, Asia and Europe

Presents in 7 INFN departments

(BO, MIB, PI, PG, RM1, RM2, TN)



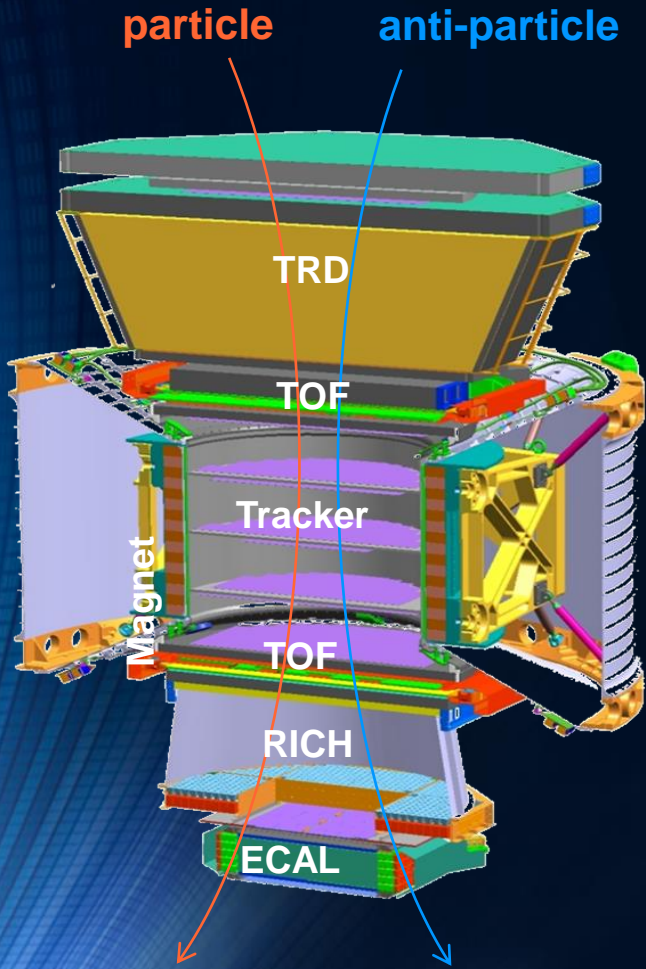
The AMS Payload Operation Control Center at CERN operates 365 days year h24

The AMS02 detector has collected so far more than 178 billion Cosmic Rays events.

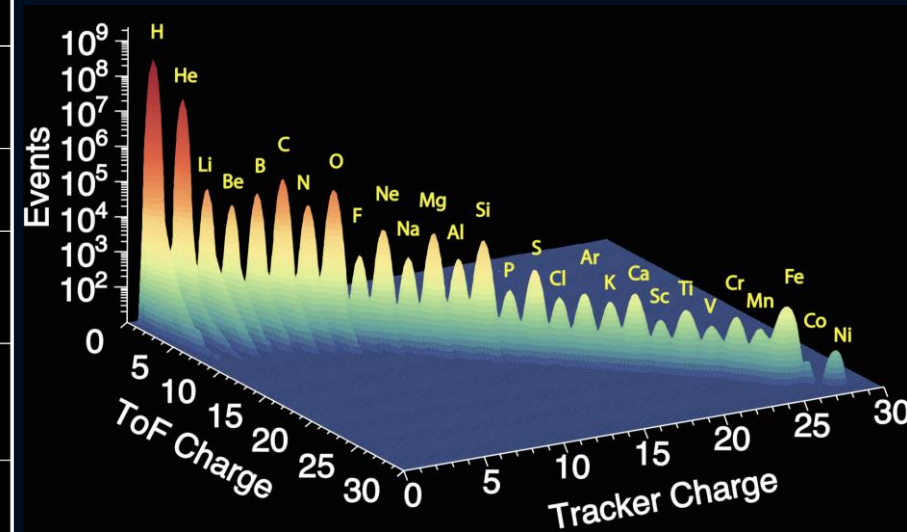
More Info in the AMS-02 webpage:

<https://ams02.space>

AMS is a space version of a precision detector used at accelerators



	Matter			Antimatter		
	e^-	P	Fe	e^+	\bar{P}	\bar{He}
TRD						
TOF						
Tracker + Magnet						
RICH						
ECAL						



Cosmic-ray properties

Dark Matter searches

Primordial antimatter searches

AMS INFN Roma-I Group

The **Alpha Magnetic Spectrometer**
on the International Space Station

L'INFN di Roma e l'Università Sapienza hanno aderito alla collaborazione AMS nel 2001 e il gruppo di Roma ha partecipato alla costruzione di uno degli strumenti che compongono AMS02, il TRD.

Al momento sta partecipando alla gestione operativa di AMS al CERN e all'analisi dei dati.

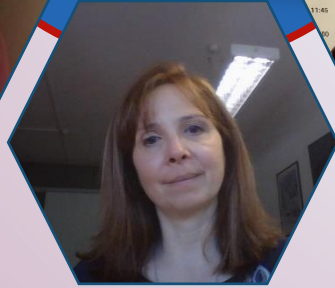
Dal 2017 il gruppo di Roma ha iniziato ad investigare sul possibile utilizzo dei dati di AMS02 nel campo di ricerca delle scienze della vita nello spazio.

Per affrontare tali problemi è attiva dal 2017 una collaborazione di ricerca su RadioBiologia SPace (SPRB) tra il gruppo INFN Roma-Sapienza di AMS e il Dipartimento di Fisica Medica del Policlinico S.Orsola di Bologna.

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Space Radiation Environment

Human Space activities must cope with the high radiation environment of outer space.

Space Radiation composition

- Galactic Cosmic Rays (GCR)
- Particle emitted by the Sun (SEP) during isolated events
- Particle trapped in Earth's magnetic field (Radiation Belt)

None of the 3 components is constant in time, mainly due to the solar activity

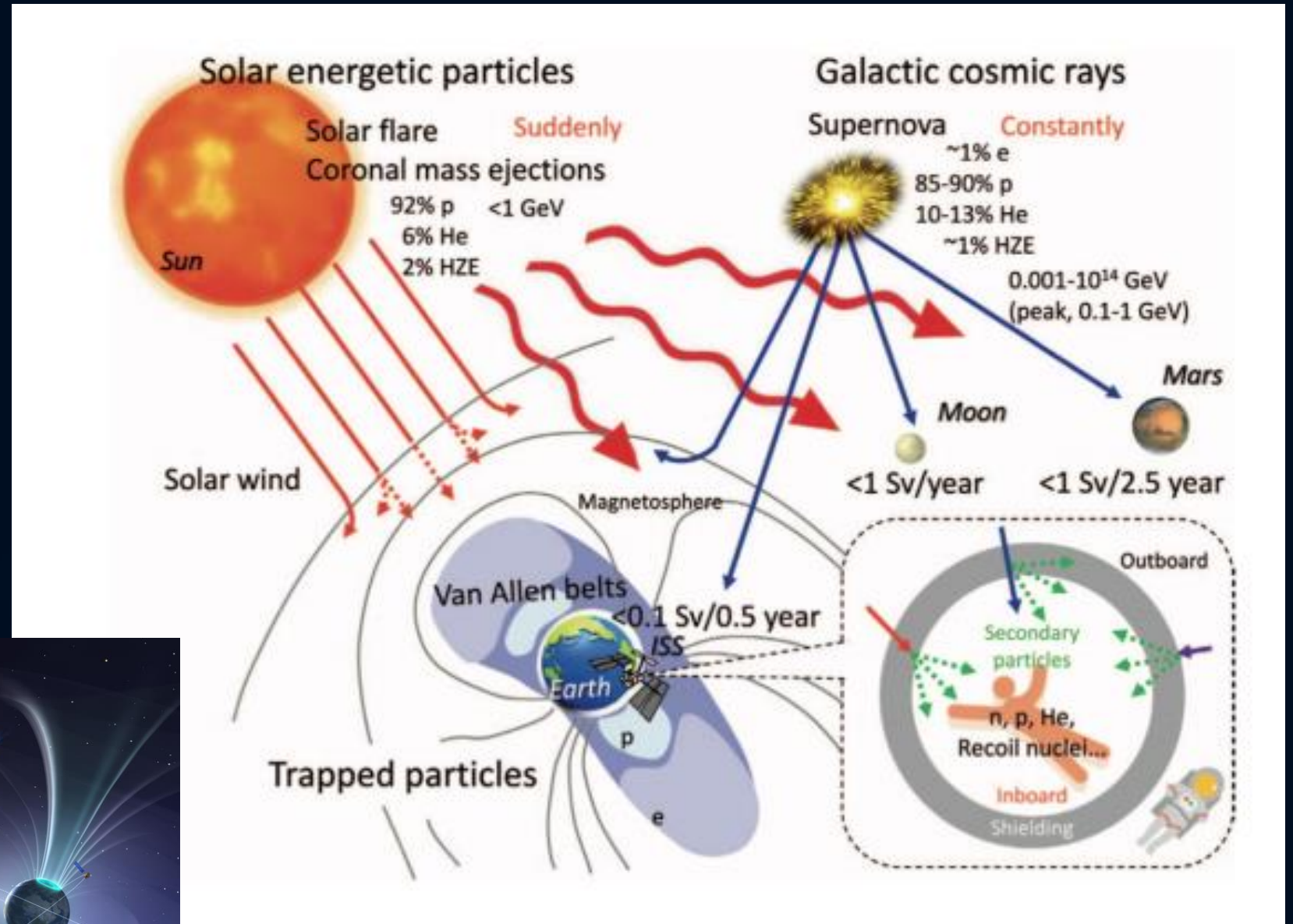
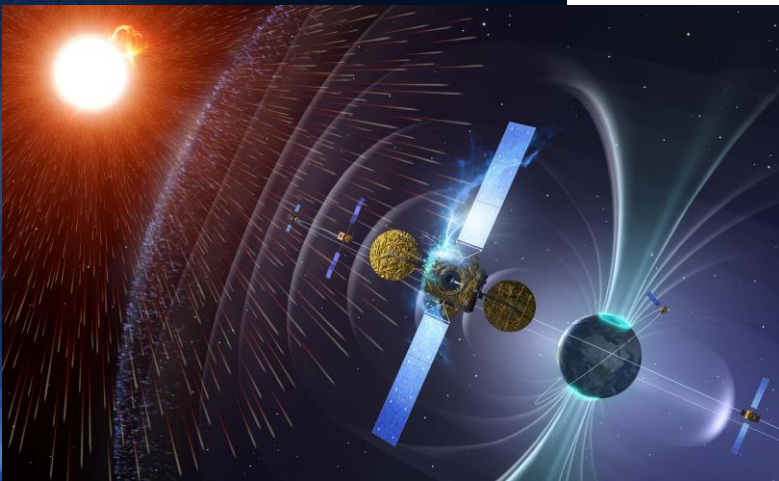


Image courtesy of European Space Agency (ESA)