

Valentina Mariani

Personal information

First name Valentina

Last name Mariani

Place and date of birth

Nationality

e-mail

Positions and achievements

- from Dec 2025 **Permanent researcher at INFN, Istituto Nazionale di Fisica Nucleare, Perugia.**
- Nov 2023 - Nov 2034 **ASN 02/A1 Fisica sperimentale delle interazioni fondamentali - II fascia, National scientific qualification.**
- Mar 2022 - Dec 2025 **Researcher (RTD-a) at Università degli Studi di Perugia, Physics department.**
- Dec 2021 - Mar 2022 **Grant Position by Università degli Studi di Perugia, "Phase-2 Tracking for the CMS experiment at LHC", Physics department.**
- Dec 2020 - Sept 2021 **Grant Position by L'Oreal For Women in Science, "New physics searches in the era of the High-Luminosity of LHC", Hosted by INFN Perugia and Università degli Studi di Perugia.**
- Nov 2018 - Nov 2020 **INFN Post-Doctoral position, "Phase-2 CMS Tracker: radiation damage simulation within the AIDA framework and process optimization for PS module construction", INFN Perugia.**
- Jul 2017 - Jun 2018 **Associated Member of the Personnel of the European Organization of Nuclear Research, "Di-meson and di-boson production as a probe for parton correlations", CERN.**

Education

- 2015-2018 **Physics PhD, Università degli Studi di Perugia, Dipartimento di Fisica e Geologia.**
Thesis Title: "Open charm production cross section measurement with the CMS tracker at $\sqrt{s} = 13$ TeV."
Supervisors: Prof. Livio Fanò, Dott. Daniele Pedrini
- 2015 **Master degree in Physics, Università degli Studi di Perugia, Dipartimento di Fisica e Geologia.**
Thesis title: "Measurement of the relative tracking efficiency for the charged pions using the branching fraction ratio of the decays $D^{*+} \rightarrow D^0 \pi_{slow}^+ \rightarrow K^- \pi^+ \pi^- \pi^+ \pi_{slow}^+$ and $D^{*+} \rightarrow D^0 \pi_{slow}^+ \rightarrow K^- \pi^+ \pi_{slow}^+$ with the CMS experiment".
Supervisors: Prof. Livio Fanò, Dott. Daniele Pedrini
Final mark: 110/110 cum laude.

- 2013 **Bachelor degree in Physics**, *Università degli Studi di Perugia*, Dipartimento di Fisica e Geologia.
 Thesis title: "Muon charge reconstruction performances with CMS experiment".
 Supervisor: Prof. Livio Fanò
 Final mark: 110/110 cum laude.
- 2013 **Summer CERN stage**, I spent two months at CERN in 2013 finalizing the thesis work and taking part to the Summer Student program about "Standard Model and Beyond, accelerators and astrophysics".
- 2010 **High school diploma**, *Liceo Scientifico Ettore Majorana*, Orvieto.
 Final mark: 100/100 cum laude.

Coordination activity

Responsibility

- April 2024 - Present Department contact for outreach activities
- Jan 2024 - Present Local coordinator of cc3m, third mission coordination committee of INFN
- Jan 2024 - Present Local coordinator of HEPscape!, third mission project of INFN
- Sept 2023 - Present Member of the CMS Collaboration Board
- Sept 2023 - Present Member of the Tracker Institution Board
- Sept 2023 - Present CMS team leader in Perugia.

Coordination within the experiment

- Sept 2025 - Present L2 convener of the B Physics PAG of CMS
- Apr 2024 Convener for the conference "IFAE2024: Incontri di Fisica delle Alte Energie" for the working group "Frontiera Energia"
- Sept 2023 - Aug 2025 L3 convener of the Production and Properties group under B Physics PAG of CMS.
- 2020 - Present Co-convener of the physics activities for the Perugia's CMS group and coordination of the activity for: four PhD students, four master students, one bachelor student.
- Sept 2020 - Aug 2022 L2 convener of the Tracking Group of CMS: finalization of the tracking algorithms for the data taking of Run 3 and coordination of the developments for the Phase 2.
- 2019 Convener for the conference "11th MPI@LHC: 11th International Workshop on Multiple Partonic Interactions at the LHC" for the working group "Minimum Bias, Underlying Event and Monte Carlo generators".
- 2019-2020 Muon contact person for the BPH (B Physics) group.
- 2019-2020 Muon contact person for the SMP (Standard Model Physics) group.
- 2018-2020 Tracking contact person for the BPH (B Physics) group.
- 2017-2018 Muon contact person for the FSQ (Forward and Small-x and QCD) group.
- 2017 Responsible of the Summer Student project at CERN: "Performances evaluation of the CMS tracking system".
- 2016 Responsible in Perugia for the quality control of the pixel modules qualification, calibration and high-rate tests for Phase-1 Upgrade of the CMS detector.
- 2015-2019 Responsible of the charged hadron tracking efficiency measurement in CMS.

Conference organization

- 2020 Member of the organization committee of COMPOSE-IT: Unitarity for composite models and beyond in the HL-LHC era, Perugia 27-28 January 2020.
- 2018 Member of the organization committee of MPI@LHC 2018, Perugia 10-14 December 2018.

Languages and skills

Italian Native language

English	UNDERSTANDING	SPEAKING	WRITING
	Very Good	Very Good	Very Good
French	UNDERSTANDING	SPEAKING	WRITING
	Good	Good	Basic

Skills linux system, shell scripting, python, c++, statistical and analysis CMS tool, machine learning

Scientific Activity

My scientific experience is closely linked with the CMS collaboration since 2013. My research activity is focused on both data analysis and hardware detector development.

- 2022 - Present **Total charm production cross section measurement**, *After the first publication of open charm production cross section in CMS [1] (described below), I'm collaborating with the DESY group to perform an inclusive total open charm production cross section measurement exploring new phase space (namely, lower p_T) never investigated in CMS so far, exploiting all the data collected by CMS at different center of mass energies. We are working in parallel at the measurement of the total open charm cross section on different center of mass energy values, unexplored so far. The analysis with Run1 data collected at $\sqrt{s} = 7$ TeV is approved [2] while the first part of the 2021 and 2022 Run3 data, collected at $\sqrt{s} = 900$ GeV, is in progress.*
- 2022 - Present **Triple Parton Scattering**, *The observation of the production of three J/Ψ in the same event [3] via single, double, and triple parton scattering, raised some interest in the investigation of new kind of QCD processes in CMS, exploiting the triple meson production as probe for the proton structure and quark correlations. In particular, the associated production of J/Ψ and open charm meson, namely D^* , would increase the production cross section, hence the possible signal yield observed. The preliminary study show this is indeed a promising final state, data analysis will include Run2 and Run3 data.*

- 2020 - 2022 **Tracking POG coordination**, *Tracking is the bulk of the event reconstruction in CMS. Tracking performances are strictly related to the detector conditions and with the approaching of Run3 (Spring 2022) several algorithms needed to be optimised or redesigned to guarantee an excellent track reconstruction. I worked at the coordination of some important developments that aimed to reduce the fake rate, improve the efficiency in particular in very dense environment (i.e. inside jets) and make the track reconstruction faster. In parallel new algorithms are developed in preparation for the High Luminosity, when the whole tracker detector will be replaced. The paradigm of the detector will completely change, entering for the first time in the L1 trigger decision, thus the tracking software has to be adapted consequently.*
- 2020 - Present **Vector Boson Scattering**, *Vector Boson Scattering (VBS) is gaining much interest in the last years, since it is expected to be sensitive to new physics. The VBS observation is an additional confirmation of the electroweak symmetry breaking [4] and a powerful tool to test effects beyond the SM. Recently, the first evidence of VBS in the semileptonic channel at LHC has been proved, with a signal significance of 4.4 standard deviations (5.1 expected) [5]. The goal is to reach the 5σ sensitivity within the Run 3 of LHC. Our group in Perugia, in collaboration with LIP, is currently working on the VBS process in the production of two same sign W bosons decaying leptonically, with the introduction, for the first time, of a hadronic tau in the final state. This means investigating a new, uncovered, phase space, increasing the sensitivity to the anomalous quartic gauge couplings. Furthermore tau, belonging to the third family, is expected to be more sensitive to the couplings to the processes beyond the Standard Model, with respect to electron and muons. The analysis is based on the whole statistics collected in Run2 [6].*
- 2019 - 2022 **Search for heavy composite Majorana neutrinos**, *The exotic states searches report a sensitivity study for the presence of heavy composite Majorana neutrinos in a final state signature with two leptons and at least one large-radius jet. I worked on the reload of an existing measurement performed in CMS with 2015 data [7]. Using the whole Run2 statistic (2016 - 2018) and optimizing the selection strategy we reached a considerable improvement in sensitivity, excluding the presence of a heavy composite Majorana neutrino at up 6 TeV [?]. This paper also entered a wide review produced in CMS on vector-like quarks, vector-like leptons, and heavy neutral leptons [8].*

- 2018 - 2020 **Tracker Upgrade for Phase 2**, In April 2018 I started working on the Phase 2 project for the tracker system upgrade foreseen for the High-Luminosity phase of the LHC starting from 2027. With the luminosity increasing more than a factor five above the actual design limit, the tracker detector will be completely replaced to ensure: greater pseudorapidity acceptance, stronger radiation tolerance, increased granularity, reduced material budget and contribution to the level-1 trigger. The activity mainly focused on two different areas: process quality control (PQC) on the sensors that will be used for the new tracker and the study and optimisation of the module assembly that will be installed in the Outer Tracker (OT). Sensors are provided by an external company, thus the PQC activity is very important to guarantee a good and constant quality of the sensors during the production, monitoring the business process. Thanks to several irradiation campaigns, with the measurements that we are performing we can study the effects of the radiation damages [9, 10, 11]. This allows to highlight any possible weak point and, if needed, to opt for more radiation hardness solutions. In parallel I'm working on the assembly of the modules that will be part of the outer tracker. The production will start in 2022 and the ongoing preliminary work is necessary to take confidence with the procedure in each step and to optimise the activity planning. The measurements done so far on the mechanical prototypes and during the testbeams [12] show a good agreement with the specifics.
- 2017 - 2021 **Open Charm production at $\sqrt{s} = 13$ TeV**, The measurement of the production cross section of open charmed mesons has been performed for the first time in the CMS collaboration from pp collisions, with data collected by CMS in 2016 at $\sqrt{s} = 13$ TeV. The mesons D^{*+} , D^0 and D^+ (and the charged conjugate) have been reconstructed from the decay chains: $D^{*+} \rightarrow D^0 \pi_{slow}^+ \rightarrow K^- \pi^+ \pi_{slow}^+$, $D^0 \rightarrow K^- \pi^+$ and $D^+ \rightarrow K^- \pi^+ \pi^+$. The reconstruction strategy for the three mesons, as well as the contamination from B meson decays and the systematic uncertainties evaluation have been originally developed in my PhD thesis. The differential cross section has been measured as a function of both p_T and η in the kinematic region: $4 < p_T < 100$ GeV and $|\eta| < 2.1$. This important result contributes to provide a deeper understanding of the charm production in the p - p collisions integrating the already existing measurements from other experiments with different acceptance and center of mass energy. The paper has been published on JHEP [1].
- 2018 - 2019 **Double Parton Scattering in $ssWW$** , The Double Parton Scattering (DPS) measurement in the same sign WW final state has been originally carried out with data collected by CMS in 2012 with $\sqrt{s} = 8$ TeV [13] and in 2016 at $\sqrt{s} = 13$ TeV [14] by two different analyses. Due to the limited statistics available the first one only put a limit on the σ_{DPS} , while the second one performed a measurement with a low sensitivity ($< 3\sigma$). I worked with the previous authors to extend the measurement to the 2017 data optimizing the selection and the strategy in order to improve the sensitivity on the σ_{DPS} measurement. The results of the analysis have been published as the first evidence for WW production via double-parton scattering, with a significance of 3.9 standard deviations [15].

- 2016 - 2017 **Pixel Upgrade for Phase 1**, *In 2017 the CMS pixel detector has been replaced with a new one because of the radiation damage and the scheduled luminosity upgrade of LHC. I was involved in the INFN module production project for most of the 2016 in Perugia, one of the CMS assembly centers, and I took part to the check out and commissioning of the detector at CERN for the first part of 2017, and again in the first months of 2018 after the removal and repair of part of the electronic components [16].*
- 2015 - Present **Tracking efficiency for charged pions measurement**, *I collaborate with the CMS Tracking Physics Object Group for the measurement of the charged pions efficiency using two decay chains of the D^0 meson. It is important to evaluate the detector performances regularly during the data taking in order to monitor the quality of the reconstructed physics objects. The efficiency measurements have been performed from 2015 till 2018 [17, 18], approved results are used by the CMS users as systematic uncertainties to the charged hadrons reconstruction in the final state [19, 20, 21, 22] .*

Didactic Experiences

Teaching

- 2025 "Advanced Particle Physics" class (6CFU) - Physics master degree course at Physics department
- 2024 - 2025 "Physics" class (6 CFU) - "Biology" degree course
- 2024 "Physics" class (2CFU) - "Engineering Management" degree course
- 2023 - 2024 "Charm Physics at LHC" class (2 CFU) - PhD didactic program at Physics department
- 2023 "Element of Physics" class (5 CFU) - "Animal Production" degree course at Veterinary department
- 2022 - 2023 "Advanced Particle Physics" class (6CFU) - Physics master degree course at Physics department

Seminars and assistant

- 2024 "(Good) techniques for public engagement" seminar at Dipartimento di Fisica e Geologia Unipg - within PerAPS 2024
- 2023-2024 Seminar activity for "Experimental technique for particle physics" class for the master degree course: "Tracking in CMS"
- 2023 Webinar for high school students within the program UniPG orientaExpress: "Travel in space and time, from the Higgs boson to gravity".
- 2022 - 2023 Seminar activity for "Element of particle physics" class for the bachelor degree course: "The CMS experiment".
- 2022 Assistant for "Element of Physics" class for the "Animal Production" degree course at Veterinary department
- 2021 Seminar activity for "Advanced particle physics" class for the Particle Physics master degree course: "Searches for Leptoquarks in CMS".
- 2021 Seminar activity for "Particle physics" class for the master degree course in Particle Physics: "Charm physics in CMS"
- 2020 - 2021 Seminar activity for "Advanced particle physics" class for the master degree course in Particle Physics: "New physics searches at ATLAS and CMS".

- 2018 - 2019 Assistant for "Experimental physics" class for the bachelor degree course in Physics.
- 2019 Assistant for "Advanced particle physics" class for the master degree course in Particle Physics.
- 2016 Seminar activity for "Particle Physics Detectors" course: "The discovery potential of LHC and CMS".
- 2016 Seminar activities within *Progetto Lauree Scientifiche*, "Particle physics experiments, road to LHC".

Student supervisions

- 2025 Co-tutor of the internship: "Jet reconstruction in VBS searches" at CERN
- 2025 Co-Tutor for master thesis: "Feasibility study of the search for the rare decay $W \rightarrow D_s \gamma$ with the CMS detector"
- 2024 Co-tutor for the bachelor thesis: "Analysis and qualification of management and control devices in the automotive sector"
- 2024 Co-Tutor for master thesis: "Study of dimension-6 EFT effects in VBS $ZZ \rightarrow 4\ell$ at CMS detector"
- 2023 Co-Tutor for master thesis: "Open charm production cross section with the CMS experiment using data collected at $\sqrt{s} = 900$ GeV"
- 2022 Co-Tutor for master thesis: "Charmed mesons as a probe for Triple Parton Scattering"
- 2022 Co-Tutor for bachelor thesis: "Necropoli del Palazzone: uno studio preliminare sulle tecniche muografiche"
- 2021 Tutor for master thesis: "Measurement of p_T resolution for charged hadrons in CMS"
- 2020 Co-tutor for bachelor thesis: "Bulk and surface radiation damage in silicon detectors for the CMS Phase-2 upgrade".
- 2019 Co-tutor for bachelor thesis: "Tracking performances study for the Run3 of LHC".
- 2019 Co-tutor for an internship project: "Comparison of tracking performance with the introduction of a DNN for track reconstruction".
- 2017 Summer student tutor: "Performances evaluation of the CMS tracking system".
- 2017 Co-tutor for the session "Tracking efficiency measurement with the D^* method" of the CMS Physics Object School.
- 2017 Co-tutor for bachelor thesis: "DPS kinematical signal characterisation in same sign WW production".
- 2016 Tutoring activities within *Progetto Lauree Scientifiche* aimed at high school students.

Awards and Competitive Grants

- 2022 **Winner of the INFN Competition for III level researcher staff position**, Selected among 18 winners out of more than 100 candidates - Position refused for incompatibility with the assigned unit.
- 2020 **Winner of the L'Oreal for Women in Science Prize**, 10 months grant, hosted by INFN Perugia and Università degli Studi di Perugia. I have been selected as one of the six winners, among more than 300 candidatures.

- July 2017 - June 2018 **Selected as "Simil-Fellow"**, one year of contract at CERN as Associated Member of the Personnel of the European Organization of Nuclear Research, CERN.
- 2017 **Selected for the International School of Subnuclear Physics in Erice**, 55th Course: Highlights From LHC and Other Frontiers of Physics.
- May 2016 **"Borsa INFN in memoria del Prof A. Nappi"**, The best INFN experimental master thesis within the period 2012 - 2016 at Dipartimento di Fisica e Geologia, Università degli Studi di Perugia.

Event Invitation

- July 2022 Invited at the celebration of the 100th anniversary of IUPAP for a contribution to the panel "Early Career", Trieste.
- February 2022 Invited to Gran Sasso laboratories for the 35th foundation anniversary, part of a small delegation of young female scientists, L'Aquila
- September 2021 Invited at the celebration of the 70th anniversary of INFN, contribution on the future of particle physics, Rome.
- February 2021 Invited at the American Physical Society's International Young Leaders Forum as a young service-oriented physics leader, online

Public Engagement and Outreach Activities

- 2025 Sharper 2025 referent for the physics department
- 2024 - present Art&Science across Italy 5th edition - local organizer committee <https://artandscience.infn.it/>
- May 2024 Fosforo festival - INFN stand with HEPscape! <https://www.fosforoscienza.it/index.php/benvenuti-a-fosforo-2024/>
- May 2024 "L'universo in un battito d'ali", Teatro Acacia Napoli
- Nov 2023 FocusLive Festival 2023 - INFN stand with HEPscape! <https://www.focusjunior.it/news/focus-live-2023-programma/>
- 2023 Sharper 2023 referent for the physics department
- 2023 - 2024 Salone del libro Torino - INFN stand with HEPscape! <https://www.salonelibro.it/>
- May 2023 PlayMo2023 - INFN stand with HEPscape! <https://www.play-modena.it/>
- April 2023 Invited talk at Festival della Scienza e della Filosofia "CERN laboratories: from the origin of universe to the web" - Foligno
- March 2023 Responsible for the organization of the CMS International MasterClasses and organization of HEPscape <https://web.infn.it/hepscape/hepscape-infn-perugia/>
- November 2022 Festival delle Scienze Roma - HEP Scape room <https://festivaldellescienzeroma.it/eventi/hepscape/>
- 2022 - 2024 Art&Science across Italy 4th edition - local organizer committee <https://artandscience.infn.it/>
- September 2022 EU Project Sharper, European Researcher's Night, responsible of the event "Let's play with particle"

- September 2021 EU Project Sharper, European Researcher's Night, local responsible for the CMS Virtual Visiting event
- 2022 - 2023 Excellence Summer project for high school students, seminar activity on particle physics
- July 2021 Invited talk at Fosforo festival: "Particle physics: from the grandmother's television to the LHC" - Senigallia <https://www.fosforoscienza.it/>
- 2021 Invited talk at TEDxPerugia Studio: "High-Luminosity LHC: a new beginning for the particle physics" https://www.youtube.com/watch?v=mtQEw3iyt3E&ab_channel=TEDxPerugia
- 2021 Interviewed by AIDIA (Associazione italiana donne ingegneri e architetti) in the context of promoting women in STEM https://www.youtube.com/watch?v=UxRLumu330g&ab_channel=AIDIAMILANO
- 2021 Interviewed by MMspa for "Talent Harbour" series, in collaboration with the scientific magazine "Le Scienze", https://www.youtube.com/watch?fbclid=IwAR0xzeFba5ac-r3AR3D2Z6nlyVmg-lv_v0pp0Xm_lus7r1SIEBuVXtxl23o&v=hrtix7AowUQ&feature=youtu.be&ab_channel=comunicazioneMM
- 2015-2021 Tutoring activities within *International MasterClasses hands on particle physics*, organized by the INFN in the framework of the International Particle Physics Outreach Group.
- 2015-2016 EU Project Sharper, European Researcher's Night, local organization and staff.

Schools, Workshops and Conferences

- Conference **WIFAI2025: Workshop Italiano di Fisica delle Alte Intensità.**
Bari, Italy; 11-14 Nov 2025
Invited Talk - "Status and perspectives of spectroscopy in ATLAS and CMS".
- Conference **CSI2025: Corfu Summer Institute 2025 - Workshop on the Standard Model and Beyond.**
Corfu, Greece; 24 Aug-3 Sept 2025.
Talk - "Heavy Flavour Results from ATLAS and CMS".
- Conference **Fragmentation in the Collider Precision Era.**
Zurich, Switzerland; 17-19 March 2025.
Invited Talk - "Experimental results from CMS".
- Conference **IV Encontro de Primavera, Sociedade Brasileira de Fisica.**
Belo Horizonte, Brazil; 24-27 Sept 2024.
Invited Talk - "News from LHC...with a taste of flavor".
- Conference **EPS-HEP2023: European Physical Society Conference on High Energy Physics 2023.**
Hamburg, Germany; 21-25 Aug 2023.
Talk - "Heavy flavor production studies at CMS".
- Conference **13th MPI@LHC: 13th International Workshop on Multiple Partonic Interactions at the LHC.**
Madrid, Spain; 14-18 Nov 2022.
Talk - "High Multiplicity and Small System results in CMS".

- Conference **SIF 2021 - Società Italiana Fisica, 107**, 102° Congresso Nazionale.
Online; 13 - 17 Sept 2021.
Invited talk - "QCD measurements at the LHC" (shared with ATLAS).
- Conference **LHCP2021: 9th Edition of the Large Hadron Collider Physics Conference.**
Online: - due to coronavirus pandemia; 7–12 Jun 2021
Talk - "Classical spectroscopy".
- Conference **ICHEP2020: 40th International Conference on High Energy Physics.**
Online- due to coronavirus pandemia; 28 Jul - 6 Aug 2020
Talk - "Production studies of D and B mesons at CMS".
- Conference **FPCP2020: Conference on Flavour Physics and CP violation.**
Online- due to coronavirus pandemia; 8-12 June 2020
Talk - "CMS Measurement of prompt open charm production cross sections in proton-proton collisions at 13 TeV".
- Conference **TREDI2020: 15th "Trento" Workshop on Advanced Silicon Radiation Detectors.**
Vienna, Austria; 17-19 Feb 2020.
Talk - "The CMS Outer Tracker Upgrade for the High Luminosity LHC".
- Conference **HSTD12: 12th International "Hiroshima" Symposium on the Development and Application of Semiconductor Tracking Detectors.**
Hiroshima, Japan; 14-18 Dec 2019.
Poster - "Measurements and simulations of surface and bulk radiation damage effects in silicon detectors for CMS Phase-2 Outer Tracker".
- Conference **11th MPI@LHC: 11th International Workshop on Multiple Partonic Interactions at the LHC.**
Prague, Czech Republic; 18-22 Nov 2019.
Convener of the Working Group "Minimum Bias, Underlying Event and Monte Carlo generators".
- Conference **ICNFP 2019: 8th International Conference on New Frontiers in Physics.**
Kolimbari, Greece; 21-29 Aug 2019.
Talk - "B Physics with CMS".
- School **INFN School of Statistics 2019.**
Paestum, Italy; 2-7 Jun 2019.
- Conference **IFAE 2019 - Incontri di Fisica delle Alte Energie.**
Napoli, Italy; 8-10 Apr 2019.
Talk - "Double Parton Scattering in ssWW at $\sqrt{s} = 13$ TeV with data collected in 2016 and 2017".
- School **VIII International Course "Detectors and Electronics for High Energy Physics, Astrophysics, Space Applications and Medical Physics.**
Padova, Italy; 1-5 Apr 2019
Poster - "The CMS outer tracker upgrade for the High-Luminosity LHC".

- School **School on the Database Infrastructure for the CMS Phase 2 Upgrade.**
CERN, Switzerland; 11-12 March 2019.
- Conference **10th International Workshop on Multiple Partonic Interactions at the LHC, MPI@LHC2018.**
Perugia, Italy; 10-14 Dec 2018.
Talk - "Recent results on Minimum Bias and Underlying Event by CMS."
- Conference **QCD 18: 21st International Conference in Quantum Chromodynamics.**
Montpellier, France; 2-6 Jul 2018.
Talk - "Measurement of the Minimum Bias, Underlying Events and Double-Parton Scatterings."
- Conference **IFAE 2018 - Incontri di Fisica delle Alte Energie.**
Milano, Italy; 4-6 Apr 2018.
Poster - "Status of the double-parton scattering cross section measurement from same-sign W boson pair production in proton-proton collisions at the CMS experiment."
- School **CMS Physics Object School.**
Bari, Italy; 4-8 Sept 2017
Co-tutor for the session "Tracking efficiency measurement with the D^* method" with V.Innocente.
- School **International School of Subnuclear Physics, 55th Course: Highlights From LHC and Other Frontiers of Physics.**
Erice, Italy; 14 - 23 June 2017.
- Conference **Blois 2017: 29th Rencontres de Blois - Particle Physics and Cosmology.**
Blois, France; 28 May - 2 Jun 2017
Talk - "Soft QCD in ATLAS and CMS".
- Meeting **129th LHCC meeting, open session.**
Geneva, Switzerland; 22nd Feb 2017.
Poster - "CMS Tracking performances in 2016 and for the Phase-1 Upgrade of the pixel detector", Posters@LHCC: Students' Poster Session at the 2017 Winter LHCC meeting.
- Workshop **First FCC Physics Workshop.**
Geneva, Switzerland; 16 - 20 Jan 2017.
- Conference **8th International Workshop on Multiple Partonic Interactions at the LHC, MPI@LHC2016.**
San Cristobal de las Casas, Mexico; 28th Nov - 2nd Dec 2016.
Talk - "Final state multiplicity and particle correlations in small systems".
- Conference **SIF 2016 - Societa' Italiana Fisica, 102° Congresso Nazionale.**
Padova, Italy; 26 - 30 Sept 2016.
Talk - "The Run-2 tracking performances of the CMS detector".
Talk - "Double parton scattering in same sign W pairs".

- School **Summer School on Machine Learning for High Energy Physics.**
Lund, Sweden; 20 -26 June 2016.
- School **Machine Learning for Particle Physics.**
CERN Geneva, Switzerland; 6 -10 June 2016.
- Conference **IFAE 2016 - Incontri di Fisica delle Alte Energie.**
Genova, Italy; 30th March - 1st April 2016.
Poster - "The Run-2 tracking performances of the CMS detector".
- School **CMSDAS@LPC2016 - Data Analysis School at Fermilab.**
Chicago, USA; 11 - 15 Jan 2016

Publications

- [1] The CMS Collaboration. **Measurement of prompt open-charm production cross sections in proton-proton collisions at $\sqrt{s} = 13$ TeV.** *JHEP*, 11:225, 2021.
- [2] The CMS Collaboration. Measurement of double differential and total charm cross sections at 7 TeV. 2024.
- [3] The CMS Collaboration. **Observation of triple J/ψ meson production in proton-proton collisions.** *Nature Physics*, 2023.
- [4] The CMS Collaboration. **Observation of electroweak production of same-sign W boson pairs in the two jet and two same-sign lepton final state in proton-proton collisions at $\sqrt{s} = 13$ TeV.** *Phys. Rev. Lett.*, 2018.
- [5] The CMS Collaboration. **Evidence for WW/WZ vector boson scattering in the decay channel $\ell\nu q\bar{q}$ produced in association with two jets in proton-proton collisions at $\sqrt{s} = 13$ TeV.** 12 2021.
- [6] Measurement of $W^\pm W^\pm$ scattering in proton-proton collisions at $\sqrt{s} = 13\text{TeV}$ in final states with one tau lepton. 2023.
- [7] The CMS Collaboration. **Search for a heavy composite Majorana neutrino in the final state with two leptons and two quarks at $\sqrt{s} = 13$ TeV.** *Phys. Lett. B*, 775:315–337, 2017.
- [8] The CMS Collaboration. Review of searches for vector-like quarks, vector-like leptons, and heavy neutral leptons in proton–proton collisions at $\sqrt{s}=13$ TeV at the CMS experiment. *Phys. Rept.*, 1115:570–677, 2025.
- [9] Valentina Mariani, Francesco Moscatelli, Arianna Morozzi, Daniele Passeri, Serena Mattiazzo, Thomas Bergauer, Marko Dragicevic, Viktoria Hinger, and Alexander Dierlamm. **Measurements of surface and bulk radiation damage effects in silicon detectors for Phase-2 CMS Outer Tracker.** *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 980:164423, 2020.
- [10] The CMS Collaboration. **Experimental study of different silicon sensor options for the upgrade of the CMS Outer Tracker.** *JINST*, 15(04):P04017, 2020.

- [11] The CMS Tracker Collaboration. **P-Type Silicon Strip Sensors for the new CMS Tracker at HL-LHC.** *Journal of Instrumentation*, 12(06):P06018–P06018, jun 2017.
- [12] The CMS Collaboration. **Test beam demonstration of silicon microstrip modules with transverse momentum discrimination for the future CMS tracking detector.** *Journal of Instrumentation*, 13(03), mar 2018.
- [13] The CMS Collaboration. **Constraints on the double-parton scattering cross section from same-sign W boson pair production in proton-proton collisions at $\sqrt{s} = 8$ TeV.** *JHEP*, 02:032, 2018.
- [14] The CMS Collaboration. **Measurement of double parton scattering in same-sign WW production in p-p collisions at $\sqrt{s} = 13$ TeV** with the CMS experiment. 2017.
- [15] The CMS Collaboration. **Evidence for WW production from double-parton interactions in proton proton collisions at $\sqrt{s} = 13$ TeV .** *Eur. Phys. J. C*, 80(1):41, 2020.
- [16] The CMS Tracker Collaboration. **The CMS Phase-1 Pixel Detector Upgrade.** *JINST*, 16(02):P02027, 2021.
- [17] The CMS Collaboration. **Tracking POG plot results on 2015 data.** Apr 2016.
- [18] The CMS Collaboration. **Tracking POG results for pion efficiency with the D^* meson using data from 2016 and 2017.** Aug 2018.
- [19] The CMS Collaboration. **Measurement of associated production of a W boson and a charm quark in proton-proton collisions at $\sqrt{s} = 13$ TeV.** *Eur. Phys. J. C*, 79(3):269, 2019.
- [20] The CMS Collaboration. **Measurement of charged pion, kaon, and proton production in proton-proton collisions at $\sqrt{s} = 13$ TeV.** *Phys. Rev. D*, 96(11):112003, 2017.
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A subset of my publications has been reported above. I'm author or co-author of more than 700 international publications with the following metrics, based on Inspire, the High Energy Physics information system:

	Citeable ☺	Published ☺
Papers	758	694
Citations	55,185	54,360
h-index ☺	114	113
Citations/paper (avg)	72.8	78.3

Full list of Publications and CMS notes: https://inspirehep.net/search?ln=it&ln=it&p=valentina+mariani&of=hb&action_search=Cerca&%sf=earliestdate&so=d&rm=&rg=25&sc=0

Perugia, January 23, 2026

La sottoscritta Valentina Mariani dichiara che tutti i fatti riportati nel presente curriculum corrispondono a verità ai sensi e per gli effetti degli artt. 46 e 47 del D.P.R. 445/2000. La sottoscritta dichiara di essere a conoscenza delle sanzioni penali cui incorre in caso di dichiarazione mendace o contenente dati non più rispondenti a verità, come previsto dall'art. 76 del D.P.R. 28.12.2000, n. 445. La sottoscritta dichiara di essere a conoscenza dell'art. 75 del D.P.R. 28.12.2000, n. 445, relativo alla decadenza dai benefici eventualmente conseguenti al provvedimento emanato, qualora l'Amministrazione, a seguito di controllo, riscontri la non veridicità del contenuto della suddetta dichiarazione. Si allega a tale scopo copia del documento di identità in corso di validità