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Emanuele Angelo Bagnaschi

Current position

from 11/2022 **Researcher**, *INFN Laboratori Nazionali di Frascati*, Italy
Staff member of the theory group (on leave to CERN until 12/2023)

Previous work experience

01/2022 - 12/2023 **Senior research fellow**, *CERN*, Switzerland
Member of the theory group under the supervision of Dr. Michelangelo Mangano

10/2021 – 12/2021 **Postdoctoral researcher**, *Università di Roma Tre*, Rome, Italy
Member of the theory group under the supervision of Prof. Dr. Giuseppe Degrassi

10/2018 – 09/2021 **Postdoctoral researcher**, *PSI*, Villigen, Switzerland
Member of the LTP theory group under the supervision of Dr. Michael Spira

10/2014 – 09/2018 **Postdoctoral researcher**, *DESY*, Hamburg, Germany
Member of the DESY theory group under the supervision of Dr. Georg Weiglein

09/2012 – 12/2012 **Internship**, *Wolfram Research Inc.*, Champaign, IL, USA
Top-level implementation in Mathematica of Mathieu functions. This internship was organized in the framework of the LHCPhenonet Initial Training Network

2008 – 2010 **System administrator for the LCM laboratory**, *Department of Physics of the University of Milan*, Milan, Italy
The Laboratorio Calcolo e Multimedia (LCM) cluster has more than four hundred active users and it is composed of about forty nodes, three servers (for various tasks - NFS server, web server and log server), four firewall/gateway systems and a dedicated batch farm for computing intensive application that I personally built with the collaboration of another staff member and that I maintained alone personally for more than a year The computing farm, used by members of the Theoretical Physics group, consists of several clients connected in a double gigabit-ethernet/Infiniband network and managed by TORQUE/MAUI. All systems run Debian Linux.
This work was funded by a joint private-public partnership of the Department of Physics and Messagenet (`http://www.messagenet.it/`)

07/2010 – 08/2010 **Summer student**, *CERN*, Geneva, Switzerland
Automation of CERN accounting data collection for the World Large Computing Grid (WLCG). The task was solved by writing a Python program that interfaced to several database and monitoring systems to collect the data. The latter were in turn presented to the user through a Django-based web interface

Education

10/2011 – 09/2014 **Ph.D. in Particle Physics**, *Université Paris Diderot*, Paris, *Mention très honorable avec les félicitations du jury*

10/2009 – 10/2011 **Laurea Magistrale (M. S.) in Physics**, *Università degli studi di Milano*, Milano, *110/110 cum laude*

10/2004 – 10/2009 **Laurea Triennale (B. S.) in Physics**, *Università degli studi di Milano*, Milano, *110/110 cum laude*

Doctoral thesis

Title *Precision phenomenology at the LHC and characterization of theoretical uncertainties*

Supervisor Prof. Matteo Cacciari (Université Paris Diderot-Paris 7)

Master thesis

Title *Implementation of the gluon fusion process in the POWHEG framework in the SM and in the MSSM*

Supervisors Prof. Alessandro Vicini (University of Milano) and Prof. Giuseppe Degrassi (University of Rome 3)

Bachelor thesis

Title *Extension of harmonic polylogarithms to the complex plane*

Supervisor Prof. Alessandro Vicini (University of Milano)

Fellowships

2014-2018 **DESY**, Hamburg, Germany
Fellowship of the SFB676 collaborative research center.

2011-2014 **Marie Curie Early Stage Researcher (ESR) doctoral fellowship**
From the LHCPhenonet European initial training network (`http://www.lhcphenonet.eu/`).

Habilitations

- ASN2019 – habilitation to the role of associate professor in Italy ("Professore universitario di seconda fascia")

Research areas

- Collider physics.
- Monte Carlo event generators.
- Precision physics of the Higgs and electroweak sectors.
- BSM physics at collider.
- Global likelihood studies of BSM models.
- Interplay between collider and non-collider experiments in the quest for dark matter.
- Computational physics, with a specific interest in high-performance software and technologies for scientific computing.

Student supervisions

2015 **Julia Gehrlein, summer student**, *DESY*, Hamburg, Germany
Revisiting Higgs production at LEP. Co-supervision with Dr. Georg Weiglein.

2017 **Margarita Gavrilova, summer student**, *DESY*, Hamburg, Germany
A re-appraisal of Higgs production in vector boson associated production in the 2HDM. Co-supervision with Dr. Georg Weiglein and Dr. Stefan Liebler.

2017 **Roberto Corral Lopez, summer student**, *DESY*, Hamburg, Germany
MSSM Higgs scenarios in light of the current LHC constraints. Co-supervision with Dr. Georg Weiglein and Dr. Stefan Liebler.

2018 **Sebastian Trifa, MSci project student**, *U. Bristol*, Bristol, United Kingdom
Global study of DMSM with a vector mediator. Co-supervision with Dr. Henning Flächer.

2018 **Thea Engler, summer student**, *DESY*, Hamburg, Germany
MSSM Higgs scenarios with Heavy Higgs decay to electroweakinos. Co-supervision with Dr. Georg Weiglein and Dr. Tim Stefaniak.

2018 **Alexander Spies, summer student**, *DESY*, Hamburg, Germany
MSSM Higgs scenarios with Heavy Higgs decay to staus. Co-supervision with Dr. Georg Weiglein and Dr. Tim Stefaniak.

2019 **Gabriele Vergani, bachelor student**, *U. Milano*, Milano,Italy
Boosted top quark tagging with neural networks. Co-supervision with Prof. Alessandro Vicini.

2019 **Ian Yi En Pang, bachelor student**, *NTU Singapore/CERN*
Global likelihood study of the CMSSM in light of the latest experimental constraints. Co-supervision with Prof. John Ellis.

2019 **Edwin Goh Duo Yao, bachelor student**, *NTU Singapore/CERN*
Global likelihood study of a leptophilic vector dark matter simplified model. Co-supervision with Prof. John Ellis.

2021 **Marta Barcena Rodriguez, bachelor/pre-master student**, *U. Cantabria*
Global likelihood study of a leptophilic axial-vector dark matter simplified model. Co-supervision with Dr. Sven Heinemeyer, Dr. Alicia Calderon Tazon and Dr. Rocio Vilar Cortabitarte

2021 **Lorenzo Magnoni, bachelor student**, *U. Milano*, Milano, Italy
Impact of PDF uncertainties in the determination of the W boson. Co-supervision with Prof. Alessandro Vicini

2021 **Matteo Tresoldi, bachelor student**, *U. Milano*, Milano, Italy
PDF uncertainties and simultaneous fit of several observables at the CERN LHC. Co-supervision with Prof. Alessandro Vicini

2022 **Simone Boscolo, bachelor student**, *U. Milano*, Milano, Italy
Proton parametrization uncertainties and their impact on the Drell-Yan neutral current process. Co-supervision with Prof. Alessandro Vicini

2022 **Matteo Tresoldi, CERN summer student**, *CERN*, CERN, Switzerland
PDF studies concerning the MW measurement at hadron colliders

2022 **Kateryna Skurativska, IRIS-HEP summer fellow**, *remote/CERN*, remote/CERN
Towards a deep learning framework for efficient jet tagging. Co-supervision with Prof. Stefano Carrazza (U. Milano)

2025 **Lorenzo Paparella, master student**, *U. Roma 1*, Rome, Italy
Missing Higher-order uncertainties. Co-supervision with Dr. Marco Bonvini (U. Roma 1)

Teaching activities

- Exercise sessions of the "Beyond the Standard Model" lecture course of PD Dr. Spira and Prof. Dr. De Cosa at ETH (03/2021 to 06/2021)
- Masterclass on Higgs physics at the INFIERI school in Madrid (with A. Casas and S. Heinemeyer) (23/08/2021 to 04/09/2021)
- PhD course on BSM Higgs physics and supersymmetry at IFT in Madrid (30/01/2023 to 03/02/2023)
- Discussion leader at the 2023 CERN-Fermilab HCP school (22/08/2023 to 31/08/2023)
- Discussion leader at the 2023 ESHEP school, Grenaa, Denmark (06/09/2023 to 19/09/2023)
- PhD course on BSM Higgs physics and supersymmetry at IFT in Madrid (11/03/2024 to 15/03/2024)
- PhD course on Monte Carlo for High-energy physics (theory overview + applications/tutorials) at Rome 1 (April and May 2024)

Organizational responsibilities

- Co-organizer of the *LHCPhenonet workshop on particle physics*, Paris, France, 4-6 June 2014
- Organizer of the *12th KUTS workshop*, PSI, Switzerland, 25-26 June 2020 (cancelled due to the coronavirus pandemic)
- Co-convener of the electroweak session of the 2020 International Workshop on the High Energy Circular Electron Positron Collider, Shanghai, China, 26-28 October 2020
- Co-convener of the performance session of the 2022 International Workshop on the High Energy Circular Electron Positron Collider, Shanghai, China, 26-28 October 2022
- Co-organizer of the $(g-2)^{'21}_{\text{Days}}$ workshop (`http://pheno.csic.es/g-2Days21/`), online, 31 May-04 June 2021
- Co-organizer of the LTP Thursday colloquia at PSI (2018 - 2021)
- Organizer of the LTP Theory seminars at PSI (2019 - 2021)
- Member of the organizing commitee of the collider cross talks seminar series at CERN (2022-2023)

- Co-Organizer of the *KUTS@CERN workshop*, CERN, Switzerland, 27 February-1 March 2023
- Co-Organizer of the *MWDays23 workshop*, CERN, Switzerland, 17-20 April 2023
- Co-Organizer of the *Future colliders for Early Career Researchers* ECFA ECR event, CERN, Switzerland, 17-20 April 2023
- Co-Organizer of the *IRN Terascale @ LNF* workshop, LNF, Frascati, Italy, 16-17 April 2024
- Co-Organizer of the *XXI LNF Spring school*, LNF, Frascati, Italy, 13-17 May 2024
- Co-Organizer/Tutoring of the *First ECFA-INFN Early Career Researchers meeting*, LNF, Frascati, Italy, 3 July 2024
- Member of the LOC of the *Workshop on High Luminosity LHC and Hadron Colliders*, LNF, Frascati, Italy, 1-4 October 2024
- Co-organizers of the *Extended Scalar sectors from all angles* workshop, CERN, Switzerland, 21-25 October 2024
- Member of the the LOC of the *Workshop on FCC-ee and Lepton Colliders*, LNF, Frascati, Italy, 22-24 January 2025
- Co-organizer of the *XXXVIII National congress of theoretical physics*, Cortona, Italy, 20-23 May 2025
- Co-organizer of the *AI in Physical Sciences: Toward a Unified Approach for Physics and Geophysics*, Roma, Italy, 19 September 2025
- Co-organizer and co-contact-perspn of the GGI Workshop "Higgs@GGI 2026" , Galileo Galilei Institute, Italy, 28 Sep-23 Oct 2026

Scientific responsibilities

- CERN-TH representative in the Early-Career-Research panel of the ECFA (2022-2023)
- Member of the scientific committee of the IRN Terascale network (http://terascale.in2p3.fr/); responsible of the Laboratori Nazionali di Frascati (LNF) node (from 2023)

Working groups and forums

- Participation and contributions to the LHC Higgs Group (LHCHWG)/Higgs cross-section working group (HXSWG)
- Theory convener of the MSSM subgroup of the LHCHWG (from 2020)
- Participation and contributions to the Electroweak Working Group (EWWG)
- Participation and contributions to KUTS working group on the Higgs mass prediction in SUSY models
- Participation and contributions to the Dark Matter Working Group (DMWG)
- Expert in the "HIGGS-TOP-EW and connection with LHC" (WG1-HTE) subgroup of the "ECFA e^+e^- Higgs/Top/EW Factory Study" working group; focus topic: two fermion final states
- Participation to the Forum on the Interpretation of the LHC Results for BSM studies
- ECR scientific secretary of the Electroweak working group created by the strategy Physics Preparatory Group to write the Physics Briefing Book – https://europeanstrategyupdate.web.cern.ch/physics-preparatory-group-ppg (2025)

Outreach

- *11th edition of CineGlobe*, 1-3 July 2022, CERN; volunteer
- *Arts@CERN*, 2023 CERN; volunteer
- *CERN guide*, 2023 CERN; volunteer
- *Open labs 2024*, 18 May 2024, LNF, Frascati, Italy; volunteer

Association and society memberships

- Marie Curie Alumni Association
- European Physical Society

- Deutsche Physikalische Gesellschaft e.V.

Other academic activities

- I presented my scientific activity at 15 seminars in research institutes
- I was invited for two colloquia
- Reviewer for the European Physical Journal C (EPJC)
- Reviewer for the Journal of High Energy Physics (JHEP)
- Reviewer for Physics Letter B (PLB)
- Reviewer for the EURIZON project
- Visiting researcher at the U. Bristol (2017-2023)
- Visiting scientist (VISC) at CERN (2019-2021; and from 2024)

Interaction with the private sector

- Through U. Bristol, collaboration with Oracle to understand the feasibility of using their bare-metal cloud services for particle physics research (2017-2018)

Referees

Alphabetical order

1. **J. Ellis** , *(King's College, CERN)*
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   Dipartimento di Fisica
   Università degli Studi di Milano
   Via Celoria, 16; I-20133 Milano (Italy)
5. **G. Weiglein** , *(DESY Hamburg)*
   +49-(0)40-8998-2523
   georg.weiglein@desy.de
   DESY
   Notkestrasse 85
   Bldg. 2a D-22607 Hamburg Germany

Publications

1. E. Bagnaschi, G. Degrassi, P. Slavich, and A. Vicini. Higgs production via gluon fusion in the POWHEG approach in the SM and in the MSSM. *JHEP*, 1202:088, 2012, 1111.2854

2. E. Bagnaschi, R. Harlander, S. Liebler, H. Mantler, P. Slavich, et al. Towards precise predictions for Higgs-boson production in the MSSM. *JHEP*, 1406:167, 2014, 1404.0327

3. E. Bagnaschi, G. F. Giudice, P. Slavich, and A. Strumia. Higgs Mass and Unnatural Supersymmetry. *JHEP*, 1409:092, 2014, 1407.4081

4. E. Bagnaschi, M. Cacciari, A. Guffanti, and L. Jenniches. An extensive survey of the estimation of uncertainties from missing higher orders in perturbative calculations. *JHEP*, 02:133, 2015, 1409.5036

5. K. J. de Vries et al. The pMSSM10 after LHC Run 1. *Eur. Phys. J.*, C75(9):422, 2015, 1504.03260

6. E. Bagnaschi and A. Vicini. The Higgs transverse momentum distribution in gluon fusion as a multiscale problem. *JHEP*, 01:056, 2016, 1505.00735

7. E. A. Bagnaschi et al. Supersymmetric Dark Matter after LHC Run 1. *Eur. Phys. J.*, C75:500, 2015, 1508.01173

8. E. Bagnaschi, R. V. Harlander, H. Mantler, A. Vicini, and M. Wiesemann. Resummation ambiguities in the Higgs transverse-momentum spectrum in the Standard Model and beyond. *JHEP*, 01:090, 2016, 1510.08850

9. E. Bagnaschi, F. Brümmer, W. Buchmüller, A. Voigt, and G. Weiglein. Vacuum stability and supersymmetry at high scales with two Higgs doublets. *JHEP*, 03:158, 2016, 1512.07761

10. E. Bagnaschi, J. Costa, K. Sakurai, et al. Likelihood Analysis of Supersymmetric SU(5) GUTs. *Eur. Phys. J.*, C77(2):104, 2017, 1610.10084

11. E. Bagnaschi, M. Borsato, K. Sakurai, et al. Likelihood Analysis of the Minimal AMSB Model. *Eur. Phys. J.*, C77(4):268, 2017, 1612.05210

12. E. Bagnaschi, J. Pardo Vega, and P. Slavich. Improved determination of the Higgs mass in the MSSM with heavy superpartners. *Eur. Phys. J.*, C77(5):334, 2017, 1703.08166

13. E. Bagnaschi, K. Sakurai, et al. Likelihood Analysis of the pMSSM11 in Light of LHC 13-TeV Data. *Eur. Phys. J.*, C78(3):256, 2018, 1710.11091

14. J. C. Costa, E. Bagnaschi, K. Sakurai, et al. Likelihood Analysis of the Sub-GUT MSSM in Light of LHC 13-TeV Data. *Eur. Phys. J.*, C78(2):158, 2018, 1711.00458

15. J. Gomes, E. Bagnaschi, I. Campos, M. David, L. Alves, J. Martins, J. Pina, A. López-García, and P. Orviz. Enabling rootless Linux Containers in multi-user environments: the *udocker* tool. *Comput. Phys. Commun.*, 232:84–97, 2018, 1711.01758

16. E. Bagnaschi, F. Maltoni, A. Vicini, and M. Zaro. Lepton-pair production in association with a $b\bar{b}$ pair and the determination of the W boson mass. *JHEP*, 07:101, 2018, 1803.04336

17. E. Bagnaschi et al. Supersymmetric Models in Light of Improved Higgs Mass Calculations. *Eur. Phys. J.*, C79(2):149, 2019, 1810.10905

18. E. Bagnaschi, J. Costa, K. Sakurai, et al. Global Analysis of Dark Matter Simplified Models with Leptophobic Spin-One Mediators using MasterCode. *Eur. Phys. J.*, C79(11):895, 2019, 1905.00892

19. E. Bagnaschi et al. MSSM Higgs Boson Searches at the LHC: Benchmark Scenarios for Run 2 and Beyond. *Eur. Phys. J.*, C79(7):617, 2019, 1808.07542

20. E. Bagnaschi, G. Degrassi, S. Paßehr, and P. Slavich. Full two-loop QCD corrections to the Higgs mass in the MSSM with heavy superpartners. *Eur. Phys. J.*, C79(11):910, 2019, 1908.01670

21. E. Bagnaschi and A. Vicini. Parton density uncertainties and the determination of electroweak parameters at hadron colliders. *Phys. Rev. Lett.*, 126:041801, Jan 2021

22. E. Bagnaschi, M. Chakraborti, S. Heinemeyer, I. Saha, and G. Weiglein. Interdependence of the new "MUON G-2" result and the W-boson mass. *Eur. Phys. J. C*, 82(5):474, 2022, 2203.15710

23. E. Bagnaschi, J. Ellis, M. Madigan, K. Mimasu, V. Sanz, and T. You. SMEFT analysis of m_W. *JHEP*, 08:308, 2022, 2204.05260

24. E. Bagnaschi, M. Goodsell, and P. Slavich. Higgs-mass prediction in the NMSSM with heavy BSM particles. *Eur. Phys. J. C*, 82(10):853, 2022, 2206.04618

25. E. Bagnaschi, L. Fritz, S. Liebler, M. Mühlleitner, T. T. D. Nguyen, and M. Spira. Pseudoscalar MSSM Higgs Production at NLO SUSY–QCD. 7 2022, 2207.02807

26. E. Bagnaschi, G. Degrassi, and R. Gröber. Higgs boson pair production at NLO in the POWHEG approach and the top quark mass uncertainties. *Eur. Phys. J. C*, 83(11):1054, 2023, 2309.10525

27. E. Bagnaschi, G. Corcella, R. Franceschini, and D. Sengupta. Rise and Fall of Light Top Squarks in the LHC Top-Quark Sample. *Phys. Rev. Lett.*, 133(6):061801, 2024, 2312.09794

Reports, notes and whitepapers

1. S. Dittmaier, S. Dittmaier, C. Mariotti, G. Passarino, R. Tanaka, et al. "Handbook of LHC Higgs Cross Sections: 2. Differential Distributions". *arXiv*, 1201.3084, 2012, 1201.3084

2. S. Heinemeyer et al. "Handbook of LHC Higgs Cross Sections: 3. Higgs Properties". *arXiv*, 1307.1347, 2013, 1307.1347

3. E. Bagnaschi et al. Benchmark scenarios for low $\tan\beta$ in the MSSM. *LHCHXSWG-2015-002*, 2015

4. D. de Florian et al. Handbook of LHC Higgs Cross Sections: 4. Deciphering the Nature of the Higgs Sector. *arXiv*, 1610.07922, 2016, 1610.07922

5. E. Bagnaschi, P. Bechtle, J. Haller, R. Kogler, T. Peiffer, T. Stefaniak, and G. Weiglein. Global SM and BSM Fits using Results from LHC and other Experiments. In J. Haller and M. Grefe, editors, *Particles, Strings and the Early Universe: The Structure of Matter and Space-Time*, pages 203–230. 2018

6. J. Alison et al. Higgs boson pair production at colliders: status and perspectives. In B. Di Micco, M. Gouzevitch, J. Mazzitelli, and C. Vernieri, editors, *Double Higgs Production at Colliders Batavia, IL, USA, September 4, 2018-9, 2019*, 2019, 1910.00012

7. W. Abdallah et al. Reinterpretation of LHC Results for New Physics: Status and Recommendations after Run 2. *SciPost Phys.*, 9(2):022, 2020, 2003.07868

8. S. S. AbdusSalam et al. Simple and statistically sound recommendations for analysing physical theories. *Rept. Prog. Phys.*, 85(5):052201, 2022, 2012.09874

9. P. Slavich et al. Higgs-mass predictions in the MSSM and beyond. *Eur. Phys. J. C*, 81(5):450, 2021, 2012.15629

10. O. Fischer et al. Unveiling hidden physics at the LHC. *Eur. Phys. J. C*, 82(8):665, 2022, 2109.06065

11. E. A. Bagnaschi, S. Heinemeyer, S. Liebler, P. Slavich, and M. Spira. Benchmark Scenarios for MSSM Higgs Boson Searches at the LHC. Technical report, CERN, Geneva, Dec 2021

12. A. A. Geanta et al. The ECFA Early Career Researcher's Panel: composition, structure, and activities, 2021 – 2022. 12 2022, 2212.11238

13. J. de Blas et al. Focus topics for the ECFA study on Higgs / Top / EW factories. 1 2024, 2401.07564

14. J. Allen et al. The ECFA Early-Career Researchers Panel: Report for the year 2023. 7 2024, 2407.12761

15. J. Butterworth et al. Reinterpretation and preservation of data and analyses in HEP. 3 2025, 2504.00256

16. C. Arina et al. t-channel dark matter at the LHC. 4 2025, 2504.10597

Datasets

1. LHC Higgs Working Group – MSSM subgroup. LHCHWG MSSM ROOT files, December 2021, 10.5281/zenodo.5730271, https://doi.org/10.5281/zenodo.5730271

Conference proceedings

1. E. Bagnaschi and L. Jenniches. Missing higher-order theoretical uncertainties in a Bayesian statistics. *Proceedings, 49th Rencontres de Moriond on QCD and High Energy Interactions*, pages 301–308, 2014

2. E. Bagnaschi. Estimation of uncertainties from missing higher orders in perturbative calculations. *Proceedings, 50th Rencontres de Moriond, QCD and high energy interactions*, pages 131–134, 2015, 1505.08029

3. E. A. Bagnaschi. Prospects for SUSY discovery after the LHC Run 1. *PoS*, EPS-HEP2015:183, 2015

4. E. A. Bagnaschi. Prospects for SUSY dark matter after the LHC Run 1. *PoS*, EPS-HEP2015:411, 2015

5. E. Bagnaschi. Matching uncertainties in the prediction of the Higgs boson transverse momentum in the SM and beyond. *PoS*, LHCP2016:077, 2016, 1609.05072

6. E. Bagnaschi. Low-energy SUSY facing LHC constraints. *Nuovo Cim.*, C40(5):190, 2018

7. F. A. Aragon, E. Bagnaschi, G. Corcella, E. Nardi, A. Paoloni, S. Pisano, D. Sengupta, and M. Testa, editors. *Proceedings, 8th Young Researchers Workshop "Physics Challenges in the LHC Era" : Frascati, Italy, May 13-16 , 2024*, 2025

Schools, workshops and conferences

- I have attended 3 schools, 56 workshops, 26 conferences and 26 meetings
- I have presented my scientific activity in 62 talks of which 16 were invited ones
- I have designed one poster

- List of events where I have presented my work

  - *LHCPhenonet Winter School 2012*, Ascona, Switzerland, 22-29 January 2012. **Contributed talk (student session)**, "Higgs boson production in the POWHEG approach in the SM and in the MSSM".

  - *LHCPhenonet Annual Meeting 2012*, Durham, United Kingdom, 19-22 March 2012. **Contributed talk**, "Higgs boson production in the POWHEG approach in the SM and in the MSSM".

  - *Higgs Hunting 2012*, Orsay, France 18-20 July 2012. **Contributed talk (student session)**, "Developments in Higgs production through gluon fusion in the SM and in MSSM in the POWHEG framework".

  - *GDR Terascale@Annecy*, Annecy, France, 28-30 October 2013. **Contributed talk**, "Effect of quark masses in gluon fusion processes: a theoretical review".

  - *Rencontres de Moriond: QCD and High Energy interactions*, La Thuile, Italy, 22-29 March 2014. **Contributed talk**, "Missing higher order theoretical uncertainties in the Cacciari-Houdeau framework: extension to hadronic observables".

  - *LHCPhenonet workshop on particle physics*, Paris, France, 4-6 June 2014. **Contributed talk**, "QCD theoretical uncertainties in a Bayesian framework".

  - *BSM Parameter Fitting Workshop*, DESY, Hamburg, 29-30 September 2014. **Contributed talk**, "Characterization of Theoretical Uncertainties in Higgs Phenomenology".

- *Heraeus Seminar: Physics Landscape after the Higgs discovery at the LHC*, Bad Honnef, Germany, 4-7 November 2014. **Contributed poster**, "Towards precise predictions for Higgs boson production in the MSSM"

- *Higgs (N)NLO MC and Tools Workshop for LHC RUN-2*, CERN, Switzerland, 17-19 December 2014. **Contributed talk**, "Higgs p_T in gluon fusion beyond the Standard Model".

- *Rencontres de Moriond: QCD and High Energy interactions*, La Thuile, Italy, 21-28 March 2015. **Contributed talk**, "Estimation of uncertainties from missing higher orders in perturbative calculations".

- *The 10th Workshop of the LHC Higgs Cross Section Working Group*, CERN, Switzerland, 15-17 July 2015. **Contributed talk**, "Towards precise predictions for pT Higgs distributions in BSM physics".

- *European Physical Society (EPS) conference on High Energy Physics 2015*, Vienna, Austria, 22-29 July 2015. **Contributed two talks**, "Prospects for SUSY dark matter after the LHC Run 1" and "Prospects for SUSY discovery after the LHC Run 1 ".

- *2nd Workshop REF 2015 (Resummation, Evolution, Factorization)*, DESY, Hamburg, Germany, 02-03 November 2015. **Invited talk**, "The Higgs transverse momentum in gluon fusion as a multiscale problem: ambiguities and predictions in different pt-resummation frameworks".

- *XI ATLAS Italia workshop on Run 2*, Cosenza, Italy, 04-06 November 2015. **Invited talk**, "Prospects for BSM Higgs boson phenomenology at Run 2".

- *Milano Christmas meeting 2015*, Milano, Italy, 21-23 December 2015. **Contributed talk**, "Higgs mass and unnatural Supersymmetry".

- *4th KUTS workshop*, Heidelberg, Germany, 20-22 January 2016. **Contributed talk**, "Heavy SUSY with a light THDM".

- *Fourth Annual Large Hadron Collider Physics Conference (LHCP2016)*, Lund, Sweden, 13-18 June 2016. **Invited talk**: "Resummation ambiguities in the Higgs transverse-momentum spectrum in the Standard Model and beyond".

- *Matter and the universe meeting*, Mainz, Germany 12 December 2016. **Contributed talk**: "Higgs mass computation in BSM".

- *Milano Christmas workshop 2016*, Milano, Italy, 22 December 2016. **Contributed talk**: "Perspective for Supersymmetry after current LHC runs".

- *6th KUTS workshop*, Aachen, Germany, 23-25 January 2017. **Contributed talk**: "Improved estimation of the EFT uncertainty in the determination of the Higgs mass with heavy superpartners".

- *Les Rencontres de Physique de la Vallée d'Aoste (La Thuile 2017)*, La Thuile, Italy, 05-11 March 2017. **Invited talk**: "Low-energy SUSY facing LHC constraints".

- *29th Rencontres de Blois*, Blois, France, 28 May/2 June 2017. **Invited talk**: "Perspectives on the Higgs p_T as a probe of BSM physics".

- *QCD@LHC 2017*, Debrecen, Hungary, 28 August/01 September 2017. **Invited talk**: "Status of QCD corrections for BSM Higgs physics"; **Contributed talk**: "$l\bar{l}\ b\bar{b}$ associated production and its impact on the W mass measurement".

- *11th Annual meeting of the Helmoltz Alliance "Physics at the Terascale"*, Hamburg, Germany, 27-29 November 2017. **Contributed two talks**: "Perspectives on the pMSSM11 in light of current LHC results"; "Container technology for phenomenology tools: the udocker middleware suite".

- *(Re)interpreting the results of new physics searches at the LHC*, CERN, Switzerland, 14-16 May 2018. **Invited talk**: "Perspectives on the pMSSM11 in light of current LHC results".

- *9th KUTS workshop*, Würzburg University, Würzburg, Germany, 16-18 July 2018. **Contributed talk**: "Update on the EFT Higgs mass computation in FlexibleSUSY"

- *SUSY2018*, Barcelona, Spain, 23-27 July 2018. **Contributed four talks**: "Towards high-precision for high-scale SUSY: status and perspectives on the EFT Higgs-mass computation in FlexibleSUSY"; "Global perspectives on dark matter simplified models"; "Prospects for SUSY discovery in light of LHC Run 2 results"; "Prospects for SUSY dark matter in light of LHC Run 2 results".

- *10th KUTS workshop*, Dresden, Germany, 8-10 April 2019. **Contributed talk**: "A preliminary study of effects and approximations in the SM matching at 2-loops".

- *KIT-NEP '19*, Karlsruhe, Germany, 7-9 October 2019. **Invited talk**: "Vacuum stability and supersymmetry at high scales with two Higgs doublets".

- *LHC EW precision sub-group workshop*, CERN, Switzerland, 14-18 October 2019. **Contributed talk**: "A new look at the estimation of the PDF uncertainties in the determination of electroweak parameters at hadron colliders".

- *Ultimate precision at hadron colliders workshop*, Institut Pascal, Paris-Saclay, France, 25-29 November 2019. **Contributed talk**: "Revisiting the role of bin-bin correlations in PDF uncertainties for the M_W measurement".

- *Kick-off meeting "Precision Electroweak Physics at the CERN Large Hadron Collider", PRIN 2017F28R78*, Scuola Normale Superiore, Pisa, Italy, 7 February 2020. **Contributed talk**: "Impact of the PDFs on the determination of MW".

- *LHC-EW WG: Jets and EW bosons meeting*, online, 16 March 2020. **Invited talk**: "Matching uncertainties and choices of the PS scales in Z+bb".

- *LHC Higgs group general meeting*, online, 9-11 November 2020. **Contribution with a talk**: "MSSM subgroup status report".

- *EPS-HEP2021*, online, 26-30 July 2021. **Contribution with a talk**: "Impact of correlations on the PDF uncertainty in the W mass measurement"

- *SUSY2021*, online, 23-28 August 2021. **Contribution with a talk**: "Correlating the anomalous moment of the muon and the W mass in the MSSM"

- *ILCX2021*, online, 26-29 October 2021. **Contribution with a talk**: "$(g-2)_\mu$ and M_W predictions in the MSSM"

- *LHC Higgs group general meeting*, online, 1-3 December 2021. **Contribution with a talk**: "MSSM Working Group Summary (Theory)".

- *KIAS workshop on physics beyond the Standard Model in light of the CDF W boson mass anomaly*, online, 24 June 2022. **Invited talk**: "SMEFT Analysis of the W boson mass in light of the recent CDF measurement"

- *ICHEP 2022*, Bologna, Italy, 6-13 July 2022 **Contribution with a talk**: "SMEFT Analysis of the W boson mass in light of the recent CDF measurement"

- *Higgs Days 2022*, Santander, Spain, 5-9 September 2022 **Contribution with a talk**: "A new Monte Carlo for double Higgs pruduction in gluon fusion"

- *Implications of LHCb measurements and future prospects 2022*, CERN, Switzerland, 19-21 October 2022 **Invited talk**: "W-mass theory overview"

- *Precision calculations for Drell-Yan processes*, Milano, Italy, 21-22 November 2022 **Contribution with 2 talks**: "Bottom quark effects in the ptZ spectrum and the MW determination", "Comments on the determination of a model parameter from kinematical distributions"

- *LHC EFT WG: EFT-model matching*, CERN/online, Switzerland, 26 June 2023 **Invited talk**: "Matching the MSSM to SMEFT, examples and possible developments"

- *Future colliders for Early-Career Researchers*, CERN, Switzerland, 27 September 2023 **Contribution with a talk**: "Survey results discussion"

- *Second ECFA workshop on e^+e^- Higgs/EW/Top factories*, Paestum, Italia, 11 October 2023 **Contribution with a talk**: "Discussion session on two-fermion final states"

- *Discussion on Monte Carlo at NLO QCD (HH LHCWG)*, Zoom, online, 20 October 2023 **Invited talk**: "Higgs boson pair production at NLO in the POWHEG approach and the top quark mass uncertainties"

- *The 20th workshop of the LHC working group*, CERN, Switzerland, 13 November 2023 **Contribution with three talks**: "Status and plans of the MSSM subgroup", "Charged Higgs cross section update", **Invited talk**: "Higgs boson pair production at NLO in the POWHEG approach and the top quark mass uncertainties"

- *TOP+SUS CMS workshop*, CERN, Switzerland, 1 February 2024 **Invited talk**: "The rise and fall of light stops in the LHC top quark sample"

- *SUSY2024*, IFT Madrid, Spain, 10-14 June 2024 **Contribution with a talk**: "The rise and fall of light stops in the LHC top quark sample"

- *HiggsDays 24*, Santander, Spain, 9-13 September 2024 **Contributed talk**: "Generator improvements for DiHiggs"

- *SUSY ATLAS workshop*, CERN, Switzerland, 25 September 2024 **Invited talk**: "Prospects for SUSY model phenomenology for Run 3 and beyond"

- *The 21th workshop of the LHC working group*, CERN, Switzerland, 4 and 5 November 2024 **Contribution with two talks**: "Status and plans of the MSSM subgroup", "Charged Higgs cross section update"

Languages

Italian	Native speaker.
English	Advanced knowledge, both written and spoken.
French	Advanced knowledge, both written and spoken.
German	Intermediate knowledge, both written and spoken.

Computer skills

Operating systems	Linux (Gentoo, Debian, Fedora, Arch), FreeBSD, Windows.

Programming languages	C, C++, Fortran77/90, Python, Perl (basic knowledge), Common Lisp (basic knowledge), Haskell (basic knowledge), Julia (basic knowledge), Rust (basic knowledge).
Scripting languages	sh, bash, awk, sed.
Databases	SQLite.
Scientific tools	Mathematica, GiNaC, ROOT, pandas, Keras.
HPC batch systems	PBS/Torque/MAUI, Condor, Slurm, SGE.
Text authoring	LaTeX, MS Office, Open Office.
Version control	cvs, svn, git.

Voluntary experience

Gentoo Linux	Several contributions to the Gentoo project in form ebuilds and eclasses. This experience enriched my knowledge of shell scripting, sed, awk and of the inner working of the Linux toolchain.