From Balloon Flights to Space Missions: The Evolution of Direct Cosmic-Ray Measurements

Specific Seminar – Curriculum 1

May 13, 2026, 2.30 p.m.

Speaker:

Prof. Pier Simone Marrocchesi - University of Siena and INFN-Pisa

Abstract:

During the last decade, a new generation of space instruments carried out direct measurements of cosmic-ray phenomena with unprecedented precision, significantly expanding the reach of direct observations and discovering unexpected features in the energy spectra of charged cosmic rays. An brief historical introduction on the pioneering era of direct measurements with balloons in the atmosphere is followed by a concise review of state-of-the-art space missions and of their most relevant recent findings, in the framework of current theoretical models of acceleration and propagation of cosmic rays in our galaxy. A glimpse into the future, with a new generation of space missions being planned or at the conceptual stage, is also offered.

Short Bio

Full professor of Physics at the University of Siena and former director of the Department of Physical Sciences, Earth and Environment. PI of the Italian participation - funded by the Italian Space Agency - in the CALET experiment, operational on the International Space Station since 2015. He has more than 400 publications to his credit in High Energy Physics (earlier experimental activity at CERN); Astroparticle Physics (experiments in space and on balloons with launches from Antarctica); development of high-energy sensors and radiation detectors with Istituto Nazionale di Fisica Nucleare - Pisa.

From **GSSI Apstroparticle Physics Colloquia**

Online attendance:

Information on remote participation can be requested by sending an e-mail to dn_sst@unitn.it

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