

# Marco Delmastro

Senior Research Scientist

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Senior experimental particle physicist (DR1, CNRS/IN2P3, France; former Research Staff CERN, Switzerland), active in the ATLAS experiment at CERN and in detector R&D for the Future Circular Collider (FCC). • PhD in Nuclear and Subnuclear Physics (Università di Milano, Italy, 2003); Habilitation à Diriger des Recherches (HDR, Université Grenoble-Alpes, France, 2016). • Accredited as Full Professor in Experimental Physics of Fundamental Interactions, Italy (ASN 2016/2018). • Over 20 years of experience spanning precision measurements at particle colliders, large-scale data analysis, detector instrumentation, readout electronics, and funded project leadership.

## Evaluation & Review Experience

- SNSF (2023–) Grant reviewer, Swiss National Science Foundation: scientific merit, work-plan feasibility, and implementation risk.
- REPRISE (2016–) Registered member, Register of Expert Peer Reviewers for Italian Scientific Evaluation (sectors: fundamental interactions and fields, particle physics).
- pECFA (2020–) Member, Plenary European Committee for Future Accelerators: strategy-level advisory body for European particle physics infrastructure.
- LBNC Fermilab (2023–2025) Member of the Long Baseline Neutrino Committee, providing independent scientific and programmatic oversight of a large-scale international research infrastructure project.
- LHCC TDR panel (2017–2018) Member of the CERN LHCC committee reviewing the CMS Phase-2 Barrel Calorimeter Technical Design Report: technical readiness, cost estimates, industrial production strategy, and staged deployment risk.
- ATLAS editorial committees Member or chair of 39 ATLAS internal editorial review boards (as of May 2025; 22 as chair), covering journal papers and conference notes: structured critical assessment of complex experimental analyses for publication quality.
- Journal refereeing (2011–) Regular referee for *Physics Letters B*, *Nuclear Physics B*, *EPJ C*, *JHEP*, *Journal of Instrumentation*, and *Computer Physics Communications*.

## Project Leadership & Funded Research

- FCC feasibility program (2022–) LAPP team leader and FCC France contact for FCC-PED; contributor to the FCC Feasibility Study Report (CERN, 2025), a pan-European assessment of next-generation collider infrastructure covering scientific, technical, and industrial dimensions.
- ATLAS LAr Phase-II upgrade (2024–) Coordinator of the LAr Calorimeter Calibration Upgrade for the HL-LHC; member of the ATLAS LAr Phase-II Upgrade Steering Group. Hardware production toward installation in 2029–2030, involving industrial partners.
- ARIA ALLEGRO ASICs (2025–2026) Principal Investigator. Regional R&D grant (USMB Annecy): custom PCB development and readout-ASIC integration in cryogenic conditions for the ALLEGRO calorimeter prototype for FCC, from technical scope definition to implementation planning with engineering partners.
- ANR PhotonPortal (2016–2021) Principal Investigator. French National Research Agency grant: full lifecycle from proposal writing and consortium assembly through milestone tracking, team coordination, and final reporting.

## Scientific Depth

- Precision measurements Higgs-sector and QCD measurements, EFT interpretation, and combination across experiments; rigorous systematic uncertainty treatment and result validation.

Data analysis & machine learning	Large-scale statistical analysis of high-dimensional experimental data; ML-based reconstruction and classification for particle physics; use of LLM-assisted workflows for detector simulation and optimisation studies.
Calorimetry & instrumentation	Design, calibration, performance optimisation, and upgrade strategy for large-scale electromagnetic calorimeters; design-review practice at the system level.
Electronics & detector systems	Front-end ASIC development, signal chain integration, electronic calibration, and hardware–software interfaces in operational detector systems.
Publication record	ca. 1500 peer-reviewed publications as part of large international collaborations; full list on INSPIRE.

## Industrial & Technology Interface

Electronics R&D	Design, commissioning, and long-term operation of the ATLAS electromagnetic calorimeter readout and calibration electronics at CERN (2005–2011 and 2017–present): front-end ASIC co-design, requirement setting, qualification, and integration into a running large-scale detector system.
ASIC development	Leadership of the ATLAS LAr Phase 2 and ALLEGRO readout-ASIC R&D and integration programmes: engineering-performance trade-off analysis, interface with microelectronics partners, technology readiness evaluation, and scalability planning.
TRL assessment	Formal review practice on two major detector upgrade projects (ATLAS and CMS Phase-2 Upgrades) focused on maturity assessment, scale-up risk, production industrialisation, and staged deployment logic.

## Community Standing & Recognition

Conference leadership	Chair, <i>Higgs 2025 International Organizing Committee</i> (Brown University, 2025); member of the Program Committee and International Organizing Committee, <i>Higgs Conference series</i> (2022–2025); program committee, <i>SM@LHC</i> (Turin, Italy, 2026); organizing committee, <i>Higgs Hunting Conference series</i> (Paris, 2020–2022); organizing committee, <i>Les Houches Workshop Physics at the TeV Colliders</i> (2013–present).
Invited talks	<i>Higgs Pairs 2025</i> , Elba (2025); Higgs@10 Scientific Symposium, CERN (2022); Rencontres de Blois (2019); Rencontres de Moriond (2016); Aspen Winter Conference on Particle Physics (2013).
Awards	CNRS RIPEC Merit-based Individual Bonus (2021–2025).

## Science Communication & Impact

Book	<i>Particelle familiari</i> (Laterza, 2014): popular-science book on particle physics, awarded the “Maria Antonia Gervasio” prize for best science communication book ( <i>Le Due Culture</i> , 2014).
Media	Featured in BBC Horizon documentary <i>Inside CERN</i> (BBC 2, 2016); regular contributor to Italian national radio (RAI, Radio Popolare) and Swiss public radio (RTS); TEDx invited talk, Lake Como (2012).
Blog & podcast	Author of <i>Borborigmi di un fisico renitente</i> (2006–present), a long-running Italian science blog on particle physics; producer of <i>Tu che sei un fisico</i> podcast (2020, 8 episodes).

## Teaching & Doctoral Supervision

Doctoral supervision	Supervisor or co-supervisor of 8 PhD theses in experimental particle physics (7 completed, 1 ongoing), covering Higgs boson measurements, QCD measurements, diphoton searches, calorimeter calibration, and ML-based track reconstruction; external examiner for 10 PhD defences at French, Italian, Dutch, and Montenegrin universities.
Advanced teaching	Annual 15-hour course, ESIPAP International School of Subatomic Physics (2014–2023); Visiting Professor, University of Torino (2026, 16-hour doctoral course on calorimetry); faculty, IN2P3 thematic school <i>De la Physique au Détecteur</i> (2025) and École de Gif (2025).
Accreditations	Full Professor accreditation ( <i>Abilitazione Scientifica Nazionale, Prima Fascia</i> ), Experimental Physics of Fundamental Interactions, Italy (ASN 2016/2018).