



UNIVERSITÀ  
DI TRENTO

Dipartimento di  
Fisica



# PhD Program in Space Science and Technology - SST

## Astroparticle Physics in Space with Cosmic Rays

### Specific Seminar – Curriculum 1

March 27, 2024, 4 p.m.

#### Speaker:

Prof. Roberto Battiston, Department of Physics, University of Trento

#### Abstract:

The Alpha Magnetic Spectrometer (AMS-02) is a state of the art Cosmic Ray magnetic detector operating on the International Space Station (ISS) since may 2011, performing a continuous, direct measurement of Cosmic Ray flux and composition in the rigidity range,  $R = p/Zc$ ,  $O(1GV) - O(1TV)$ . The large statistics collected during 13 years of operation, more than  $1.5 \cdot 10^{11}$  particles, together with the excellent particle identification provided by the instruments, allows for the precise study of the spectra of all Cosmic Ray species ( $p$ , He, Li, Be, B, C, N, O . . . and  $e$ ), and begins the exploration of the rare antimatter components ( $\bar{p}$ ,  $e^+$ , anti-D, anti-He3, anti-He4...), which can be used as probes to search for new physics phenomena. We review the results obtained from the data collected so far, the perspectives of the ongoing analyses and of the forthcoming 10 years of data taking on the ISS.

#### Online attendance:

Zoom Link: <https://unitn.zoom.us/j/4363513193>

Meeting ID: 436 351 3193

Passcode: 0aLewd

Prof. Carlo Baccigalupi  
Scuola Internazionale Superiore di Studi Avanzati (SISSA) - Trieste  
[carlo.baccigalupi@sissa.it](mailto:carlo.baccigalupi@sissa.it)

National PhD in Space Science and Technology - Secretariat  
+39 0461 281504  
+39 0461 283566  
[dn\\_sst@unitn.it](mailto:dn_sst@unitn.it)