

ALESSANDRO VICINI's curriculum vitae

Family name: Vicini

First name: Alessandro

Place and date of birth: [REDACTED]. Nationality: Italian.

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Work address: Dipartimento di Fisica, Università degli Studi di Milano,
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Education

- **July 1987:** Maturità classica (60/60) at the Liceo Classico "P.Sarpi", Bergamo (Italy)
- **July 1992:** Laurea in Fisica, University of Pavia (Italy), Grade: 110/110 cum laude
Title of the thesis: Jet photoproduction at the *ep* collider HERA
Supervisor: Prof. [REDACTED]
- **1993-1995:** Ph.D. at the University of Padova (Italy)
Ph.D. Thesis: Precision tests and radiative corrections in the Standard Model
Supervisor: Prof. [REDACTED]

Scientific iter

- **summer 1996:** Unpaid Scientific Associate at the Theory Division at CERN, Geneva
- **1997-1998:** Post-doc at DESY-Zeuthen
- **1999-2001:** Post-doc at the Institut für Theoretische Physik of the University of Karlsruhe
- **2002-2004:** Post-doc at the Dipartimento di Fisica of the University of Milano
- **2005-2014:** Assistant professor at the Dipartimento di Fisica of the University of Milano
- **09/2012 - 12/2012:** Paid Scientific Associate at the Theory Division at CERN, Geneva
- **07/2013 - 10/2013:** Visiting Scientist at the Université Sorbonne Paris VI, Paris
- **01/2014:** Habilitation to the role of Associate Professor of Theoretical Physics in Italy.
- **02/2015:** Habilitation to the role of Professor of Theoretical Physics in France.
- **since May 2015:** Associate Professor of Theoretical Physics at the Dipartimento di Fisica of the University of Milano
- **03/2017:** Habilitation to the role of Full Professor of Theoretical Physics in Italy.
- **06/2019 - 09/2019:** Paid Scientific Associate at the Theory Division at CERN, Geneva

Present fields of interest

Phenomenology of elementary particles: Precision Tests of the Standard Model. SM renormalization. EFT and searches for New Physics.

Radiative corrections in Quantum Field Theory. Loop integrals and their mathematical representations.

Collider physics. Monte Carlo event generation at NLO and NNLO.

Grants and network coordination

Milan coordinator of a NVIDIA Research and Teaching Center, sponsored by NVIDIA for the diffusion of GPU technologies (2011-2014).

National coordinator of the network SPIF (Precision studies of Fundamental Interactions) funded on a competitive basis by the INFN (Istituto Nazionale di Fisica Nucleare), since 2017 and until 2023.

National coordinator of a grant funded by the Italian Ministero degli Affari Esteri for a bilateral program of cooperation between Italy and India (2017-2019).

Coordinator of the Milano unit of a PRIN Italian national grant on “Precision Electroweak Physics at the CERN Large Hadron Collider” (2019-2022).

Peer reviewing

Referee for the following journals:

Physics Letters B, European Physical Journal C, Journal of High Energy Physics, Nuclear Physics B, Physical Review D, Computer Physics Communication, Nuovo Cimento B.

Conference organization and working groups

In the years 2006 and 2007, organizing committee of the Italian annual “Congresso di Fisica Teorica”, Cortona (Italy).

Organizer of the “W mass workshop” (Milano, March 2009; Fermilab, October 2010).

Convenor of the EW session of DIS 2013 (Marseille).

Convenor in the CERN LHC-Electroweak Working Group (2013-today).

Convenor of the “Ultimate Precision at Hadron Colliders workshop, Paris (France), November 2019.

Member of the International Scientific Committee of the 2020 CEPC Workshop.

Outreach

Contact person in the outreach activities organized by the Dipartimento di Fisica dell’Università degli Studi di Milano (2014-2017).

Conferences on high-energy physics in the schools.

Languages:

italian: mother tongue;

english: fluent speaking, very good reading, writing and comprehension;

german: fluent speaking, very good reading writing and comprehension (Goethe Institut Diplom);

french: fluent speaking, very good reading, writing and comprehension.

List of publications (January 31st 2021)

I am author of 85 scientific publications, 45 on refereed journals, with a total of 12112 citations, an average of 142.5 citations per publication, a Hirsch index $h = 37$ and the most cited publication on a journal with 506 citations (inspire.net database on January 31st 2021).

Theses

- [1] A.Vicini, “Fotoproduzione di jet all’anello di collisione ep HERA”, Tesi di Laurea, Università di Pavia, July 1992.
- [2] A.Vicini, “Misure di precisione e correzioni di ordine superiore in teorie elettrodeboli”, Ph.D. Thesis, Padova, February 1996

Papers

- [1] M.Greco and A.Vicini, “Photoproduction of high- P_T jets in next-to-leading order QCD”, Nucl.Phys.B415 (1993) 386 .
- [2] M.Greco, S.Rolli and A.Vicini, “Inclusive particle photoproduction in next-to-leading order”, Z.Phys.C65 (1995) 277
- [3] G.Degrassi, S.Fanchiotti, F.Feruglio, P.Gambino and A.Vicini, “Two-loop corrections in the heavy top limit to the ρ parameter”, Phys.Lett.B 350 (1995) 75
- [4] G.Degrassi, P.Gambino and A.Vicini, ”Two-loop heavy top effects on the $m_W - m_Z$ interdependence”, Phys.Lett.B 383 (1996) 219
- [5] A.Vicini, “ $\mathcal{O}(\alpha)$ 1-loop radiative corrections to $e^+e^- \rightarrow 4f$ ”, Acta Phys.Pol.90 (1998)
- [6] J.Matias, A.Vicini, ”The ρ parameter and the screening phenomenon for extra W and Z bosons”, Int.J.Mod.Phys.A15:3369-3394,2000
- [7] A. Vicini, “The 1-loop scalar box integral with complex masses”, KA-TP-01-14
- [8] A. Vicini, “Gauge invariant decomposition of 1-loop multiparticle scattering amplitudes”, Phys.Lett. B581 (2002) 83
- [9] G. J. v. Oldenborgh, J. Vermaseren, A. Vicini, “The 1-loop six-point integral”, IFUM-725/FT
- [10] G. Berrino, S. Cacciatori, A. Celi, L. Martucci, A. Vicini, “Non-commutative electrodynamics”, Phys.Rev.D67 (2003) 065021, hep-th/0210171
- [11] D. Dudal, H. Verschelde, V.E.R. Lemes, M.S. Sarandy, S.P. Sorella, M. Picariello, A. Vicini, “More on ghost condensation in Yang-Mills theories: BCS versus Overhauser effect and the breakdown of the Nakanishi-Ojima annex $SL(2,R)$ symmetry”, JHEP 0306:003, 2003
- [12] G. Degrassi, A. Vicini, “Two-loop renormalization of the electric charge in the Standard Model”, Phys.Rev.D70:073007 (2004)
- [13] U. Aglietti, R. Bonciani, G. Degrassi, A. Vicini, “Two-loop light-fermion contribution to Higgs production and decay”, Phys.Lett.B595:432 (2004)
- [14] U. Aglietti, R. Bonciani, G. Degrassi, A. Vicini, “Master integrals for the two-loop light-fermion contributions to $gg \rightarrow H$ and to $H \rightarrow \gamma\gamma$ ”, Phys.Lett.B600:57 (2004)
- [15] C.M. Carloni Calame, G. Montagna, O. Nicrosini, A. Vicini, “Precision electroweak calculation of the charged current Drell-Yan process”, JHEP 0612 (2006) 016

- [16] U. Aglietti, R. Bonciani, G. Degrassi, A. Vicini, “Analytic expression of the QCD-NLO corrections to Higgs production and decay”, *JHEP* **0701** (2007) 021
- [17] C. M. C. Calame, G. Montagna, O. Nicrosini and A. Vicini, “Precision electroweak calculation of the production of a high transverse-momentum lepton pair at hadron colliders,” *JHEP* **0710** (2007) 109 [arXiv:0710.1722 [hep-ph]]
- [18] G. Balossini, C.M. Carloni Calame, G. Montagna, M. Moretti, O. Nicrosini, F. Piccinini, M. Treccani, A. Vicini, “Precision predictions and tools for weak boson production at the LHC”, *Acta Phys.Polon.*B38:2347-2355,2007.
- [19] R. Bonciani, G. Degrassi, A. Vicini, “Scalar particle contribution to Higgs Production via Gluon Fusion at NLO”, *JHEP* **0711** (2007) 095 [arXiv:0709.4227[hep-ph]]
- [20] R.D. Ball, V. Del Duca, S. Forte, S. Marzani, A. Vicini “Higgs production via gluon-gluon fusion with finite top mass beyond next-to-leading order”, *Nucl.Phys.B*800:127-145,2008 [arXiv:0801.2544[hep-ph]]
- [21] G. Balossini, C.M. Carloni Calame, G. Montagna, M. Moretti, O. Nicrosini, F. Piccinini, M. Treccani, A. Vicini, “Combination of electroweak and QCD corrections to single W production at the Fermilab Tevatron and the CERN LHC.”, *JHEP* 1001:013,2010
- [22] F. Demartin, S. Forte, E. Mariani, J. Rojo, A. Vicini, “The impact of PDF and alphas uncertainties on Higgs Production in gluon fusion at hadron colliders”, *Phys.Rev.D***82**:014002,2010
- [23] R. Bonciani, G. Degrassi, A. Vicini, “On the Generalized Harmonic Polylogarithms of One Complex Variable,” *Comput. Phys. Commun.* **182** (2011) 1253-1264, [arXiv:1007.1891 [hep-ph]].
- [24] G. Bozzi, J. Rojo, A. Vicini, “The Impact of PDF uncertainties on the measurement of the W boson mass at the Tevatron and the LHC,” *Phys. Rev.* **D83** (2011) 113008, [arXiv:1104.2056 [hep-ph]].
- [25] E. Bagnaschi, G. Degrassi, P. Slavich, A. Vicini, “Higgs production via gluon fusion in the POWHEG approach in the SM and in the MSSM”, *JHEP* 02 (2012) 088, [arXiv:1111.2854 [hep-ph]].
- [26] L.Barzè, G. Montagna, P. Nason, O. Nicrosini, F. Piccinini, A. Vicini, “Neutral current Drell-Yan with combined QCD and electroweak corrections in the POWHEG BOX”, *Eur.Phys.J. C*73 (2013) 2474, arXiv:1302.4606
- [27] E. Bagnaschi, R.V. Harlander, S. Liebler, H. Mantler, P. Slavich, A. Vicini “Towards precise predictions for Higgs-boson production in the MSSM”, *JHEP* 1406 (2014) 167, arXiv:1404.0327
- [28] G. Bozzi, L. Citelli, A. Vicini, “PDF uncertainties on the W boson mass measurement from the lepton transverse momentum distribution”, *Phys.Rev.D*91 (2015) 113005, arXiv:1501.05587
- [29] E. Bagnaschi, A. Vicini, “The Higgs transverse momentum distribution in gluon fusion as a multiscale problem”, *JHEP* 1601 (2016) 056, arXiv:1505.00735
- [30] S. Forte, A. Nisati, G. Passarino, R. Tenchini (eds.) et al., “The Standard Model from the LHC to future colliders: a contribution to the Workshop ”What Next” of INFN”, *Eur.Phys.J. C*75 (2015) no.11, 554, arXiv:1505.01279
- [31] G. Bozzi, L. Citelli, M. Vesterinen, A. Vicini, “Prospects for improving the LHC W boson mass measurement with forward muons”, *Eur.Phys.J. C*75 (2015) no.12, 601,

arXiv:1508.06954

- [32] E. Bagnaschi, R.V. Harlander, S. Liebler, H. Mantler, A. Vicini, M. Wiesemann, “Resummation ambiguities in the Higgs transverse momentum spectrum in the Standard Model and beyond”, JHEP 1601 (2016) 090, arXiv:1510.08850
- [33] A. Vicini, D. Wackerath et al., “Precision Studies of Observables in $pp \rightarrow W \rightarrow l\nu$ and $pp \rightarrow \gamma^*, Z \rightarrow l^+l^-$ processes at the LHC”, Eur.Phys.J. C77 (2017) no.5, 280 arXiv:1606.02330
- [34] R. Bonciani, F. Buccioni, R. Mondini, A. Vicini, “Double-real corrections at $\mathcal{O}(\alpha\alpha_s)$ to single gauge boson production”, Eur.Phys.J. C77 (2017) no.3, 187, arXiv:1611.00645
- [35] C. M. Carloni Calame, M. Chiesa, H. Martinez, G. Montagna, O. Nicrosini, F. Piccinini, A. Vicini, “Precision Measurement of the W-Boson Mass: Theoretical Contributions and Uncertainties”, Phys.Rev. D96 (2017) no.9, 093005, arXiv:1612.02841
- [36] E. Bagnaschi, F. Maltoni, A. Vicini, M. Zaro, “Lepton-pair production in association with a $b\bar{b}$ pair and the determination of the W boson mass”, JHEP 1807 (2018) 101, arXiv:1803.04336
- [37] “VBSCan Split 2017 Workshop Summary”, C. Anders et al., Rev.Phys. 3 (2018) 44-63 arXiv:1801.04203
- [38] A. Abada et al., “FCC Physics Opportunities: Future Circular Collider Design Report Volume 1, Eur.Phys.J.C 79 (2019) 6, 474
- [39] A. Abada et al., “FCC Physics Opportunities: Future Circular Collider Design Report Volume 2, Eur.Phys.J.ST 228 (2019) 2, 261
- [40] A. Abada et al., “FCC Physics Opportunities: Future Circular Collider Design Report Volume 3, Eur.Phys.J.ST 228 (2019) 4, 755
- [41] A. Abada et al., “HE-LHC The High-Energy Large Hadron Collider: Future Circular Collider Design Report Volume 4, Eur.Phys.J.ST 228 (2019) 5, 1109
- [42] M. Chiesa, F. Piccinini, A. Vicini, “On the determination of $\sin^2 \theta_{eff}^\ell$ at hadron colliders”, Phys.Rev.D100 (2019) 7, 071302, arXiv:1906.11569
- [43] E. Bagnaschi, A. Vicini, “A new look at the estimation of the PDF uncertainties in the determination of electroweak parameters at hadron colliders”, Phys.Rev.Lett.126 (2021) 041801, arXiv:1910.04726
- [44] R. Bonciani, F. Buccioni, N. Rana, I. Triscari, A. Vicini, “NNLO QCDxEW corrections to Z production in the $q\bar{q}$ channel Phys.Rev.D101 (2020) 3, 031301, arXiv:1911.06200
- [45] R. Bonciani, F. Buccioni, N. Rana, A. Vicini, “NNLO QCDxEW corrections to on-shell Z production. Phys.Rev.Lett.125 (2020) 23, 232004, arXiv:2007.06518

Proceedings

- [1] A. Vicini, in “TESLA Technical Design Report: Physics with an e^+e^- Linear Collider”, Electroweak section, DESY 2001-23, March 2001
- [2] G.Degrassi, S.Fanchiotti, F.Feruglio, P.Gambino and A.Vicini, “Two-loop corrections for electroweak processes”, in Proceedings of the XXX^{th} Rencontres de Moriond on “Electroweak interactions and Unified Theories”, March 11-18 1995, Les Arcs (France)
- [3] G.Degrassi, S.Fanchiotti, F.Feruglio, P.Gambino and A.Vicini, “Two-loop electroweak top corrections: are they under control?” published in CERN Report 95-03

- [4] A.Culatti, G.Degrassi, F.Feruglio, A.Masiero, S.Rigolin, L.Silvestrini and A.Vicini in "Physics at LEP2", CERN 96-01, eds. G.Altarelli, T.Sjöstrand and F.Zwirner
- [5] A.Culatti, G.Degrassi, F.Feruglio, A.Masiero, S.Rigolin, L.Silvestrini and A.Vicini, DESY 96-123D and proceedings of the "3rd workshop on physics and experiments with e^+e^- linear colliders (LCWS 95)"
- [6] A.Vicini, "The Screening Phenomenon in a New Class of Extended Gauge Models", proceedings of the 11th Rencontres de physique de la Vallée d'Aoste, La Thuile, 2-8 March 1997, ed. Mario Greco
- [7] A.Vicini, "Exact 1-loop QED corrections to $e^+e^- \rightarrow 4f$ " proceedings of the EPS Conference on High Energy Physics HEP97, Jerusalem 19-26 August 1997
- [8] A.Vicini, "Two-loop renormalization of the electric charge in the Standard Model", proceedings of the international workshop Sighad03, Pisa 8-10 October 2003, hep-ph/0312148
- [9] C.M. Carloni Calame, G. Montagna, O. Nicrosini, A. Vicini, in proceedings of Les Houches 2005 "Physics at TeV colliders", hep-ph/0604120
- [10] C.M. Carloni Calame, G. Montagna, O. Nicrosini, A. Vicini, "Electroweak corrections to the charged current Drell-Yan process", proceedings of IFAE-2006, Pavia, 19-21 April 2006, hep-ph/0610018
- [11] U. Aglietti, R. Bonciani, G. Degrassi, A. Vicini, "Two-loop electroweak corrections to Higgs production in proton-proton collisions", contribution to the TeV4LHC Workshop, Brookhaven, Upton, New York, 3-5 February 2005, hep-ph/0610033
- [12] C.M. Carloni Calame, G. Montagna, O. Nicrosini, A. Vicini, in proceedings of the TeV4LHC workshop: Top and Electroweak Physics, arXiv:0705.3251
- [13] U. Aglietti, R. Bonciani, G. Degrassi, A. Vicini, in proceedings of the TeV4LHC workshop: Higgs physics, hep-ph/0612172
- [14] C.M. Carloni Calame, G. Montagna, O. Nicrosini, F. Piccinini, A. Vicini, in proceedings of CIPANP 2006, AIP Conf.Proc.870:436-439,2006
- [15] G. Balossini, C.M. Carloni Calame, G. Montagna, M. Moretti, O. Nicrosini, F. Piccinini, M. Treccani, A. Vicini, in proceedings of DIS2007, 18-22 April 2007, Munich.
- [16] G. Balossini, C.M. Carloni Calame, G. Montagna, M. Moretti, O. Nicrosini, F. Piccinini, M. Treccani, A. Vicini, in proceedings of EPS:HEP2007, 19-25 July 2007, Manchester.
- [17] G. Balossini, C.M. Carloni Calame, G. Montagna, M. Moretti, O. Nicrosini, F. Piccinini, M. Treccani, A. Vicini, in proceedings of RADCOR 2007, 1-5 October 2007, Firenze, in PoS:RAD COR 2007,013
- [18] C. Buttar et al., "Standard Model Handles and Candles Working Group: Tools and Jets Summary Report", in Proceedings of the workshop "Physics at TeV colliders 2007", Les Houches, 11-29 June 2007, arXiv:0803.0678 [hep-ph]
- [19] R.D. Ball, V. Del Duca, S. Forte, S. Marzani, A. Vicini "Finite-top-mass effects in NNLO Higgs production", [arXiv:0809.4934[hep-ph]]
- [20] G. Balossini, C.M. Carloni Calame, G. Montagna, M. Moretti, O. Nicrosini, F. Piccinini, M. Treccani, A. Vicini, "Review of precision calculations for the measurement of electroweak boson production and properties at hadron colliders.", J.Phys.Conf.Ser.110:042002,2008.
- [21] G. Balossini, C.M. Carloni Calame, G. Montagna, M. Moretti, O. Nicrosini, F. Piccinini,

- M. Treccani, A. Vicini, “Electroweak & QCD corrections to Drell Yan processes”, *Acta Phys.Polon.B39:1675,2008*
- [22] G. Balossini, C.M. Carloni Calame, G. Montagna, M. Moretti, O. Nicrosini, F. Piccinini, M. Treccani, A. Vicini, “Precision predictions and tools for weak boson production at the LHC.”, *Acta Phys.Polon.B38:2347,2008*
- [23] SM and NLO Multileg Working Group (J.R. Andersen et al.), “The SM and NLO Multileg Working Group: Summary report”, Presented at 6th Les Houches Workshop: Physics at TeV Colliders, Les Houches, France, 8-26 Jun 2009. e-Print: arXiv:1003.1241 [hep-ph]
- [24] F. Ambroglini et al. “Proceedings of the Workshop on Monte Carlo’s, Physics and Simulations at the LHC PART I.” Feb 2009. 239pp. e-Print: arXiv:0902.0293 [hep-ph]
- [25] F. Ambroglini et al. “Proceedings of the Workshop on Monte Carlo’s, Physics and Simulations at the LHC PART II.” Feb 2009. 148pp. e-Print: arXiv:0902.0293 [hep-ph]
- [26] G. Balossini, C.M. Carloni Calame, G. Montagna, M. Moretti, O. Nicrosini, F. Piccinini, M. Treccani, A. Vicini, in proceedings of RADCOR 2009, 25-30 October 2009, Ascona, in PoS:RADCOR 2009,014
- [27] S. Alekhin, S. Alioli, R. D. Ball, V. Bertone, J. Blumlein, M. Botje, J. Butterworth, F. Cerutti *et al.*, “The PDF4LHC Working Group Interim Report,” [arXiv:1101.0536 [hep-ph]].
- [28] S. Dittmaier *et al.* [LHC Higgs Cross Section Working Group Collaboration], “Handbook of LHC Higgs Cross Sections: 1. Inclusive Observables,” [arXiv:1101.0593 [hep-ph]].
- [29] S. Dittmaier *et al.* [LHC Higgs Cross Section Working Group Collaboration], “Handbook of LHC Higgs Cross Sections: 2. Differential Observables,” [arXiv:1201.3084 [hep-ph]]
- [30] S. Heinemeyer *et al* [LHC Higgs Cross Section Working Group Collaboration] “Handbook of LHC Higgs Cross Sections: 3. Higgs Properties” [arXiv:1307.1347 [hep-ph]]
- [31] A. Oh, M. Stoye, A. Vicini, “Electroweak and Beyond the Standard Model results at DIS2013”, Published in PoS DIS2013 (2013) 017
- [32] M. Baak *et al.*, “Study of Electroweak Interactions at the Energy Frontier”, [arXiv:1310.6708 [hep-ph]]
- [33] J. Rojo and A. Vicini, “PDF uncertainties in the extraction of the W mass at LHC: a Snowmass Whitepaper”, [arXiv:1309.1311 [hep-ph]]
- [34] A. Andreazza et al, “What Next: White Paper of the INFN-CSN1”, *Frascati Phys.Ser.60* (2015) 1-302
- [35] M.L.Mangano et al., “Physics at a 100 TeV pp collider: Standard Model processes”, arXiv:1607.01831
- [36] LHC Higgs Cross Section Working Group, “Handbook of LHC Higgs Cross Sections: 4. Deciphering the Nature of the Higgs Sector”, arXiv:1610.07922
- [37] A. Vicini, “Interplay of QCD and EW corrections and precision physics at hadron colliders”, *PoS EPS-HEP2017* (2017) 417
- [38] A. Vicini, “Bottom quark mass effects on the ptZ spectrum and the W mass determination”, *PoS DIS2018* (2018) 111
- [39] M. Chiesa, C.M. Carloni Calame, F. Piccinini, O. Nicrosini, H. Martinez, G. Montagna, A. Vicini, “EW and mixed QCD-EW effects in the W boson mass determination”, *PoS*

- [40] J. da Costa et al., CEPC Conceptual Design Report: Volume 2 - Physics and Detector, arXiv:1811.10545
- [41] R. Bonciani, F. Buccioni, N. Rana, A. Vicini, “NNLO QCDxEW corrections to single vector boson production, proceedings of RADCOR 2019 arXiv:1912.10951

Computer codes

The Montecarlo event generator **HORACE** for the simulation of the Drell-Yan process, including EW NLO can be downloaded from the following url:

<http://www.pv.infn.it/hepcomplex/horace.html>

The upgraded version of the Montecarlo event generator **POWHEG**, describing Higgs production via gluon fusion in the SM, in the MSSM and in the 2HDM, can be downloaded from the following url:

<http://powhegbox.mib.infn.it>

The Montecarlo event generator **POWHEG** for the simulation of the Drell-Yan process, including QCD and EW NLO corrections, can be downloaded from the following url:

<http://powhegbox.mib.infn.it>

Talks

July 1993: two invited talks with the title "High PT jet photoproduction in NLO QCD" in Frascati, Italy, at the INFN National Laboratories and in Hamburg, Germany, at DESY.

March 1994: participation to the congress on "Field theory and statistical mechanics", organised at the Università di Bari, Italy.

August 1994: participation to the "QCD Summer Institute" held at the INFN Gran Sasso Laboratories, Italy, talk intitled: "Single particle photoproduction at HERA".

September 1994: participation to the "Workshop on QCD" organised at DESY-Hamburg, Germany, talk intitled "Progress in jet cross section calculation".

February - May 1996: three talks with the title "Heavy top effects in two-loop electroweak radiative corrections" at the University of Bielefeld, Germany, (February 29th), at the University of Valencia, Spain, (March 21st) and at the DESY-IfH in Zeuthen, Germany, (May 15th).

March 1997: Talk at "Les Rencontres de physique de la Vallée d'Aoste", La Thuile, Italy, March 2-8 1997, with the title "The screening phenomenon in a class of extended gauge models".

August 1997: Talk at "The International Europhysics Conference on High-Energy Physics, 19-26 August 1997, Jerusalem, Israel", with the title "Exact 1-loop QED corrections to $e^+e^- \rightarrow 4f$ ".

April 1998: Talk at NALEP, italian annual meeting on the "Physics at LEP", 15-17 April 1998 Napoli, Italy, "Exact 1-loop EW corrections to $e^+e^- \rightarrow 4f$ ".

April 1998: Invited talk at the DESY workshop "Loops and legs", 19-24 April 1998, Rheinsberg, Germany, "Exact 1-loop EW corrections to $e^+e^- \rightarrow 4f$ ".

October 1999: Talk at the "2nd ECFA-DESY linear collider workshop, Obernai, France, 16-19 October 1999" with the title "Status of 1-loop electroweak corrections to $e^+e^- \rightarrow 4f$ ".

June 2000: Talk at the "Convegno informale di Fisica Teorica" organized in Cortona, Italy, by the Scuola Normale Superiore di Pisa, with the title "Exact 1-loop EW corrections to $e^+e^- \rightarrow 4f$ ".

September 2000: Talk at the DESY-ECFA linear collider workshop, Hamburg, Germany, 25-28 September 2000, with the title "Numerical issues in the Montecarlo integration of processes of the class $e^+e^- \rightarrow 4f$ ".

October 2000: Talk at the University of Milano, Italy, with the title "Exact 1-loop EW corrections to $e^+e^- \rightarrow 4f$ ".

March 2001: Talk at the Granada, Spain, meeting of the EU network "Physics at colliders" with the title "4 fermions scattering amplitudes at 1-loop".

April 2001: Talk at the University of Milano, Italy, with the title "Gauge invariant decomposition of 1-loop multiparticle scattering amplitudes".

May 2002: Invited talk at the Brookhaven National Laboratory (USA) with the title "Towards a complete calculation of 1-loop corrections to $e^+e^- \rightarrow 4f$ ".

June-October 2003: Talks at the Universities of Pisa, Milano, Padova and at CERN, with the title "Two-loop renormalization of the electric charge in the Standard Model".

October 2003: Invited talk at the international workshop **Sighad03**, Pisa 8-10 October 2003.

May-November 2004: Talks at the Universities of Durham (UK) and Aachen (Germany), with the title "Two-loop light fermion contributions to Higgs production and decay".

February 2005: Talk at the workshop TEV4LHC, 2-4 February 2005, Brookhaven National Laboratories, with the title "Two-loop light fermion contributions to Higgs production and decay".

February 2006: Seminar at the University of Pavia with the title "Higgs searches at high energy colliders"

April 2006: Seminar at the University of Durham (UK) with the title "Precision electroweak calculation of the charged current Drell-Yan process."

April 2007: Talk at the DIS2007 conference, Munich 18-23 April 2007 with the title "Precision electroweak calculation of the charged current Drell-Yan process."

April 2007: Seminar at the University of Padova with the title "Precision electroweak calculation of the charged current Drell-Yan process."

October 2007: Talk at the conference Radcor2007, Firenze 1-5 October 2007, with the title "Drell-Yan processes at hadron colliders."

February 2008: Talk at the workshop PDF4LHC, CERN 22-23 February 2008, with the title "Drell-Yan processes at LHC and PDF measurements."

February 2008: Seminar at the Max-Planck Institut für Physik, München, with the title "Drell-Yan processes at hadron colliders."

July 2008: Seminar at the University of Karlsruhe, with the title "Drell-Yan processes at hadron colliders."

August 2008: "Wine-and-cheese" seminar at the Fermilab (Chicago), with the title "Drell-Yan processes at hadron colliders."

August 2008: Talk at the SUNY at Buffalo with the title "Relevance of the Drell-Yan processes

at hadron colliders.”

June 2009: Seminar at the University of Southampton with the title “Higgs production in gluon fusion at NLO and beyond”

July 2009: Talk at the annual meeting of the American Physical Society (Division of Particles and Fields) in Detroit with the title “Drell-Yan processes at hadron colliders.”

September 2009: Talk at the second workshop on the LHeC (Divonne) with the title “Impact of the LHeC PDFs measurements on precision EW physics”

September 2009: Talk at the “Higgs Days 2009” (Santander) with the title “Higgs production in gluon fusion at NLO and beyond”

November 2009: Talk at the Higgs@TO meeting (Torino) with the title “Impact of the PDFs measurements on Higgs production via gluon fusion”

January 2010: Talk at the PDF4LHC workshop (CERN) with the title “Impact of PDFs and α_s uncertainties on Higgs production via gluon fusion”

April 2010: Talk at the Higgs cross-section workshop (Freiburg) with the title “Impact of PDFs and α_s uncertainties on Higgs production via gluon fusion”

June 2010: Talk at the LoopFest IX (SUNY at Stony Brook) with the title “Precision extraction of MW from observables at hadron colliders”

June 2010: Talk at the “W and Z physics” workshop at BNL (Brookhaven) with the title “Precision extraction of MW from observables at hadron colliders”

July 2010: Talk at the HO10 Theory Institute at CERN with the title “Precision extraction of MW from observables at hadron colliders”

July 2010: Talk at the Higgs cross-section workshop (CERN) with the title “Impact of PDFs and α_s uncertainties on Higgs production via gluon fusion”

September 2010: Talk at the Santander workshop Higgs Days 2010 with the title “Impact of PDFs and α_s uncertainties on Higgs production via gluon fusion”

October 2010: Talk at the workshop QCD@LHC (Trento) with the title “Impact of PDFs and α_s uncertainties on Higgs production via gluon fusion”

April 2011: Talk at the first workshop of the LHC Electroweak working group (CERN) with the title “Precision extraction of MW and tuning of QCD codes”

April 2011: Talk at the first workshop of the LHC Electroweak working group (CERN) with the title “EW corrections to Drell-Yan processes: MW precision measurement and more”

September 2011: Talk at the Santander workshop Higgs Days 2011 with the title “Higgs production via gluon fusion in the POWHEG approach in the SM and in the MSSM”

November 2011: Talk at the second workshop of the LHC Electroweak working group (CERN) with the title “PDF impact on the extraction of the weak mixing angle”

February 2012: Invited talk at the University of Padua with title: “Higgs production via gluon fusion in the POWHEG approach in the SM and in the MSSM ”

April 2012: Talk at the workshop “SM physics at LHC” (Copenhagen) with the title: “Recent theoretical developments in W/Z production at hadron colliders”

October 2012: Talk at the third workshop of the LHC Electroweak working group (CERN) with the title “Electroweak input schemes”

January 2013: Invited talk at the University of Louvain-la-Neuve, with the title: “Searching for Higgs boson(s) at hadron colliders”

February 2013: Talk at the meeting of the Snowmass EW working group at the Duke University (USA), with the title “Monte Carlo programs for electroweak precision physics at hadron colliders”

February 2013: Talk at the City College of Technology, New York, with the title “Electroweak measurements at hadron colliders”

April 2013: Summary talk of the EW and BSM parallel session at the DIS2013 conference in Marseille.

July 2013: Talk at the EPS-HEP conference in Stockholm, with the title “Prospects on MW measurements”

December 2013: Two talks at the meeting of the Higgs Cross Section Working Group with the following titles: “The Higgs transverse momentum distribution in Shower Monte Carlo codes for $pp\text{-}jH+X$ ” and “Higgs production via gluon fusion in POWHEG in the 2HDM”

March 2014: Collider Cross Talk at the CERN Theory Division on “Theoretical uncertainties on the W boson mass measurement”

September 2014: Talk at the Santander workshop Higgs Days 2014 with the title “Higgs production via gluon fusion in POWHEG in the 2HDM as a theoretical framework to discuss p_T resummation in presence of a multiscale hard scattering process”

October 2014: Talk at the GGI (Florence) institute “Challenges in precision physics at hadron colliders” in the joint ATLAS-CMS-Theory meeting on “Systematic uncertainties on the MW measurement” with the title “PDF uncertainties on the MW determination from the charged lepton transverse momentum distribution”

February 2015: Talk “PDF uncertainties on the MW determination from the charged lepton transverse momentum distribution” at the PDF4LHC meeting, 21 January 2015, CERN

February 2015: Talk “SM physics at the LHC” at the national ATLAS meeting, 11 February 2015, Milano

February 2015: Talk “PDF uncertainties on the MW determination from the charged lepton transverse momentum distribution” at the CERN EW-WG meeting, 23 February 2015 CERN

May 2015: Talk “Ambiguities in the prediction of the Higgs boson p_T spectrum” at the CMS Monte Carlo group meeting, 18 May 2015, CERN

September 2015: Talk “Higgs physics at the LHC” at the conference “LHCP2015”, 31 August - 5 September 2015, St.Petersburg

October 2015: Talk “MW theory” at the workshop “CMS precision mass measurement retreat”, 28-30 October 2015, Fermilab

November 2015: Talk “MW measurement at the LHCb experiment” at the workshop “Implications of LHCb measurements and future prospects”, 3-5 November 2015, CERN

January 2016: Invited talk at SUNY University at Buffalo with the title: “Higgs boson production in gluon fusion in the SM and beyond: theoretical uncertainties in Monte Carlo simulations.”

April 2016: Talk at the Kavli Institute for Theoretical Physics at Santa Barbara, in the workshop “The LHC Run II and the precision frontier”, with the title “Matching uncertainties in the prediction of the Higgs transverse momentum distribution in the SM and in the 2HDM”.

June 2016: Talk at the “MW topical meeting of the LHC EW working group” with the presentation of the results of the report published in arXiv:1606.02330

August 2016: Invited talk at the QCDLHC 2016 conference, with the title “Precision calculations for electroweak measurements”

September 2016: Summary talk of the “Precision physics session” of the conference “Precision theory for precise measurements at the LHC and future colliders”, ICISE Quy Nhon (Vietnam)

May 2017: Invited talk at the “SM@LHC 2017” conference, Amsterdam 2-5 May, “Theoretical aspects of the M_W measurement”

May 2017: Invited talk at the “LHCP2017” conference, Shanghai 15-20 May 2017, “Impact of EW and mixed QCD-EW corrections on the M_W measurement”

June 2017: Talk at the CERN Theory Institute “LHC and the SM, physics and tools”, “Bottom quark effects on the ptZ distribution and their effects on the M_W measurement”

July 2017: Invited talk at the “EPS-HEP 2017” conference, Venice 5-12 July 2017, “Mixed QCD-EW corrections and precision measurements at hadron colliders”

August 2017: Invited plenary talk at the “QCD@LHC 2017” conference, Debrecen August 28th - September 1st 2017, “Electroweak corrections at hadron colliders”

April 2018: Invited talk at the “DIS2018” conference, Kobe April 16-20 2018, “Bottom quark mass effects and the W mass determination”

October 2018 Invited talk at the CMS week (Physics and Upgrade), Budapest, October 1-5 2018

December 2018 Colloquium at the Institute of Mathematical Sciences, Chennai (India).

April 2019 Invited talk at the SM@LHC 2019 conference, April 21-25 2019, Zuerich (Switzerland)

May 2019 Invited plenary talk at the LHCP2019 conference, May 19-25 2019, Puebla (Mexico)

November 2019 Invited plenary talk at the 2019 International conference on the High-Energy Circular electron-positron colliders, November 18-20 2019, Beijing (China)

January 2020 Invited talk at the 2020 IAS workshop on High Energy Physics, January 6-24 2020, Hong Kong (China)

May 2020 Invited plenary talk at the LHCP 2020 conference on High Energy Physics, May 25-30 2020, online-Paris)

Lectures at international schools

- Four lectures on “Montecarlo generators for precision physics at hadron colliders” at the India-CMS winter school, Tata Institute for Fundamental Research in Mumbai (India), January 3-8 2014.
- Five lectures on “Precision physics at hadron colliders” at the workshop “Multi-loop and multi-leg processes for precision physics at the LHC”, Saha Institute of Nuclear Physics, Kolkata (India), February 23-27 2016.

Teaching at the University of Milano

- In the years 1999-2001, responsible for the “Research seminar” (Forschungsseminar) of the ITP in Karlsruhe.
- I gave two lectures (6 hours) on the linux operating system, in the year 2003/2004 in the Master “Methods and mathematical models for quantitative finance”.
- In the academic years starting from 2001-02 until 2007-08 I have been lecturing in one module (40 hours) of the course of “Computational Methods in Physics” at the University of Milano.
- Starting from the academic year 2008-09 I am lecturing the full course (2 modules of 66 hours each) of “Computational methods in Physics” at the University of Milano.
- Starting from the academic year 2003-04 and until 2013-2014, I have been lecturing 24 hours in the course “Theory of fundamental interactions” at the University of Milano, giving an introduction and some basic applications of the theory of the electroweak interaction. Since 2014-2015 I am responsible of the full course, where I still teach 24 hours.
- Starting from the academic year 2019-20 I am responsible of the “Quantum Mechanics” course, activated in the second semester of the second year (first half) and in the first semester of the third year (second half) in the Bachelor program at the University of Milano,

Supervision of Bachelor and Master theses:

██████████, “ $e^+e^- \rightarrow \nu\bar{\nu}\gamma$ at LEP and at TESLA” (discussed in September 2002, now postdoc in Valencia);

██████████, “Theoretical aspects of four fermion production” (discussed in July 2003);

██████████ “Some aspects of W+jet production at the LHC” (discussed in October 2005);

██████████ ttanzio “Parity violation in Caesium” (discussed in March 2006);

██████████ ghetti “Initial state radiation at hadron colliders” (discussed in October 2007);

██████████ “W mass determination at hadron colliders” (discussed in February 2008, PhD student in Milano);

██████████ “Applications of neural networks” (discussed in April 2008);

██████████ “Merging EW and QCD corrections in HORACE to simulate the Drell-Yan process” (October 2009, postdoc in Louvaine-la-neuve);

██████████ “Harmonic polylogarithms of complex variable” (October 2009, postdoc at DESY-Hamburg);

██████████ “A fitting procedure to extract MW from Drell-Yan observables” (October 2009, PhD student in Lausanne);

██████████ “PDF uncertainties on the Higgs total cross-section via gluon fusion” (October 2009, PhD student in Louvaine-la-neuve).

[REDACTED] o “Divergent structures in the calculation of the $\mathcal{O}(\alpha_s)$ corrections to single boson production” (April 2011, PhD student in Milano)

[REDACTED] “Higgs production via gluon fusion in the POWHEG approach in the SM and in the MSSM” (October 2011, postdoc at DESY-Hamburg)

[REDACTED] lla “Numerical integration with CUDA on GPU” (April 2012, PhD student at Université de Paris Sorbonne)

[REDACTED] “Solving linear system of equations with CUDA on GPU” (April 2012)

[REDACTED] “Sviluppo di un modello a reti neurali per la previsione di effetti collaterali della radioterapia nella regione della prostata” (April 2012)

[REDACTED] “Evaluation of the total cross section for the process $q\bar{q} \rightarrow W\gamma$ including virtual NLO-QCD corrections.” (October 2012).

[REDACTED] (luglio 2013) “Tecniche per la valutazione di correzioni radiative $\mathcal{O}(\alpha_s)$ al processo di Drell-Yan”.

[REDACTED] (October 2013, PhD student at MIT) “PDF uncertainties on the high-mass Drell-Yan distributions”.

[REDACTED] (October 2014) “PDF uncertainties on the MW determination from the charged lepton transverse momentum distribution”.

[REDACTED] (April 2015, PhD student at SUNY Buffalo) “Mixed QCD-EW corrections to single gauge boson production”.

[REDACTED] (July 2015, PhD student at University of Zurich) “Double-real $\mathcal{O}(\alpha_s)$ corrections to single gauge boson production”.

Ilario Triscari (October 2015) “Studio del processo di Drell-Yan in presenza di una densità di fotone nel protone”.

[REDACTED] (December 2015) “Option pricing: dinamica di Black-Scholes e di Lévy a confronto”.

[REDACTED] (February 2016) “Effetti del quark bottom nel processo di Drell-Yan”.

[REDACTED] (July 2016) “Metodo delle equazioni differenziali per il calcolo di integrali di Feynman”.

[REDACTED] (October 2016) “QCD uncertainties in charged and neutral current Drell-Yan processes and the W mass determination”.

[REDACTED] (December 2016) “La dinamica delle comunicazioni umane”.

Stefano Schmidt (October 2017) “Parton-Shower simulations on GPUs”.

[REDACTED] (October 2017) “Mixed QCD-EW corrections to single boson production: the real-virtual contribution”.

[REDACTED] rtinoli (February 2018) “Analytic continuation of generalized harmonic polylogarithms”

[REDACTED] cari (April 2018) “Mixed QCD-EW corrections to the total cross section for single W and Z production”.

[REDACTED] (July 2018) “Metodi Numerici Per la Ricostruzione di Funzioni Polinomiali Fratte”.

[REDACTED] (December 2018) “Incertezze teoriche in una procedura di fit globale di osservabili elettrodeboli a un collisore adronico”.

[REDACTED] “Machine-learning techniques and top-tagging” (April 2019).

[REDACTED] “Analytic continuation of polylogarithmic functions” (July 2019).

[REDACTED] va “Photon-density effects on Drell-Yan observables” (July 2019).

[REDACTED] “Weak mixing angle determination at hadron colliders” (October 2019).

[REDACTED] “PDF uncertainties in the determination of the weak mixing angle” (December 2019).

██████████ “Modelling of an assistance service and its automation” (April 2020).
Arianna Crippa (January 2021). “Techniques for the evaluation of $\mathcal{O}(\alpha\alpha_s)$ corrections to the Drell-Yan process”.

I was co-supervisor of two PhD students: ██████████ (2003-2004), ██████████ (2013-2014).

I was co-tutor of the following students, for the discussion of a degree thesis: ██████████ (April 2005, now staff in Genova), ██████████ (June 2007, now staff in Milano) and ██████████ (September 2007, now staff in Oxford), ██████████ (October 2011), ██████████ (October 2011, now postdoc in Milano-Bicocca), ██████████ (October 2013, now postdoc at Northwestern).

I am currently supervisor in Milano of two postdocs, ██████████ (2019-2021) and ██████████ (2020-2022).