

Curriculum Vitae

Giovanni MARCHIORI

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Personal data and contact information

Birthday	7 November 1977
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Employment

2009–present	“chargé de recherche” (CRCN) at Institut national de physique nucléaire et de physique des particules (IN2P3) of CNRS , France, LPNHE (2009–2021) and APC (2021–present) laboratories
2008–2009	post-doctoral research contract with CNRS/IN2P3 at LPNHE , Paris
2005–2008	post-doctoral research contract at Università degli Studi di Pisa

Education and academic qualifications

11/2013	Habilitation à Diriger des Recherches , Université Pierre et Marie Curie, Paris. (document)
06/2005	Ph. D. in Physics , Università degli Studi di Pisa (Italy). (thesis)
11/2001	Physics Diploma , Scuola Normale Superiore, Pisa. Final mark: 70/70 <i>cum Laude</i> .
07/2001	Master Degree in Physics , Università degli Studi di Pisa. Final mark: 110/110 <i>cum Laude</i> .

Responsibilities

2024–present	responsible of the APC Particles group (30 physicists)
2024–present	member of the Collaboration board of the ECFA detector R&D group on calorimetry
2023–present	member of the Speakers Committee of the ATLAS Collaboration
2022–present	co-convener of working group 3 (detectors) of the “ ECFA study on future e^+e^- Higgs/Top/Electroweak factories ”
2022–present	member of the ATLAS Collaboration board
2021–present	co-founder and responsible of the APC ATLAS/FCC Higgs team (10 physicists)
2014–present	responsible of the skimming software and production for the ATLAS e/γ working group
2021–2023	member of the Publication Committee of the ATLAS Collaboration
2019–2022	analysis contact of the ATLAS Higgs $\rightarrow \gamma\gamma$ fiducial cross sections team (15 physicists)
2018–2021	member of the council of “ Fédération de Recherche Interactions Fondamentales ” (FRIF)
2017–2021	responsible of the “ ATLAS-tracking ” team at LPNHE: 6 staff, 2 post-doc, 10 Ph.D. students. In 2019 the team had a dedicated budget of around 60 thousand euros
2016–2021	responsible of the LPNHE team in the French ANR “Photonportal” collaboration project
2015–2021	responsible of the “ Higgs to $b\bar{b}$ ” analysis team of the ATLAS-LPNHE team (10 physicists)

2018–2020	co-convener of the LHC Higgs working group 1 (cross sections and branching ratios) (level-2 responsibility, 2 years)
2015–2019	member of the council of the scientific responsables of LPNHE
2012–2019	leader of the French-Chinese collaboration between the ATLAS teams of LPNHE, USTC (Hefei) and IHEP (Beijing) , within the France-China Particle Physics Laboratory (FCPPL), on photon-related and Higgs-boson-related studies in ATLAS (about 8 physicists each year)
2014–2018	elected member of the “conseil de laboratoire” of LPNHE (4 years)
2016–2017	co-convener of the “HGamma” ($H \rightarrow \gamma\gamma$ and $Z\gamma$) working group of the ATLAS Collaboration (level-3 responsibility, 1 year) (about 125 physicists)
2014–2016	co-convener of the “Photon identification” working group of the ATLAS Collaboration (level-3 responsibility, 2 years) (about 35 physicists)
2014–2016	analysis contact of the ATLAS Higgs $\rightarrow Z\gamma$ analysis team (10 physicists)
2011–2012	convener of the “Standard Model Direct Photon” working group of the ATLAS Collaboration (level-3 responsibility, 1 year) (about 30 physicists)
2010–2012	organizer of the weekly scientific seminars at LPNHE (2 years)
2007–2010	co-convener of the “B to open charm decays” working group of the BABAR Collaboration (level-2 responsibility, 3 years) (about 30 physicists)
2006–2008	BABAR skim software coordinator : maintainer and developer of the C++ code used for producing about 200 pre-filtered subsets of the full BABAR data sample
2003–2004	operation manager, on-call expert and data-quality responsible of the BABAR vertex detector during the BABAR data taking (4 months)

Scientific activities

2021–present	<p>member of the FCC Collaboration</p> <p>2021–present: sensitivity studies for measuring Higgs couplings to $b/c/s$ quarks and gluons at FCC-ee</p> <p>2022–present: development of the simulation of a high-granularity liquid argon calorimeter for FCC-ee</p>
2008–present	<p>member of the ATLAS Collaboration and of the ATLAS Planar Pixel Sensor Upgrade Project (evolved into the ATLAS ITk Pixel Collaboration)</p> <p><i>Preparation of the LHC Run 1</i></p> <p>2009–2010: prospect studies for observing Higgs boson decays to $\gamma\gamma$ with the first ATLAS data</p> <p>2009–2010: optimisation of the ATLAS photon identification criteria for the LHC Run1, and feasibility studies of data-driven photon trigger efficiency measurements</p> <p>2011–2012: optimisation of the ATLAS di-photon trigger for the 2012 8 TeV data taking</p> <p><i>Performance studies with Run 1 data</i></p> <p>2011–2015: measurements of the ATLAS photon trigger and identification efficiencies</p> <p><i>Physics measurements with Run 1 data</i></p> <p>2010–2013: measurement of inclusive prompt photon (γ), γ+jet and $\gamma\gamma$ cross-sections</p> <p>2010–2014: search for and discovery of a Higgs boson using decays to two photons</p> <p>2012–2014: search of the Higgs boson decay to $Z\gamma$</p> <p><i>Preparation of the LHC Run 2</i></p> <p>2014–2015: optimisation of the ATLAS photon identification criteria for the LHC Run 2</p> <p><i>Performance studies with Run 2 data</i></p> <p>2014–2017: measurement of the efficiency of the Run2 ATLAS photon identification algorithms</p> <p>2016–2017: calibration and study of the linearity of the energy response of the ATLAS electromagnetic calorimeter with $J/\psi \rightarrow ee$ events</p> <p>2015–2022: measurement of the ATLAS b-tagging efficiency and b-jet energy scale</p> <p><i>Physics measurements with Run 2 data</i></p> <p>2014–2017: search for supersymmetry in events with two photons and missing energy</p> <p>2014–2017: search for high-mass $Z\gamma$ and $\gamma\gamma$ resonances</p> <p>2014–2022: search for and observation of Higgs boson decays to $b\bar{b}$ and measurement of Higgs boson cross-sections with $H \rightarrow b\bar{b}$</p> <p>2014–2024: search and evidence for the rare Higgs boson decay to $Z\gamma$</p>

2016–2023: Higgs boson measurements (mass, cross-sections, couplings) with $\gamma\gamma$ decays
 2018–2020: theoretical calculations/modelling of Higgs boson production and decay at the LHC
 2020–2023: search for double-Higgs production and constraints on the Higgs boson self-coupling with the $b\bar{b}\gamma\gamma$ and $b\bar{b}\tau\tau$ final states

Preparation of the LHC Run 3

2020–2021: reoptimisation of the photon identification algorithms for the Run 3 high pileup
 2023–present: trigger optimisation studies for $H \rightarrow Z\gamma$ decays

Physics measurements with Run 3 data

2022–2023: measurement of the Higgs production cross-section at 13.6 TeV
 2023–present: search for HH production in the $b\bar{b}\gamma\gamma$ and $b\bar{b}\tau\tau$ channels

Detector R&D for the ATLAS upgrades

2009–2013: development of “slim-edge” silicon pixel sensors for the insertable b-layer (IBL)
 2012–2019: R&D on active-edge silicon sensors for the ATLAS inner tracker (ITk) at HL-LHC
 2015–2017: electrical tests of low-gain avalanche diode sensors for a high-granularity timing detector for the upgrade of the ATLAS detector at HL-LHC
 2017–2018: module assembly for the demonstrators of the ITk outer-barrel pixel detector
 2018–2021: qualification of the LPNHE cleanroom as an official ITk sensor testing site. Market survey for the ITk pixel detector. Setup of the LPNHE cleanroom for module assembly (gluing, wirebonding) and testing
 2021–2023: contribution to the qualification of the LPNHE cleanroom as an official ITk pixel module assembly and testing site, preproduction of ITk pixel modules
 2021–present: implementation of radiation damage effects in the ATLAS ITk simulation, improvement of the ITk pixel and strip digitisation software

2000–present member of the **BABAR** and **BABAR Silicon Vertex Tracker (SVT)** Collaborations
 2002–2012: measurement of the branching fractions and CP -violating charge asymmetries of $B \rightarrow D^{(*)0}K^*$ decays and of the Unitarity Triangle angle γ
 2007–2010: studies of QCD with the exclusive hadronic B decays to open charm
 2003–2004: operation manager of the BABAR vertex detector
 2002–2003: BABAR vertex detector spare module construction and radiation damage studies

2006–2008 member of and contributor to the **SLIM5** (Silicon detectors with low interaction with material) and **SuperB** (high-luminosity flavour factory) projects
 2006–2008: development of a Geant4 simulation of beam-induced backgrounds in SuperB
 2008: testbeam characterization of monolithic active silicon pixel sensors for SuperB

2005 Feasibility study of a $\mu \rightarrow \tau$ conversion experiment

The detailed description of my research activities and the lists of presentations, supervision and review activities is available at <http://cern.ch/Giovanni.Marchiori/CV/GiovanniMarchiori-researchactivities.pdf>.

Awards

2021 CNRS “**prime d’encadrement doctoral et de recherche**”
 2013 CNRS “**prime d’excellence scientifique**”
 2013 “**European Physics Society High Energy and Particle Physics Prize**” awarded to the members of the ATLAS Collaboration for the discovery of the Higgs boson
 2015–2020 awards granted to my former Ph.D. students for their theses performed under my direction:
 Ahmed Tarek: “**ATLAS Collaboration Thesis Award**” (2020)
 Stefano Manzoni: “**INFN Premio Nazionale Marcello Conversi**” (2019) and “**ATLAS Collaboration Thesis Award**” (2019)
 Kun Liu: “**FCPPL prize for the best Ph.D. thesis**” (2016) and “**ATLAS Collaboration Thesis Award**” (2015)

Grants

- 2021 grant (**125000 euros**) by **Université de Paris** to create a new ATLAS+FCC “Higgs” research team (**team leader, author of the proposal**)
- 2020 grant (**482000 euros**) by Ile-de-France (320000 euros), CNRS/IN2P3, LPNHE and Sorbonne Université (162000 euros) to create a silicon sensor measurement platform (“CLAP”). **Scientific responsible of the project, main author of the proposal**
- 2012–2019 grants (**4000-5000 euros/year from CNRS, 15000 euros/year from Chinese academy of science**, for 8 years) by **FCPPL** for the LPNHE-USTC-IHEP collaboration on photon and Higgs-related studies. **Co-leader of the project and co-author of the proposal.**
- 2016 4-year grant (**485000 euros**) by the French national agency for research (**ANR**) for the “Photonportal” LAPP/LAL/LPNHE project (**contributor to the proposal, responsible for LPNHE**)
- 2016 grant by **ILP** for a one-month visit by Prof. H. Sadrozinski (UCSC, USA) for R&D on a high-granularity timing detector for the upgrade of the ATLAS calorimeter (**author of the proposal**)
- 2012, 2015 grants by **ILP** and “Fédération de recherche: interactions fondamentales” (**FRIF**) for the organisation of the “Workshop on photons at the LHC” (**author of the proposal**)
- 2013, 2015 grants by **UPMC Paris** for two one-month visits of Prof. L. Bosisio (Univ. of Trieste, Italy) for R&D on silicon pixel sensors for the upgrade of the ATLAS pixel detector (**author of the proposal**)
- 2014 4-year grant (**499000 euros**) by **ANR** for the “Hbb+ttH@LHC” CPPM/LAL/LPNHE/IRFU project (**contributor to the proposal and responsible of one workpackage**)
- 2010–2011 grant by the European Union program “AIDA Transnational Access (TA)” for taking part to testbeams of the ATLAS planar pixel sensor upgrade project (**author of the proposal**)
- 2010 4-year grant (**480000 euros**) by **ANR** for the “HiggsNet” LAL/LAPP/LPNHE/LPSC project (**contributor to the proposal**)
- 2010 EU grant for a collaboration with IRST-FBK (Trento) for doping profile measurements of silicon sensors for the upgrade of the ATLAS pixel detector (**author of the proposal**)

Conference and workshop organization

- 2023–2024 organising committee member of the **Higgs Hunting 2024** conference (Orsay/Paris, 09/2024)
- 2021–2024 member of the International Advisory Committees of the **LHC Physics (LHCP) 2022** (Taipei, 05/2022), **LHCP 2023** (Belgrade, 05/2023), and **LHCP 2024** (Boston, 05/2024) conferences
- 2015–2024 scientific committee member of the **XX, XIX, XVI, XV, XIV, XIII Schools on Software for Nuclear, Subnuclear and Applied Physics** (Alghero, 06/2023, 06/2022, 05/2019, 05/2018, 06/2017, 06/2016)
- 2022–2023 programme committee member of the **First** and **Second ECFA workshop on e^+e^- Higgs/EW/Top Factories** (DESY, 10/2022; Paestum, 10/2023)
- 2014–2023 member of the scientific and local organizing committees of the **2023, 2021, 2018, 2016, 2014 IN2P3 schools on silicon detector simulation** (Paris, 11/2021, 10/2018, 09/2016, 09/2014)
- 2022 co-chair of the scientific and local organising committees of the **Physique ATLAS France workshop** (Paris, 09/2022)
- 2021 co-convener of the “Higgs” parallel sessions of the **EPS-HEP 2021** conference (online, 07/2021)
- 2018–2021 chairperson of the local organising committee, member of the steering committee, and co-chair of the **LHCP 2021** (online, 06/2021) and **LHCP 2020** (online, 05/2020) conferences (more than 1000 participants each, free of charges. Talks were recorded, captioned and available offline. LHCP 2020 was the first major conference in high-energy-physics to offer these features, and allowed keeping scientific debates in a period of COVID-induced lockdowns)
- 2018–2020 organization (scientific program) of the **17th, 16th, 15th Workshops of the LHC Higgs cross section working group** (CERN, 11/2020, 10/2019, 12/2018)
- 2019 member of the local organising committee of the **ApPEC-NuPPEC-ECFA workshop** (Orsay, 10/2019)
- 2019 member of the scientific committee of the **Workshop on Photon Physics and Simulation at Hadron Colliders** (Frascati, 06/2019)
- 2016 chairperson of the scientific and local organization committees of the “**Biennale**” (**bi-annual meeting**) of **LPNHE** (Tirrenia, 10/2016)
- 2015–2016 member of the local organising committee of the **11th “Trento” conference on advanced silicon radiation detectors** (Paris, 02/2016)
- 2015 chairperson of the scientific and local organising committees of the **Workshop on Photon Physics at the LHC** (Paris, 05/2015)
- 2014 member of the scientific committee of the “**ILP workshop on numerical methods: solutions and challenges**” (Paris, 11/2014)

- 2014 local organization and organization of the scientific session on photon identification of the [ATLAS \$e/\gamma\$ workshop](#) (Paris, 09/2014)
- 2013 local organization of the **ATLAS Planar Pixel Upgrade Collaboration meeting** at LPNHE
- 2011–2012 organization (scientific program and web page) of the [Workshop on Photon Physics and Simulation at Hadron Colliders](#) (Paris, 03/2012)
- 2008 local organization of the **BABAR and SuperB Collaboration meetings** (Isola d'Elba, 05/2008)
- 2008 co-convenor of the parallel sessions on flavour physics of the **"IFAE 2008" Italian conference on High energy physics** (Bologna, 03/2008)

Outreach

- 2023–2024 organisation of the [2023](#) and [2024](#) editions of the **International Masterclass** at APC for high-school students
- 2021–2024 participation to the [2021](#), [2023](#) and [2024](#) editions of the **Enseigner l'Univers (Teaching the Universe)** training programme for middle- and high-school teachers
- 2022 **interview with France Culture** for the episode **"Boson W : c'est du lourd"** of the radio broadcasting programme "La Methode Scientifique"
- 2021–2022 contributed proposals to the setup of the APC Outreach Center for pedagogical activities with high-school and university students
- 2015–2021 contributions to the **public pages "À la une" and "Actualités" of the LPNHE web site**, to the IN2P3 electronic newsletter, and to the physics briefings of the ATLAS Collaboration
- 2013–2015 guided tours of the ATLAS LPNHE cleanroom and description of the ATLAS R&D activities on planar pixel sensors for the **"Fete de la science"** (10/2013, 10/2014, 10/2015)
- 2014, 2015 animation of the **International masterclasses on particle physics** for high-school students
- 2014 **presentation of the ATLAS-LPNHE activities** to L3 students of the [ENS Cachan](#) University
- 2011, 2012 organization of two editions (2011 and 2012) of **"Fete de la science"** in the Jussieu campus of UPMC - stand on silicon detectors for high energy physics
- 2012 **phone interview** with the newspaper *La Croix* after the conference press organized by CNRS and CEA for the discovery of a Higgs-like boson

Supervision activities

- 2017–present supervision of **5 post-doctoral** research associates in the LPNHE and APC laboratories
- 2011–present direction or co-direction of **9 Ph. D. theses**
- 2007–2022 supervision and direction of the internships of **28 master (20 M2, 8 M1) and 5 L3 students**
- 2007–2017 mentoring of several students and post-docs as convenor of ATLAS or BABAR working groups

Reviewing activity

- 2006–present **peer-review of several articles for 6 journals** (Physical Review D, Physical Review Letters, Journal of High Energy Physics, Physics Letters B, European Physics Journal C, Chinese Physics C)
- 2015–present **reviewer/rapporteur of 12 Ph.D. theses** and **member of the jury of 8 Ph.D. theses**
- 2021–2023 member of the ATLAS Publications Committee: **review of 40 conference proceedings, review of 12 paper drafts; final reading and sign-off of 8 conference notes**
- 2005–2023 **chairperson of 4 review committees (RC)/editorial boards (EB)** for the internal review of ATLAS (3) and BABAR (1) **journal articles**
- 2011–2022 **member of the EBs** for the internal review of **4 journal articles** and **5 public conference notes** of the ATLAS collaboration
- 2013–2021 **final reading and sign-off of 6 public documents** of the ATLAS collaboration (4 public notes and 6 conference notes)

Teaching activities

2006–2008 Università degli Studi di Pisa, Engineering department: collaboration contract for teaching **Classical mechanics and electromagnetism**

Presentations

2002–2024 17 invited talks and 2 posters at international conferences (ICHEP, EPS-HEP, Lepton-Photon, Moriond, SUSY, IEEE Nuclear Science Symposium ...)
17 invited talks at international workshops
10 invited talks at national conferences and workshops
4 lectures at physics schools or seminars
More than 350 presentations in meetings of the BABAR, ATLAS and FCC Collaborations

Publications

2002–2024 co-author of **1792 articles** published in peer-reviewed journals, as well as of several conference notes and internal notes of the ATLAS and BABAR Collaboration
– significant contributor to the analysis and/or editing of the article for more than 60 publications
– main editor of 23 articles
– supervisor, as working group convener, of the analysis and the publication of more than 20 articles
– contributor to the internal review of more than 20 articles
author of **15 conference proceedings (one in preparation), one undergraduate thesis, one Ph. D. thesis and one HDR dissertation**
contributor to **7 technical design reports / technical proposals / conceptual design reports**
contributor to three books and co-author of 6 online journal articles

The **full list of publications** is available at <http://cern.ch/Giovanni.Marchiori/CV/GiovanniMarchiori-publications.pdf>.