

Roma, 05 May 2025

M. Diemoz - Summary of research activity and scientific impact

Since the beginning of the career, I focused my scientific interest on the understanding of the Standard Model of particle physics, from neutrino weak interactions (CHARM experiment) to the study of the Z and W properties at LEP (L3 experiment), the search and the discovery of the Higgs boson at LEP and LHC (CMS experiment). In this last breakthrough for particle physics, I had a leading role in the design, construction and exploitation of the CMS electromagnetic calorimeter, the key detector for the observation of the decay $H \rightarrow \gamma\gamma$. The Nobel Prize in Physics 2013 have been awarded jointly to F. Englert and P. Higgs for the theoretical discovery of the electroweak symmetry breaking mechanism confirmed experimentally in 2012 by ATLAS and CMS at the LHC of CERN. After the Higgs boson discovery, the key issue is to understand if even tiny deviations from the Standard Model are present and I am concentrating now on the particle nature of the dark matter (CMS and SABRE). During my career, I published more than 1500 papers, I gave a number of invited talks to international and national conferences, lectures to international and national schools. I also frequently give outreach talks and talks to address the gender balance problem in science (STEM).

Curriculum Vitae

Education

- July 1982 Degree in Physics (Laurea) at the Università di Roma "La Sapienza".
- January 1987 PhD in Particle Physics at the Università di Roma "La Sapienza"

Professional Appointments

- 1982 - 1983 Paid associate at CERN
- 1987 - 1988 Post Doctoral INFN fellowship
- 1988 - 1990 Permanent staff Reasercher (Ricercatore) of INFN Sezione di Roma
- 1990 - 2002 Senior staff Reasercher (Primo ricercatore) of INFN Sezione di Roma
- 2002 - 2025 Director of Research (Dirigente di Ricerca) of INFN Sezione di Roma

Main Responsibilities in Scientific Coordination

- 1996-2012 leader of the CMS Rome group contributing to the CMS Electromagnetic Calorimeter (ECAL) Project. Responsible for the construction and test in Rome and delivery to CMS of half of the barrel part of ECAL (about 30000 PWO crystals).
- 1997-2002 member of the Technical Board of ECAL.
- 2002-2007 coordinator of INFN activities (Roma, Milano, Torino, Trieste) within the CMS ECAL Project.
- 2001-2004 Deputy Chair of the CMS ECAL Institution Board.
- 2004-2008 Deputy Project Manager CMS ECAL Project.
- 2004-2011 Member of the CMS Management Board.
- 2007-2011 INFN representative in CMS (Rappresentante nazionale italiano).
- 2007-2011 Member of the CMS Finance Board.
- 1996-2012 Member of the CMS Collaboration Board.
- 2011-2019 Director of INFN *Sezione di Roma* (Rome Department).
- From 2020 Partner Investigator of the ARC Centre of Excellence for Dark Matter Particle Physics for the *Sezione di Roma*.
- 2021-2023 Chair of the CMS Implementation Team on Inclusion and Diversity

International Scientific Committees

- 2007 member of the Review Comm. for Calorimetry and Jet Energy Measurement at ILC.
- 2008-2014 member of the European Committee for Future Accelerators (ECFA).
- 2009-2012 member elected of the Scientific Policy Committee of CERN (SPC), 1st term.

- 2012-2014 member elected of the Scientific Policy Committee of CERN (SPC), 2nd term.
- 2011-2014 member of the ECFA EU Comm. to review the R&D effort for future detector projects.
- 2011-2012 member of the Preparatory Group for European Strategy in Particle Physics.
- 2017-2021 member of the Future Circular Colliders International Advisory Committee.
- 2018-2019 member of the Muon Collider working group for the EU Strategy in Particle Physics.

Commissions of trust

- 2004-2011 member of CERN Research Fellow & Associate selection committee.
- 2010-*present* Member of the Editorial Board of *Nature Scientific Reports*
- 2011 Member of the selection committee of Premio Fermi of Società Italiana di Fisica.
- 2011-2012 Member of the panel (Gruppo Esperti della Valutazione, GEV02) set up by ANVUR (Agency for the evaluation of Italian Research) to evaluate the physics research activities in Italy for the period 2004-2010.
- 2012 Member of the selection committee (Area 02) for the program PRIN 2010-1011.
- 2013 Referee for Scuola Normale Superiore di Pisa of particle physics projects.
- 2013-2022 Member of the selection committee of Premio Tomassoni of Dipartimento di Fisica *Sapienza Università di Roma*.
- 2014 Referee for Swiss National Science Foundation of particle physics projects.
- 2014-2024 Member of the selection committee of International Doctorate Network in Particle Physics, Astrophysics and Cosmology IDPASC-Portugal.
- 2014 Member of the Search Committee for the selection of the Director General of CERN.
- 2017, 2019 Member of the ERC Starting Grant panel PE2.
- 2019-2021 Member of the Scientific Advisory Committee of the Instituto de Fisica de Cantabria.
- 2020-2022 Member of the panel (Gruppo Esperti della Valutazione, GEV02) set up by ANVUR (Agency for the evaluation of Italian Research) to evaluate the physics research activities in Italy for the period 2015-2019. Coordinator of the subGEV 1 (particle and nuclear experimental physics).
- 2021 Member of the Advisory committee in the NOW (Nederlandse Organisatie voor Wetenschappelijk Onderzoek) Open Competition-XL programme 2021/2022 of the Domain Science.
- 2021 Chair of the ERC Starting Grant panel PE2.
- 2022 Member of the Ramon y Cajal panel of area of particles and nuclear physics at the Spanish Research Agency.
- 2023 Chair of the ERC Starting Grant panel PE2.
- 2023 Chair of the selection committee (PE2) for the programs PRIN 2022 and PRIN PNRR 2022 selection of Italian research projects in fundamental physics (assigning about 33 Meuro).
- 2025 member of the expert panel for the program Proyectos de Generation de Conocimiento2024 selection of Spanish research projects, the program represents the main source of research funding in Spain.

Honours and Awards

- 1980 Winner of “Enrico Persico” Grant, Accademia dei Lincei
- 2008 Awarded Premio Minerva per la Ricerca scientifica.
- 2012 Awarded the honour of “*Grande Ufficiale dell’ordine al merito della Repubblica*” by the Italian President Giorgio Napolitano (May 2012).