Marco Delmastro *Curriculum Vitæ*

Born on August 26, 1973 – Torino, Italy
Italian nationality
Married, one daughter

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Areas of specialization and interests

Experimental high-energy physics, from detector prototyping, operations and performance optimization to large-scale data analysis and physics interpretation • Higgs physics • BSM searches with photon and jet final states • QCD precision measurements • Calorimetry • Readout electronics • Signal processing • Science education, communication and dissemination

Appointments held

2017–present Directeur de Recherche, *CNRS/IN2P3*, *LAPP*, Annecy, France.

2020–2022 Scientific Associate, *CERN*, Switzerland.

2011–2017 Chargé de Recherche 1ere Classe, *CNRS/IN2P3*, *LAPP*, Annecy, France.

2007–2011 Research Physicist Staff, *CERN*, Switzerland.

2005–2007 Fellow, *CERN*, Switzerland.

2003–2005 Post–doctoral Research Associate, *University of Milano*, Italy.

1999–2003 Ph.D. Student, *University of Milano*, Italy.

1998–1999 Post–graduate Research Associate, *Microelectronics and Silicon Detector Group*, *CERN*, Switzerland.

Education

2016 Accreditation to Supervise Research (*Habilitation à Diriger des Recherches, HDR*), *University of Grenoble-Alpes*, France.

THESIS *From ADC counts to the Higgs boson: photons for physics measurements with the ATLAS experiment at the LHC Run 1* (HAL tel-01312862)
REFEREES Prof. M. Cacciari (LPTHE, Paris, France)
Dr. L. Iconomidou-Fayard (LAL, Orsay, France)
Dr. Y. Sirois (LLR, Palaiseau, France)

2003 PHD in Nuclear and Subnuclear Physics, *University of Milano*, Italy (highest honours).

THESIS *Energy reconstruction and calibration algorithms for the ATLAS electromagnetic calorimeter* (CERN-THESIS-2003-033)
SUPERVISOR Prof. L. Mandelli (University of Milano, Italy)
REFEREES Prof. W.E. Cleland (University of Pittsburgh, USA)
Prof. S. Centro (University of Padova, Italy)

1998 MSC ("*Laurea*") in Physics, *University of Torino*, Italy (110/110 *cum laude*, highest honours).

THESIS *Measurement of the J/ψ production at the CERN SPS with the NA50 experiment*
SUPERVISOR Prof. E. Chiavassa (University of Torino, Italy)
CO-SUPERVISOR Dr. N. De Marco (INFN Torino, Italy)

Awards

2014–2017 CNRS *Scientific Excellence Prize* (*Prime d'Excellence Scientifique*), rewarding the 2010-2014 period and awarded for the 2014-2017 period.

2016 Award *Italian Excellence on the Web*, awarded by the Treccani Institute for the Italian Encyclopedia for the article *The particle that wasn't*.

2014 Literary award *Le Due Culture* (*The Two Cultures*) "Maria Antonia Gervasio", awarded to the best popular-science book published in 2014 to *Particelle familiari* (Editori Laterza, Italy, 2014).

Recent research grants

2016–2021 Principal investigator of the French ANR *PhotonPortal* Project (LAPP-LPNHE-LAL joint project, selected for funding in 2016 for 485'000 €).

Services to the profession

Responsibilities and coordination roles

2020–2022 Convener of the ATLAS Higgs Working Group.

2020–2022 Member of the ATLAS Physic Coordination Group.

2018–2020 Convener of the LHC Higgs Cross-Section Working Group 2 *Higgs Properties*.

2017–2020 ATLAS Analysis Contact for the $H \to \gamma\gamma$ *couplings* analysis.

2017–2020 Member of the ATLAS Liquid Argon (LAr) Phase II Upgrade Steering Group.

2017–2020 Convener of the ATLAS LAr Phase II Calibration Upgrade Working Group.

2017–2020 Coordinator of the ATLAS LAr activities at LAPP Annecy.

2016–2017 Convener of the ATLAS Higgs *HGamma* Working Group ($H \to \gamma\gamma$, $H \to Z\gamma$, low and high-mass $\gamma\gamma$ resonances, $HH \to \gamma\gamma b\bar{b}$, $HH \to \gamma\gamma WW$, mono-Higgs Dark Matter and heavy scalar searches with $\gamma\gamma + E_{\mathrm{T}}^{\mathrm{miss}}$)

2015-2016 ATLAS Analysis Contact for the *Search for Higgs-like* $\gamma\gamma$ *resonances* analysis.

2012–2014 Member of the ATLAS Physics Coordination group.

2012–2014 Convener of the ATLAS e/γ (electron/photon) Combined Performance group.

2012–2014 Member of the ATLAS Physic Coordination Group.

2011–2012 Member of the ATLAS LAr Calorimeters Management and Steering Groups.

2011–2012 Convener of the ATLAS LAr Calorimeters Software and Data Preparation group.

2011–2012 Coordinator of the ATLAS Photon Identification working group.

2010–2011 Convener of the ATLAS Standard Model Direct Photons working group.

2009–2011 Coordinator of the photon analysis activities of the CERN ATLAS Team.

2005–2010 Convener of the ATLAS LAr Calorimeter Electronic Calibration working group.

Conference and school organization

2022– Member of the International Organizing Committee of the *Higgs* conference

2022 Member of the Program Committee of the *Higgs 2022* conference (Pisa, November 7-11, 2022)

2022 Member of the Organizing Committe of the *Higgs Hunting 2022* workshop (Paris, September 12-14, 2022)

2019 Organizer of the parallel session *Quel avenir pour la physique des particules?* (What future for particle physics?) at the *25^{e} Congrès Général de la Société Française de Physique*, Nantes, France, July 8–12 2019.

2013–present Member of the organizing committee of Les Houches Workshop *Physics at the TeV Colliders*.

2017 Member of the organizing committee of the ENIGMASS Lectures *Neutrino physics*, LAPP Annecy, France.

2016 Member of the organizing committee of the ENIGMASS Lectures *Searching for Dark Matter at the LHC*, LSPC Grenoble, France.

2015 Member of the organizing committee of the ENIGMASS Lectures *Probing Naturalness and Electroweak Symmetry Breaking at LHC Run 2*, LAPP Annecy, France.

2014 Organizer and Chairman of the Higgs session, *Physique ATLAS France* Workshop 2014.

2012 Organizer of the *Workshop on Photon Physics and Simulation at Hadron Colliders*, Paris, March 2012.

Research management and evaluation

2022–present FCC France contact at LAPP Annecy.

2020-present Member of the Plenary European Commitee for Future Accellerator (ECFA).

2016–present Member of the Register of Expert Peer Reviewers for Italian Scientific Evaluation (REPRISE).

2012–present ATLAS Liquid Argon Group Representative for the LAPP Annecy group.

2015–2020 Member of the French CERN Fellowship Selection Committee.

2017-2018 Member of LHCC Panel in charge to review the Technical Design Report of the Phase-2 Upgrade of the CMS Barrel Calorimeters.

2011-2016 Organizer and chairman of ATLAS LAPP Weekly Group Meetings.

Editorial activities

2022 Reviewer for *Physics Letters B*.

2015 Reviewer for *Journal of Instrumentation*.

2014 Reviewer for *The European Physical Journal C*.

2011 Reviewer for *Computer Physics Communications*.

2013 Editor of the Rapport d'Activité LAPP 2009–2012.

2009–present Chairman and member of Editorial Boards for internal review of ATLAS papers.

2009–2011 Member of the Publication Committee of the ATLAS Collaboration.

2009–2011 Responsible of the graphics and typesetting templates for the ATLAS Collaboration articles and plots.

Teaching

2014-present Faculty of the *Summer School in Particle and Astroparticle Physics of Annecy-le-Vieux (GraSPA)*, Annecy-le-Vieux (France). *LHC Experimental Physics* (2-hour lectures: 2014, 2015, 2016, 2017, 2018, 2019; no session in 2020 due to COVID sanitary conditions).

2014-present Faculty of the European School of Instrumentation in Particle and Astroparticle Physics (ESIPAP). Archamps (France). *Experimental Subatomic Physics* (15-hour lectures and tutorial: 2014, 2015, 2016, 2017, 2018, 2019, 2020).

2016 *Physics and Communication: science and the media* INFN Researcher Training Course.
Case study: scientific blogs (1 hour).

2014 Accreditation as Associate Professor, Experimental Physics of Fundamental Interactions (*Abilitazione Scientifica Nazionale, Professore di Seconda Fascia, Settore 02/A1, tornata 2012*), Italy.

2014 CERN Italian Teacher Program 2014. CERN (Switzerland), October 12-17, 2014.
Introduction to Experimental Particle Physics (4-hour lectures and tutorials).

2014 Summer School "Science Communication Society 2014". La Morra (Italy), September 7-12, 2014.
The visible researcher (8-hour lectures and exercises on scientific blogging).

2012 XXIV Seminario Nazionale di Fisica Nucleare e Subnucleare. Otranto (Italy), September 21-27, 2012.
Session on *Scientific communication and relationship with media, general public and industry* (2 hours)

2002–2005 Computational Physics Laboratory (*lecturer*). BSc in Physics, *University of Milano*, Italy.
Referent: Prof. L. Perini (University of Milano, Italy).

2001–2011 Physics (*secondary level professor, in leave of absence for research reasons*), *I.T.I.S. "Faccio"*, Vercelli, Italy.

2000 Mathematics (*secondary level professor*), *I.T.I.S. "Bodoni"*, Torino, Italy, and *Liceo Scientifico "Galilei"*, Ciriè, Italy.

2000 Qualification to teach Physics in all Italian secondary schools (*"Abilitazione"*, class 38/A).

Student supervision

Supervision and co-supervision of PhD theses

2018-2022 Luca Franco.*PhD at LAPP, France. Thesis Supervisor.*
PHD THESIS: *Precision Higgs Physics and search for Physics Beyond the Standard Model with the Higgs Boson decaying into two photons with the ATLAS experiment at LHC*(sdefended on 13/1/2022. CERN-THESIS-2022-026).

Currently PostDoc at Radboud University (Nikhef), Nijmegen, Netherlands.

2016-2019 Saskia Falke. *PhD au LAPP, France. Co-supervised with Dr. T. Guillemin.*
PHD THESIS: *Measurement of Higgs boson properties in the Higgs to diphoton channel with the ATLAS experiment, EFT interpretation of the Simplified Template Cross Section measurements and energy calibration of electrons and photons in ATLAS*. (defended on 17/9/2019. CERN-THESIS-2019-148).
Currently CNRS Permanent Research in Strasbourg, France.

2014-2017 Kirill Grevtsov. *PhD at LAPP, France. Co-supervised with Dr. I. Wingerter-Seez.*
PHD THESIS: *Exploring the diphoton final state at the LHC at $\sqrt{s} = 13$ TeV: searches for new particles, and the Higgs boson mass measurement with the ATLAS detector.* (defended on 4/7/2017. CERN-THESIS-2017-138).

2013-2017 Simone Mazza. *PhD at University of Milano, Italy. Co-supervised with Prof L. Carminati.*
PHD THESIS: *Search for new physics in the diphoton channel at the ATLAS experiment at the LHC.* (defended on 27/2/2017. CERN-THESIS-2017-010).
Currently PostDoc at SCIPP, University of California Santa Cruz, USA.

2012-2015 Zuzana Barnovska. *PhD at LAPP, France. Thesis Supervisor.*
PHD THESIS: *Diphoton measurements with the ATLAS detector at the LHC: search for new resonances and study of diphoton production in association with jets.* (defended on 29/09/2015. CERN-THESIS-2015-167).

2010-2013 Maud Schwoerer. *PhD at LAPP, France. Co-supervised with Dr. I. Wingerter-Seez.*
PHD THESIS: *Études des états finals diphoton dans l'expérience ATLAS au LHC: mesure de sections efficaces différentielles, découverte d'une nouvelle résonance dans la recherche du boson de Higgs et étude de ses propriétés* (defended on 27/09/2013. CERN-THESIS-2013-193).

Supervision of other PhD projects

2012-2013 Angel Campoverde. *PhD at Stonybrook University, USA. Co-supervised with Prof. R. McCarthy.*
PHD THESIS: *Search For Gravitons Decaying To Vector Bosons In Hadronic Final States in proton-proton Collisions at $\sqrt{s} = 8$ TeV Collected With The ATLAS Detector* (defended on 12/08/2015. PDF).
PROJECT: *Study of the Calibration Constants of the Electromagnetic Calorimeter* (ATL-LARG-INT-2013-006).
Currently Post-doc at University of Siegen, Germany.

2012-2013 Guillaume Lefebvre. *PhD at LPNHE, France. Co-supervised with Prof. M. Ridel.*
PHD THESIS: *Étalonnage des jets et mesure de la section efficace de production de paires de quarks top dans le canal hadronique à $\sqrt{s} = 8$ TeV avec l'expérience ATLAS auprès du LHC.* (defended on 26/09/2014. CERN-THESIS-2014-234).
PROJECT: *Impact of the LAr High Voltage corrections on the electromagnetic energy response resolution* (ATL-LARG-INT-2013-001).
Currently Consultant at InovenAltenor, Paris, France.

2009-2010 Stefania Bordoni. *PhD at LPNHE, France. Co-supervised with Prof. M. Ridel.*
PHD THESIS: *Mesure de la section efficace de production des quarks beaux et charmés à partir de leur désintégration semi-leptonique en électrons avec l'expérience ATLAS dans les collisions protons-protons à $\sqrt{s} = 7$ TeV au LHC* (defended on 16/09/2011. CERN-THESIS-2011-246).
PROJECT: *Effect of electronic calibration constant variations on reconstructed cell energy in the ATLAS electromagnetic calorimeter* (ATL-LARG-INT-2011-001).
Currently Fellow at CERN, Switzerland.

2007-2009 Carolina Gabaldon Ruiz. *PhD at University of Madrid, Spain. Co-supervised with Prof. J. Del Peso.*
PHD THESIS: *Calibration of the ATLAS electromagnetic calorimeter and search of the W' exotic boson* (defended on 24/03/2010. PDF).
PROJECT: *Electronic calibration of the ATLAS electromagnetic calorimeter endcaps. Measurement of*

the drift time in the ATLAS electromagnetic calorimeter using cosmic pulses (ATL-LARG-INT-2009-010).
Currently Areo Performance Manager at Inmarsat, Nyon, Switzerland.

Master student internships

2018 Luca Franco. *M2/Erasmus internship at LAPP, France. Co-supervised with Prof. E. Meoni, Università della Calabria, Italy*.
MASTER THESIS ("LAUREA MAGISTRALE"): *Study of the Higgs boson production in Vector Boson Fusion through its decay into two photons with the ATLAS detector at LHC*

2017 Florian Eble. *M1 internship at LAPP, France. Co-supervised with Dr. N. Lorenzo Martinez*.
PROJECT: *Study of LAr calibration from Run2 for phase II upgrade.* (ATL-COM-LARG-2017-028).

Summer Student projects

2018 Dimitrios Sidiropoulos Kontos. *CERN Summer Student*.
PROJECT: *Machine Learning techniques for precision Higgs physics, exploiting the Higgs Boson decays into two photons.*

2010 Maud Schwoerer. *CERN Summer Student*.
PROJECT: *First evidence of* $\Upsilon \to e^+e^-$ *events at* $\sqrt{s} = 7$ *TeV in the ATLAS detector.* (ATL-PHYS-INT-2011-054).

2007 Kilian Mueller. *CERN Summer Student*.
PROJECT: *Studies on longitudinal weight extraction for very low energy electrons.*

2006 Martin Skou Andersen. *CERN Summer Student*.
PROJECT: *Optimization of clustering algorithms for very low energy electrons.*

Brief overview of research activities

Higgs physics at the LHC

2007–present ***Search for the Higgs boson and measurement of its properties***

- Search and discovery of the Standard Model Higgs boson with the $H \to \gamma\gamma$ decay with 7 TeV and 8 TeV pp data.
- Measurement of the Higgs boson couplings with the $H \to \gamma\gamma$ with 7 TeV and 8 TeV pp data.
- Measurement of the Higgs boson mass with the $H \to \gamma\gamma$ decay with 7 TeV and 8 TeV pp data; ATLAS Higgs mass Run 1 combination with $H \to ZZ^* \to 4\ell$; ATLAS and CMS Run 1 mass combination.
- Measurements of the Higgs boson couplings, Simplified Template Cross Sections (STXS), mass and width with the $H \to \gamma\gamma$ decay with 13 TeV pp data.
- Effective Field Theory (EFT) interpretation of Higgs properties, both in the $H \to \gamma\gamma$ channel and in the global coupling combination. Global EFT fit (Higgs+EW+top).

2009–present ***Prompt photons production at the LHC***

- Measurement of inclusive prompt photon cross sections in pp collisions at $\sqrt{s} = 7$ TeV.
- Measurement of differential prompt diphoton cross sections in pp collisions at $\sqrt{s} = 7$ TeV.
- Measurement of prompt diphoton production in association with jets in pp collisions at $\sqrt{s} = 8$ TeV.
- Study of sensitivity potential of $Z + j/\gamma + j$ 8 TeV/13 TeV cross-section double ratio.

ATLAS detector, performance optimization and upgrade

2000–present ***Electron and photon energy calibration***

- Electron and photon response calibration, using *in-situ* techniques and MC-based calibration, at test-beam and with pp data.
- Data-driven correction to the electromagnetic calorimeter response; intercalibration of longitudinal layers of electromagnetic calorimeter with photons.
- Final Run 1 electron and photon calibration for the measurement of the Higgs boson mass.
- Run 2 improved electron and photon calibration exploiting lateral electromagnetic shower information.
- Development of an improved correction for the LAr Medium Gain electronic calibration using special $Z \to e^+e^-$ data, to be used to improve the extrapolation of the electromagnetic calorimeter response between the Z and the H bosons' kinematical regimes.

2008–2012 ***Photon identification***

- Optimization of photon identification criteria for 7 TeV and 8 TeV data taking.
- Data-driven measurement and correction of Data/MC discrepancies of electromagnetic shower shapes.
- Data-driven measurement of photon identification efficiencies.

2000–present ***Liquid Argon calorimetry***

- ATLAS Liquid Argon (LAr) calorimeter detector prototyping, test-beam, assembly and installation.
- LAr electronic calibration development, from ADC count to cell energy.
- LAr reconstruction software, simulation and condition database development and maintenance.
- LAr data quality (software setup and maintenance, shifter training and coordination).
- Development of the new front-end calibration board for the LAr calorimeter Phase II HL-LHC upgrade.

Other activities

2014–2017 ***Search for physics beyond the Standard Model at the LHC***

- Search for low and high-mass spin-0 and spin-2 resonances decaying in photon pairs with 8 TeV and 13 TeV pp data.

2013–2015 ***Study of physics potential of a Future Circular Collider (FCC)***

- Projection of Higgs property measurement sensitivity with $H \to \gamma\gamma$ at FCC pp collider at $\sqrt{s} = 100$ TeV

1997–1998 ***Ultra-relativistic heavy ions at the SppS***

- Measurement of the J/ψ suppression in Pb-Pb collision at 158 GeV/c per nucleon with the $\mu\mu$ decay

1998–2000 ***Rad–hard microelectronics for the LHC detectors***

- Development and test of rad-hard *enclosed* transistors for the front-end electronics of the LHC detectors

Summary of scientific production

Publications

As of November 22, 2022, more than 900 publications on peer-reviewed scientific journals. All publications available on INSPIRE; citations and h-index available on SCOPUS, INSPIRE or Google Scholar.

Selected publications

15 publications selected among those representative of my research commitments and achievements, and counting major personal contributions.

[1] ATLAS Collaboration, "Methodology for EFT interpretation of Higgs boson Simplified Template Cross-section results in ATLAS,". https://cds.cern.ch/record/2694284.

[2] ATLAS Collaboration, "Combined measurements of Higgs boson production and decay using up to 80 fb^{-1} of proton-proton collision data at $\sqrt{s} = 13$ TeV collected with the ATLAS experiment," *Phys. Rev. D* **101** no. 1, (2020) 012002, arXiv:1909.02845 [hep-ex].

[3] ATLAS Collaboration, "Observation of Higgs boson production in association with a top quark pair at the LHC with the ATLAS detector," *Phys. Lett.* **B784** (2018) 173–191, arXiv:1806.00425 [hep-ex].

[4] ATLAS Collaboration, "Measurements of Higgs boson properties in the diphoton decay channel with 36 fb^{-1} of pp collision data at $\sqrt{s} = 13$ TeV with the ATLAS detector," *Phys. Rev.* **D98** no. 5, (2018) 052005, arXiv:1802.04146 [hep-ex].

[5] ATLAS Collaboration, "Search for resonances in diphoton events at $\sqrt{s}$=13 TeV with the ATLAS detector," *JHEP* **09** (2016) 001, arXiv:1606.03833 [hep-ex].

[6] ATLAS Collaboration, "Measurement of Higgs boson production in the diphoton decay channel in pp collisions at center-of-mass energies of 7 and 8 TeV with the ATLAS detector," *Phys. Rev.* **D90** no. 11, (2014) 112015, arXiv:1408.7084 [hep-ex].

[7] ATLAS and CMS Collaborations, "Combined Measurement of the Higgs Boson Mass in pp Collisions at $\sqrt{s} = 7$ and 8 TeV with the ATLAS and CMS Experiments," *Phys. Rev. Lett.* **114** (2015) 191803, arXiv:1503.07589 [hep-ex].

[8] ATLAS Collaboration, "Measurement of the Higgs boson mass from the $H \to \gamma\gamma$ and $H \to ZZ^* \to 4\ell$ channels with the ATLAS detector using 25 fb^{-1} of pp collision data," *Phys. Rev.* **D90** no. 5, (2014) 052004, arXiv:1406.3827 [hep-ex].

[9] ATLAS Collaboration, "Electron and photon energy calibration with the ATLAS detector using LHC Run 1 data," *Eur. Phys. J.* **C74** no. 10, (2014) 3071, arXiv:1407.5063 [hep-ex].

[10] ATLAS Collaboration, "Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC," *Phys. Lett.* **B716** (2012) 1–29, arXiv:1207.7214 [hep-ex].

[11] ATLAS Collaboration, "Search for the Standard Model Higgs boson in the diphoton decay channel with 4.9 fb^{-1} of pp collisions at $\sqrt{s} = 7$ TeV with ATLAS," *Phys. Rev. Lett.* **108** (2012) 111803, arXiv:1202.1414 [hep-ex].

[12] ATLAS Collaboration, "Measurement of isolated-photon pair production in pp collisions at $\sqrt{s} = 7$ TeV with the ATLAS detector," *JHEP* **01** (2013) 086, arXiv:1211.1913 [hep-ex].

[13] ATLAS Collaboration, "Measurement of the inclusive isolated prompt photon cross-section in pp collisions at $\sqrt{s} = 7$ TeV using 35 pb^{-1} of ATLAS data," *Phys. Lett.* **B706** (2011) 150–167, arXiv:1108.0253 [hep-ex].

[14] ATLAS Collaboration, "Readiness of the ATLAS Liquid Argon Calorimeter for LHC Collisions," *Eur. Phys. J.* **C70** (2010) 723–753, arXiv:0912.2642 [physics.ins-det].

[15] D. Banfi, M. Delmastro, and M. Fanti, "Cell response equalisation of the ATLAS electromagnetic calorimeter without the direct knowledge of the ionisation signals," *JINST* **1** (2006) P08001.

Communications at international conferences

[1] M. Delmastro, "Higgs boson properties: mass, width, spin and CP," in *Higgs10*. 4 July, 2022. https://cds.cern.ch/record/2824995.

[2] M. Delmastro, "Higgs couplings and properties measurements: recent results as well as full run-2 and HL-LHC prospects (invited talk)," in *31*$^{\text{st}}$ *Rencontres de Blois, Particle Physics and Cosmology*. 2–7 June, 2019.

[3] M. Delmastro, "Diphoton searches in ATLAS," in *51*$^{\text{st}}$ *Rencontres de Moriond on Electroweak Interactions and Unified Theories*. 12–19 March 216, 2016. https://cds.cern.ch/record/2150667. ATL-PHYS-PROC-2016-046.

[4] M. Delmastro, "Results of $H \to \gamma\gamma$ and $Z\gamma$ from ATLAS," in *Aspen 2013 "Higgs Quo Vadis" conference*. Aspen, CO, USA, 10–15 March, 2013.

[5] M. Delmastro, "Photon and diphoton production at ATLAS," in *Proceedings of the 15th Lomonosov Conference, Moscow State University, 8–24 August, 2011*, pp. 57–60. Moscow, Russia, 2013. arXiv:1111.2223 [hep-ex]. ATL-PHYS-PROC-2011-236.

[6] M. Delmastro, "Searches for the Higgs boson at the LHC," in *Proceedings of the "XXI*$^{\text{eme}}$ *Rencontres de Blois"*. Blois (France), 21–26 june, 2009. arXiv:0909.0493 [hep-ex]. ATL-PHYS-PROC-2009-077.

[7] M. Delmastro, "Recent results of the ATLAS barrel combined test beam," *AIP Conf.Proc.* **867** (2006) 358–365. *Proceedings of the 12*$^{\text{th}}$ *International Conference on Calorimetry in High Energy Physics, CALOR 2006, Chicago, USA, June 5-9, 2006.*

[8] M. Delmastro, "A stand–alone signal reconstruction and calibration algorithm for the ATLAS electromagnetic calorimeter," in *Proceedings of the IEEE Nuclear Science Symposium 2003*. Portland, Or, USA, 19–25 October, 2003.

[9] M. Delmastro, "The ATLAS Liquid Argon calorimeters read–out system," in *Proceedings of the IEEE Nuclear Science Symposium 2003*. Portland, Or, USA, 19–25 October, 2003.

[10] M. Delmastro, "The ATLAS liquid Argon electromagnetic calorimeter: main features, requested physic performances and test–beam results," in *Proc. 6*$^{\text{th}}$ *World Multiconference on Systemics, Cybernetics and Informatics (SCI2002)*. Orlando, Fl, USA, 14–18 July, 2002.

Recent communications at national conferences and workshops

[1] M. Delmastro, "Higgs Review," in *Workshop Physics ATLAS France 2017*. Vogüé, France, 29-31 Mars, 2017. https://indico.cern.ch/event/572873/.

[2] M. Delmastro, "ATLAS electromagnetic physics," in *2*$^{\text{nd}}$ *LPCC Workshop on LHC detector simulations: status, needs and prospects*. CERN, Switzerland, 18–19 March, 2014. https://indico.cern.ch/conferenceDisplay.py?confId=279530.

[3] M. Delmastro, "Direct photons at ATLAS," in *1*$^{\text{st}}$ *Workshop on Photon Physics and Simulation at Hadron Colliders*. Paris, France, 30 March, 2012. https://indico.in2p3.fr/event/5709/.

[4] M. Delmastro, "Four good reasons to be a visible researcher (invited talk)," in *102*$^{\text{nd}}$ *Congress of the Italian Physics Society (SIF)*. Padova, Italy, 26–30 September, 2016. http://www.sif.it/attivita/congresso/102.

[5] M. Delmastro, "Communicate physics with the guise of daily experience (invited talk)," in *Comunicare Fisica 2012*. Torino, Italy, October 8-12, 2012. http://agenda.infn.it/conferenceDisplay.py?confId=4955.

Recent technical reports

[1] F. Bedeschi, M. Convery, H. Danielsson, M. Delmastro, G. Eigen, F. Forti, D. Glenzinski, A. Kluge, A. Kuzmin, F. Lanni, M. Morandin, F. Simon, and A. Smith, "UCG Report on the TDR for the Phase-II Upgrade of the CMS Barrel Calorimeter,". https://cds.cern.ch/record/2304338. CERN-LHCC-2018-004. UCG-027.

[2] A. Collaboration, "Technical Design Report for the Phase-II Upgrade of the ATLAS LAr Calorimeter," Tech. Rep. CERN-LHCC-2017-018. ATLAS-TDR-027, CERN, Geneva, Sep, 2017. https://cds.cern.ch/record/2285582.

[3] ATLAS LAr Calorimeter Group, "Initial Design Review of the ATLAS Liquid Argon Calorimeter System Phase II Upgrade,". https://cds.cern.ch/record/2248382. ATL-COM-LARG-2017-006.

[4] ATLAS Collaboration, "ATLAS Liquid Argon Calorimeter Phase-I Upgrade Technical Design Report," Tech. Rep. CERN-LHCC-2013-017. ATLAS-TDR-022, Sep, 2013. https://cds.cern.ch/record/1602230.

Outreach

Public events

2015–present *Il bosone di Higgs in un bicchiere d'acqua* (The Higgs Boson in a glass of water): a popular science conference targeting students, presented in numerous Italian high-schools and public events (and virtually held in 2020!).

2022 Soirée "10 ans du bosone de Higgs" au LAPP, Conference grand public pour celebrer l'anniversaire de la découverte du boson de Higgs.

2020 Da dove viene il 99% della massa della materia ordinaria? (Where does 99 % of ordinary matter come from?). Virtual conference for the Leeds EN-IT Interpreting Practice Sessions.

2020 *Misurare le proprietà del bosone di Higgs* (How to measure the Higgs boson properties): virtual conference for the "La Via delle Scienze" Spring 2020 cycle.

2020 *Mattoncini elementari* (Elementary Brick): virtual workshop at the 2020 INFN Kids Summer Camp.

2017 *Comunicare la fisica al tempo dei social?* (How to communicate physics in the social network era?). Public seminar at Università degli Studi di Milano, Milano (Italy), February 28, 2017.

2016 *Fête de la Science 2016*, LAPP Annecy, France. Presentation and projection of BBC documentary movie *Inside CERN*, and animation of following question-and-answers session.

2016 *Il compendio delle teorie squinternate* (The compendium of tattered theories), Conference at the *Festival della Comunicazione*, Camogli, Italy, September 10, 2016

2015 *Explaining the Higgs Boson with LEGO bricks*, Conference at the *Festival delle Scienze*, Rome, Italy, October 2, 2015.

2015 *The dance of science*, invited presentation and round-table discussion on LHC physics at *Orvieto Scienza 2015*, Orvieto, Italy, February 27-28, 2015. In collaboration with INFN.

2015 *Si può spiegare il bosone di Higgs?* (Can the Higgs boson be explained?), Conference at the *Festival della Comunicazione*, Camogli, Italy, September 12, 2015

2014 *FameLab 2014*. Communication trainer for the participants to the Geneva Regional Edition.

2013 Lecturer and volunteer for the CERN Open Days 2013.

2012 *Looking For the Immeasurably Small.* TED talk at TEDx Lake Como, November 19, 2012.

2005–present *ATLAS Guide.* Guided tours of the ATLAS underground experimental area and control room in English, French and Italian.

Books

2014 *Particelle familiari (Familiar particles)*. A popular science book where the job of a particle physicist looking for the Higgs boson gets unveiled in the dialogues with his five-years old daughter, his wife and other members of the family. Published in Italy by Editori Laterza in July 2014. Second edition in 2015, paperback edition in 2016.

Podcast

2020 Tu che sei un fisico (You who are a physicist). A podcast where a particle physicist answer to any question sent from the audience. 8 episodes produced in 2020.

Blogs

2006–present *Borborigmi di un fisico renitente* (*"Rumbles of a resistant physicist"*). Popular-science blog in Italian, focused on particle physics vulgarization. About 2 millions unique visits since 2009.

2010 *Blogging ICHEP 2010.* Featured blogger of the collective forum about the 35$^{\text{th}}$ edition of the International Conference on High Energy Physics (Paris, July 2010).

TV and radio

2016 Participation to the *Inside CERN* documentary movie by BBC 2 Horizon.

2015 Participation to the TV show *It's all Einstein's fault! ("Tutta colpa di Einstein")*, Italia 1, Italy.

2010–present Numerous interviews and interventions at panels on the Italian and Swiss public radios, addressing

the state-of-the-art of particle-physics.

14/02/2019	*What happens during the LHC shutdown?*	Le Oche, Radio Popolare Milano
08/06/2017	*The practical value of science*	Millevoci, RSI
28/02/2017	Interview by *BreakingLab* podcast	Radio Statale
17/09/2016	Interview with *It's all Einstein's fault!* conductor	RSI
30/01/2016	*Einstein's garden: the electroweak force*	RSI
10/02/2015	*The history of the Higgs boson*	StoccolmaRoma podcast
11/11/2014	*The science of Interstellar*	Radio 3 Scienza, Radio 3
05/08/2014	Interview about *Familiar particles* book	Radio 3 Scienza, Radio 3
08/10/2014	*Seeing the invisible*	Memos, Radio Popolare Milano
16/10/2013	*A nearly-Nobel Prize for CERN*	Scintille, RSI
26/06/2013	*Particle physics and LEGO bricks*	Scintille, RSI
05/07/2012	*Emotions and reactions after the Higgs discovery*	Radio 3 Scienza, Radio 3
02/07/2012	*Rumours and scientific communication*	Radio 3 Scienza, Radio 3
25/10/2011	*Superluminal neutrinos?*	Scienza Speciale 42, RSI
05/10/2011	*What's behind superluminal neutrinos?*	Radio 3 Scienza, Radio 3
09/05/2011	*What else is there in the cosmos?*	Millevoci, RSI
05/04/2010	*The particle physics "commune"*	Radio 3 Scienza, Radio 3

Press

2014 *Comics & Science @ CERN*. Organizer and co-author of the comic book "OraMai" (*"NeverNow"*), in collaboration with the CERN Internal Communication office.

2012–present Articles and interviews on various newspaper and magazines.

03/09/2016	*The crackpot index*	Il Manifesto (Alias)
19/12/2015	*Something new at the LHC? Only time will tell*	Le Scienze (Italian edition of *Scientific American*)
10/09/2015	*Little Einsteins*	Style Piccoli (interview)
09/10/2013	*A model Nobel*	La Nazione Ticino
04/02/2014	*Sixty years of CERN*	La Nazione Ticino (interview)
12/2013	*Imagine a night at CERN*	Meridiani Svizzera (interview)
10/2012	*scientists and navigators*	D la Repubblica N. 813 (interview)
09/2013	*Elementary physics of everyday time*	Camminiamo Insieme (interview)

2012–2015 Author of the science section of DafDaf (Italian monthly magazine for children aged 6-11).

05/2015	*Why do metal boats float, and metal spoon sink?*	DafDaf n. 56
02/2015	*My name is Philae, and I ride a comet*	DafDaf n. 53
08/2014	*Measuring time*	DafDaf n. 49
06/2014	*Finding the way among the stars*	DafDaf n. 46
04/2014	*Why it is dark at night?*	DafDaf n. 43
12/2013	*Bits of cosmic honey*	DafDaf n. 39
07/2013	*Colors appearing, colors disappearing*	DafDaf n. 34
02/2013	*Mathematics and soap balls*	DafDaf n. 29
08/2012	*Water*	DafDaf n. 23
07/2012	*Air*	DafDaf n. 22
05/2012	*DIY spectroscopy*	DafDaf n. 20
04/2012	*It lives, it's yeast*	DafDaf n. 19
02/2012	*What do plants eat?*	DafDaf n. 17

Expositions

2016 Video presence in the renewed CERN Microcosm.

2016 Presence (audio interview, personal object locker) in the *Extreme* permanent exposition at the Science Museum in Milano, Italy, a joint project with CERN and INFN.

2014 *The daily life of a particle physicist*: activity during the Open Night 2014 at the Science and Technology Museum of Milano, Italy.

Languages

Italian (native speaker). *English* (fluent). *French* (fluent).

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