

SCIENTIFIC CURRICULUM FABIO GARGANO - 2024

My research activity focuses on the study of topics related to astroparticle physics and fundamental interactions physics, as well as the study and development of new detectors primarily for space applications.

I am currently a member of the international collaborations DAMPE and Fermi-LAT, satellite experiments collecting data on high-energy cosmic radiation, both neutral and charged. I am also involved in other initiatives for future experiments, both satellite-based (HERD, eASTROGAM, AMEGO) and at LHC (SAS), related to the study of both charged and neutral cosmic radiation.

The results of my research have been presented at numerous international conferences, including invited talks, and have led to various publications. I have personally contributed to data analysis and interpretation, scientific discussions of results within working groups, writing and revising the text, and serving as an internal referee.

I have published more than 350 papers in international peer-reviewed journals (h-index 110, source WOS) [link: <http://orcid.org/0000-0002-5055-6395>]."

My area of scientific interest in recent years has been that of the study of high-energy cosmic radiation and in particular I have had the opportunity, thanks to the data from the Fermi-LAT (Large Area Telescope) experiment and DAMPE, to be able to study the problems in detail linked to the emission of gamma radiation by neutron stars (pulsars), supernova remnants and active galactic nuclei. I have also contributed to works on the study of the spectra of charged cosmic rays and to the indirect search for dark matter.

I'm also very involved in design and characterization of novel detectors for space applications, in particular detectors based on scintillating materials (Calorimeter, fiber tracker, Particle Identification detectors) and Silicon Strip Detectors.

I'm involved in high performance computing projects both directly linked to my research activity and linked to the development of innovative solutions applicable in other sectors of research and society.

RESPONSIBILITIES AND COORDINATION ROLES

- Since 2022, member of the Astrophysics Working Group of the Italian Space Agency.
- Since 2023 WP2 Co-leader in Spoke3 of ICSC PNRR project
- International Lead for the design, testing, and construction of the Plastic Scintillator Detector (PSD) of the HERD experiment since 2019 to the present. Managing and coordinating an international research group (20 researchers) involved in all activities related to the study, design, characterization, construction, and integration of the HERD PSD. Leading the design of a new SiPM tailored to the experiment's needs and the design of readout electronics to maximize the PSD's performance in terms of charged particle veto efficiency, high dynamic range, and identification of high-Z nuclei.
- Member of the Publication Board of the DAMPE experiment since 2018 to the present.
- Member of the International Board of the HERD experiment since 2018 to the present. Managing the collaboration relationship among different institutions within the international HERD collaboration.
- Member of the HERD International Joint Working Team since 2018 to the present. Managing aspects related to joint research and development activities among various institutions within the international HERD collaboration.
- Convener of the working group on gamma-ray data analysis for the DAMPE experiment since 2016 to the present. Managing a research group (30 researchers from different Chinese, Italian, and Swiss research institutes and universities) involved in gamma astrophysics studies using DAMPE satellite data. Identifying promising research directions and guiding analysis procedures.
- Convener of the working group on Simulation and Computing Resources for the DAMPE experiment since 2014 to the present. Managing a research group (25 researchers from different Chinese, Italian, and

Swiss research institutes and universities) engaged in simulation code development. Responsible for optimizing the utilization and management of computing resources distributed among various research entities.

- Member of the Faculty of the National Aerospace Ph.D. program (2022) - Curriculum Coordinator.
- Member of the Faculty of Ph.D. programs in Physics at Bari (2021 - 2022)."