Curriculum Vitae of Carla Biggio

Personal Data

Name Carla Biggio

Place and Date of Birth [redacted]

Nationality Italian

Present Address Dipartimento di Fisica, Università di Genova, via Dodecaneso 33, 16146 Genova (IT)

Telephone [redacted]

E-mail [redacted]

Languages Italian (mother tongue), English (fluent), Spanish (fluent), French (good), Catalan (good), German (basic)

Studies

Oct95-Apr00 Undergraduate student at Università degli Studi di Genova, Italy.

Apr99-Apr00 Member of Borexino Collaboration.

19 April 2000 Discussion of the degree thesis entitled "*Sensibilità di Borexino ai Neutrini del* ^{7}*Be e Soluzioni al Problema dei Neutrini Solari* " ("Sensitivity of Borexino to the ^{7}Be Neutrinos and Solutions to the Solar Neutrino Problem") under the supervision of Dr. M. Pallavicini and achievement of the university degree in physics ("Laurea in Fisica") with grade 110/110 cum laude.

Nov00-Oct03 Graduate student at Università degli Studi di Padova, Italy, under the supervision of Prof. F. Feruglio.

2 December 2003 Discussion of Ph.D. thesis entitled "*Symmetry Breaking in Extra Dimensions* " and achievement of the Ph.D. degree in theoretical physics.

Career

Nov03-Sep05 Postdoc in the Theoretical Physics Group at the IFAE (Institut de Física d'Altes Energies), Universitat Autònoma de Barcelona, Spain.

Sep05-Sep07 Postdoc in the Theoretical Physics Department of the Universidad Autónoma de Madrid, Spain.

Oct07-Sep10 Postdoc at the Max Planck Institut for Physics (MPI), München, Germany.

Oct10-Sept12 Postdoc at Institut de Fisica d'Altes Energies, Universitat Autonoma de Barcelona, Spain.

Oct12-Nov15 Researcher (Ricercatore a tempo determinato - tipo A) at Dipartimento di Fisica, Università di Genova, Italy.

Dic15-Nov18 Researcher (Ricercatore a tempo determinato - tipo B) at Dipartimento di Fisica, Università di Genova, Italy [1];

from Dic18 Associate Professor (Professore associato) at Dipartimento di Fisica, Università di Genova, Italy [2].

Habilitations

- Obtention of the Italian "Abilitazione Scientifica Nazionale per professore di Seconda Fascia nel settore concorsuale 02/A2" on 21/01/2015;
- Obtention of the Italian "Abilitazione Scientifica Nazionale per professore di Prima Fascia nel settore concorsuale 02/A2" on 07/01/2020.

Tasks

- From April 2016 to April 2020 member of the Management Committee of the COST Action "Connecting insights in fundamental physics (FUNDAMENTALCONNECTIONS)".
- From Novembre 2018 to present member of "Giunta di Dipartimento".
- From January 2020 member of the permanent committee for the bachelor degree (commissione di laurea triennale).
- From January 2020 to January 2023 coordinator of the Genova INFN Theory Group (coordinatrice della sezione di Genova in Commissione Scientifica Nazionale 4 INFN).

Grants

- Obtention in 2013 of the Marie Curie Career Integration Grant. It is a personal grant, of four years duration, which has been financed for a total amount of 100000 euros, mainly used to create postdoctoral grants.
- P.I. of the "PRA 2013", a grant of the University of Genova, financed with 6000 euros.

[1] On parental leave from 23/11/2016 to 28/01/2018.
[2] On parental leave from 08/04/2019 to 04/06/2019.

Schools, Conferences and Workshops Attended

1. *SNFT2000 - IX Seminario Nazionale di Fisica Teorica*, Parma, Italy, 4-15/09/2000;
2. *Summer School in Particle Physics*, ICTP, Trieste, Italy, 18/06 - 6/07/2001;
3. Lectures on *Physics of Extra Dimensions*, Padova, Italy, 26-28/06/2001;
4. *First Graduate School in Physics at Colliders*, Torino, Italy, 2-6/10/2001;
5. Lectures on *Supergravity*, Roma, Italy, 12-16/11/2001;
6. *XXXVII Rencontres de Moriond on Electroweak Interactions and Unified Theories*, Les Arcs, France, 9-16/03/2002, oral and written contribution;
7. Fifth European Meeting *Planck 02 - Supersymmetry and Brane Worlds*, Kazimierz, Poland, 25-29/05/2002, oral contribution;
8. Mid-term Meeting *RTN Across the Energy Frontier*, Palaiseau, France, 10-14/12/2002, oral contribution;
9. X International Workshop on *Neutrino Telescopes*, Venezia, Italy, 11-14/03/2003;
10. Sixth European Meeting *Planck 03 - From the Planck Scale to the Electroweak Scale*, Madrid, Spain, 26-31/05/2003, oral contribution;
11. *Hierarchy Problems in Four and More Dimensions*, Trieste, Italy, 1-4/10/2003;
12. Seventh European Meeting *Planck 04 - From the Planck Scale to the Electroweak Scale*, Bad Honnef, Germany, 24-28/05/2004;
13. *Strings at CERN*, CERN, Switzerland, 5-7/07/2004;
14. *X IFT-UAM/CSIC Christmas Workshop*, Madrid, Spain, 15-17/12/2004, oral contribution;
15. *XL Rencontres de Moriond on Electroweak Interactions and Unified Theories*, La Thuile, Italy, 5-12/03/2005, oral and written contribution;
16. *Cosmic Connections @ La Magia*, Quarrata, Italy, 17-23/04/2005;
17. *What's ν ? - IFT MiniWorkshop on Neutrino Physics*, Madrid, Spain, 18-20/05/2005;
18. *Eurogdr on Supersymmetry 2005*, Barcelona, Spain, 2-5/11/2005, oral contribution;
19. Network Meeting *The Quest for Unification*, Madrid, Spain, 12-13/12/2005;
20. *XI IFT-UAM/CSIC Christmas Workshop*, Madrid, Spain, 14-16/12/2005;
21. *Cosmology and Underground Laboratory Physics*, Valencia, Spain, 6/03/2006;
22. Ninth European Meeting *Planck 06 - From the Planck Scale to the Electroweak Scale*, Paris, France, 29/05 - 02/06/2006, oral contribution;

23. *NUFACT06*, Irvine, California, 24-30/08/2006, oral contribution;

24. *Flavour in the era of LHC*, CERN, Switzerland, 09-11/10/2006, oral contribution;

25. *Getting ready for the LHC*, Madrid, Spain, 23-27/10/2006;

26. *XII IFT-UAM/CSIC Christmas Workshop*, Madrid, Spain, 18-20/12/2006;

27. *XLII Rencontres de Moriond on Electroweak Interactions and Unified Theories*, La Thuile, Italy, 10-17/03/2007;

28. *European Physical Society Conference HEP 2007*, Manchester, England, 19-25/07/2007, oral and written contribution;

29. *PAU Academic Training 07*, Madrid, Spain, 10-14/12/2007;

30. *Incontri di Fisica delle Alte Energie - IFAE2008*, Bologna, Italy, 26-28/03/2008, oral and written contribution;

31. *Planck 08 - From the Planck Scale to the Electroweak Scale*, Barcelona, Spain, 19-23/05/2008, oral contribution;

32. *Sestri Levante 2008 - Convegno Informale di Fisica Teorica*, Sestri Levante, Italy, 04-06/06/2008, oral contribution;

33. *Rencontres de Physique de Particules 2009*, Palaiseau, France, 23-25/03/2009, oral contribution;

34. *Planck 09 - From the Planck Scale to the Electroweak Scale*, Padova, Italy, 25-29/05/2009, oral contribution;

35. *Beyond the Standard Model Physics at the Threshold*, Aspen (CO), USA, 5-19/07/2009;

36. *Rencontres de Physique de Particules 2010*, Lione, France, 25-27/01/2010, oral contribution;

37. *Indirect Searches for New Physics at the time of LHC*, Galileo Galilei Institute, Firenze, Italy, 7-26/03/2010;

38. *Planck 10 - From the Planck Scale to the Electroweak Scale*, CERN, Switzerland, 31/05-04/06/2010;

39. *Planck 11 - From the Planck Scale to the Electroweak Scale*, Lisbon, Portugal, 30/05-03/06/2011, oral contribution;

40. *III CPAN Days*, Barcelona, Spain, 2-4/11/2011, oral contribution;

41. *Rencontres de Moriond on Electroweak Interactions and Unified Theories*, La Thuile, Italy, 03-10/03/2012, oral and written contribution;

42. *VI Workshop Italiano sulla Fisica p-p a LHC*, Genova, Italy, 8-10/05/2013;

43. *WIN 2013*, Natal, Brasil, 16-20/09/2013, oral contribution;

44. *Rencontres de Moriond on Electroweak Interactions and Unified Theories*, La Thuile, Italy, 15-22/03/2014, oral and written contribution;

45. *Portoroz 2015 - Particle Phenomenology From the Early Universe to High Energy Colliders*, Portoroz, Slovenia, 7-10/04/2015;

46. *Invisible 2015*, Madrid, Spain, 22-26/06/2015, oral contribution;

47. *Physics on the Riviera 2015*, Sestri Levante, Italy, 16-18/09/2015, organizer;

48. *IFAE 2016*, Genova, Italy, 30/03-1/04/2016, organizer;

49. *Planck 2016*, Valencia, Spain, 23-27/05/2016, oral contribution;

50. *Workshop on the Standard Model and Beyond*, Corfù, Greece, 31/08-09/09/2018, oral contribution;

51. *Asimmetrie di genere: il caso delle STEM* , Genova, Italy, 17/06/2022, organizer;

52. *Invisibles22 Workshop*, Orsay, Paris, France, 20-24/06/2022;

53. *Fisica teorica all'INFN tra passato, presente e futuro*, Roma, Italy, 4/11/2023.

Seminars and Conference Talks

Seminars

1. *Fermion Generations, Masses and Mixing Angles from extra Dimensions*, Departamento de Física Teórica y del Cosmos, Universidad de Granada, Spain, 04/06/2003;

2. *Symmetry Breaking in Extra Dimensions*, Ph.D thesis dissertation, Dipartimento di Fisica, Università di Padova, Italy, 02/12/2003;

3. *Fermion Generations from Extra Dimensions*, IFAE, Universitat Autònoma de Barcelona, Spain, 09/01/2004;

4. *Flavour Physics from Extra Dimensions*, Dipartimento di Fisica, Università di Genova, Italy, 29/06/2004;

5. *Tadpoles and Symmetries in Higgs-Gauge Unification Theories*, Dipartimento di Fisica, Università di Padova, Italy, 21/10/2004;

6. *Unitarity of the Leptonic Mixing Matrix*, Dipartimento di Fisica, Università di Genova, Italy, 06/06/2006;

7. *Neutrino Masses and Unitarity of the Leptonic Mixing Matrix*, Dipartimento di Fisica, Università di Padova, Italy, 20/11/2006;

8. *Neutrino Masses and Unitarity of the Leptonic Mixing Matrix*, Sissa, Trieste, Italy, 24/11/2006;

9. *Neutrino Masses and Unitarity of the Leptonic Mixing Matrix*, Instituto Superior Técnico, Lisbon, Portugal, 13/12/2006;

10. *Neutrino Masses and Unitarity of the Leptonic Mixing Matrix*, Instituto de Física Teórica, Universidad Autónoma de Madrid, Spain, 16/01/2007;

11. *Neutrino Masses and Unitarity of the Leptonic Mixing Matrix*, Laboratoire de Physique Theorique d'Orsay, Univ. Paris-Sud 11, France, 01/02/2007;

12. *Low Energy Effects of Neutrino Masses*, Departamento de Física Teórica y del Cosmos, Universidad de Granada, Spain, 12/06/2007;

13. *Can we distinguish among different models for neutrino mass in the near future?*, IFAE, Universitat Autònoma de Barcelona, Spain, 29/02/2008;

14. *Can we distinguish among different models for neutrino mass in the near future?*, DESY, Hamburg, Germany, 05/05/2008;

15. *Phenomenology of (low scale) seesaw models*, TUM, Muenchen, Germany, 18/07/2008;

16. *Phenomenology of (low scale) seesaw models*, Università di Genova, Italy, 20/10/2008;

17. *Neutrino masses and new physics*, Dipartimento di Fisica, Università di Padova, Italy, 15/01/2009;

18. *Neutrino masses and new physics*, LPTA, Montpellier, France, 10/03/2009;

19. *Neutrino masses and new physics*, CPT, Marseille, France, 16/03/2009;

20. *Neutrino masses and new physics*, IPNL, Lyon, France, 20/03/2009;

21. *Neutrino NSI & non-unitarity: which constraints?*, LPT, Orsay, France, 26/03/2009;

22. *Neutrino non-standard interactions: a critical appraisal*, IFAE, Universitat Autònoma de Barcelona, Spain, 18/09/2009;

23. *Lepton flavour violation in (SUSY) seesaw models*, Max-Planck-Institut fuer Physik, Munich, Germany, 10/06/2010;

24. *Lepton flavour violation in (SUSY) seesaw models*, Dipartimento di Fisica, Università di Genova, Italy, 08/07/2010;

25. *Phenomenology of SUSY with intermediate scale physics*, Max-Planck-Institut fuer Physik, Munich, Germany, 20/12/2011;

26. *Testing the seesaw mechanism at the LHC* IFAE, Universitat Autònoma de Barcelona, Spain, 22/02/2012;

27. *Is the 125 GeV scalar the neutrino superpartner?*, Université Libre de Bruxelles, Bruxelles, Belgium, 06/06/2013;

28. *Is the 125 GeV scalar the neutrino superpartner?*, Università di Padova, Italy, 4/12/2013;

29. *Is the 125 GeV scalar the neutrino superpartner?*, Weizmann Institute, Israel, 11/06/2014;

30. *Explaining the muon* $(g-2)$ *anomaly with a single new particle*, University of Montpellier, France, 07/07/2016.

Conference Talks

1. *Gauge Symmetry Breaking on Orbifolds*, "XXXVII Rencontres de Moriond" , Les Arcs, France, 15/03/2002;

2. *Symmetry Breaking for Bosonic Systems on Orbifolds*, Fifth European Meeting "Planck 02", Kazimierz, Poland, 28/05/2002;

3. *Scherk-Schwarz Mechanism and Mass Terms on Orbifolds*, Mid-term Meeting "RTN Across the Energy Frontier", Palaiseau, France, 12/12/2002;

4. *Fermion Generations, Masses and Mixing Angles from Extra Dimensions*, Sixth European Meeting "Planck 03", Madrid, Spain, 30/05/2003;

5. *Tadpoles and Symmetries in Higgs-Gauge Unification Theories*, "X IFT-UAM/CSIC Christmas Workshop", Madrid, Spain, 16/12/2004;

6. *Divergencies and Symmetries in Higgs-Gauge Unification Theories*, "XL Rencontres de Moriond", La Thuile, Italy, 07/03/2005;

7. *Higgs-Gauge Unification Theories: Divergences and Symmetries*, "Eurogdr on SUSY", Barcelona, Spain, 03/11/2005;

8. *Unitarity of the Leptonic Mixing Matrix*, Ninth European Meeting "Planck 06", Paris, France, 01/06/2006;

9. *Unitarity of the Leptonic Mixing Matrix*, "NUFACT06", Irvine, California, 29/08/2006;

10. *Unitarity of the Leptonic Mixing Matrix*, "Flavour in the era of LHC", CERN, Switzerland, 10/10/2006;

11. *Neutrino Masses and New Physics at TeV Scale*, "HEP 2007", Manchester, England, 20/07/2007;

12. *Can we disentangle among different models for neutrino mass in the near future?*, "MPI Project Review 2007", München, Germany, 18/12/2007;

13. *Effetti di bassa energia in modelli di massa del neutrino*,"IFAE2008", Bologna, Italy, 26/03/2008;

14. *Discriminating among different seesaw models*, "Planck 08", Barcelona, Spain, 21/05/2008;

15. *Can we distinguish among different models for neutrino mass in the near future?*, "Sestri Levante 2008", Sestri Levante, Italy, 04/06/2008;

16. *Loop bounds on neutrino non-standard interactions*, "RPP 2009", Palaiseau, France, 24/03/2009;

17. *Neutrino mass hierarchies in the double seesaw model*, "Planck 09", Padova, Italy, 28/05/2009;

18. *Neutrino mass hierarchies in the double seesaw model*, "RPP 2010", Lyon, France, 25-27/01/2010;

19. *Phenomenology of SUSY SU(5) with type I+III seesaw*, "Planck 2011", Lisbon, Portugal, 30/05-03/06/2011;

20. *TeV neutrino implications at the LHC*, "III CPAN Days", Barcelona, Spain, 02-04/11/2011;

21. *Phenomenology of SUSY with intermediate scale physics*, "Rencontres de Moriond on Electroweak Interactions and Unified Theories", La Thuile, Italy, 03-10/03/2012;

22. *Is the 125 GeV scalar the neutrino superpartner?*, "WIN 2013", Natal, Brasil, 16-20/09/2013;

23. *Is the 125 GeV scalar the neutrino superpartner?*, "Rencontres de Moriond on Electroweak Interactions and Unified Theories", La Thuile, Italy, 15-22/03/2014;

24. *Minimal muon anomalus magnetic moment*, "Invisibles15", Madrid, Spain, 22-26/06/2015;

25. *Explaining the muon (g-2) anomaly with a single new particle*, Planck 2016, Valencia, Spain, 23-27/05/2016;

26. *Constraints on the low scale type-III seesaw*, "Workshop on the Standard Model and Beyond", Corfù, Greece, 31/08-09/09/2018.

List of Publications

1. C. Biggio, *Gauge Symmetry Breaking on Orbifolds*, published in the Proceedings of "37th Rencontres de Moriond on Electroweak Interactions and Unified Theories" [hep-ph/0205142];

2. C. Biggio and F. Feruglio, *Symmetry Breaking for Bosonic Systems on Orbifolds*, **Ann. Phys. 301: 65-81, 2002** [hep-th/0207014];

3. C. Biggio, F. Feruglio, A. Wulzer and F. Zwirner, *Equivalent Effective Lagrangians for Scherk-Schwarz Compactifications*, **JHEP 0211: 013, 2002** [hep-th/0209046];

4. C. Biggio, F. Feruglio, I. Masina and M. Pérez-Victoria, *Fermion Generations, Masses and Mixing Angles from Extra Dimensions*, **Nucl. Phys. B 677: 451-470, 2004** [hep-ph/0305129];

5. C. Biggio, *Symmetry Breaking in Extra Dimensions*, Ph.D thesis [hep-ph/0312209];

6. C. Biggio and M. Quirós, *Higgs-Gauge Unification without Tadpoles*, **Nucl. Phys. B 703: 199-216, 2004** [hep-ph/0407348];

7. C. Biggio and M. Quirós, *Tadpoles and Symmetries in Higgs-Gauge Unification Theories*, published in the proceedings of "Pascos04" [hep-ph/0410226];

8. C. Biggio, *Divergences and Symmetries in Higgs-Gauge Unification Theories*, published in the proceedings of "40th Rencontres de Moriond on Electroweak Interactions and Unified Theories", [hep-ph/0505116];

9. C. Biggio, E. Massó and J. Redondo, *Mixing of Photons with Massive Spin-Two Particle in a Magnetic Field*, **Phys. Rev. D 79: 015012, 2009** [hep-ph/0604062];

10. S. Antusch, C. Biggio, E. Fernández-Martínez, B. Gavela and J. Lopez-Pavón, *Unitarity of the Leptonic Mixing Matrix*, **JHEP 0610: 084, 2006** [hep-ph/0607020];

11. S. Antusch, C. Biggio, E. Fernández-Martínez, B. Gavela and J. Lopez-Pavón, *Determining the PMNS Matrix Elements without Assuming Unitarity*, **AIP Conf.Proc.903: 279-282, 2007**;

12. A. Abada, C. Biggio, F. Bonnet, B. Gavela and T. Hambye, *Low-energy effects of neutrino masses*, **JHEP 0712: 061, 2007** [0707.4058[hep-ph]];

13. C. Biggio, *Neutrino masses and new physics at TeV scale*, **J. Phys.: Conf. Ser. 110 072002, 2008**;

14. The ISS Physics Working Group, *Physics at a Future Neutrino Factories and Super-beam Facility*, **Rept. Prog. Phys. 72: 106201, 2009** [arXiv: 0710.4947[hep-ph]];

15. M. Raidal et al., *Flavour physics of leptons and dipole moments*, **Eur. Phys. J. C57: 13-182, 2008** [arXiv:0801.1826[hep-ph]];

16. A. Abada, C. Biggio, F. Bonnet, B. Gavela and T. Hambye, *$\mu \to e\gamma$ and $\tau \to l\gamma$ decays in the fermion triplet seesaw model*, **Phys. Rev. D 78: 033007, 2008** [arXiv:0803.0481 [hep-ph]];

17. C. Biggio, *The Contribution of fermionic seesaws to the anomalous magnetic moment of leptons*, **Phys. Lett. B 668: 378-384, 2008** [arXiv:0806.2558 [hep-ph]];

18. C. Biggio, *Low energy processes to distinguish among seesaw models*, **Nuovo Cim. 123 B: 880-882, 2008** [arXiv:0809.3922 [hep-ph]];

19. C. Biggio, M. Blennow, E. Fernández-Martínez, *Loop bounds on non-standard neutrino interactions*, **JHEP 0903: 139, 2009** [arXiv:0902.0607 [hep-ph]];

20. C. Biggio, M. Blennow, E. Fernández-Martínez, *General bounds on non-standard neutrino interactions*, **JHEP 0908: 090, 2009** [arXiv:0907.0097 [hep-ph]];

21. C. Biggio, L. Calibbi, *Phenomenology of SUSY SU(5) with type I+III seesaw*, **JHEP 1010: 037, 2010** [arXiv:1007.3750 [hep-ph]];

22. C. Biggio, F. Bonnet, *Implementation of the type III seesaw model in FeynRules/MadGraph and prospects for discovery with early LHC data*, **Eur. Phys. J. C72 (2012) 1899** [arXiv: 1107.3463[hep-ph]];

23. C. Biggio, L. Calibbi, A. Masiero, S. Vempati *Postcards from oases in the desert: phenomenology of SUSY with intermediate scales*, **JHEP 1208 (2012) 150** [arXiv:1205.6817 [hep-ph]];

24. C. Biggio, *Phenomenology of SUSY with intermediate scale physics*, published in the Proceedings of "Rencontres de Moriond on Electroweak Interactions and Unified Theories", arXiv:1206.0134 [hep-ph];

25. The CMS collaboration, *Search for heavy lepton partners of neutrinos in proton-proton collisions in the context of the type III seesaw mechanism*, **Phys. Lett. B718 (2012) 348-368** [arXiv:1210.1797 [hep-ex]];

26. F. Riva, C. Biggio, A. Pomarol, *Is the 125 GeV Higgs the superpartner of a neutrino?*, **JHEP 1302 (2013) 081**, [arXiv:1211.4526 [hep-ph]];

27. C. Biggio, *Is the standard model scalar the first discovered SUSY particle?*, published in the Proceedings of "Rencontres de Moriond on Electroweak Interactions and Unified Theories", arXiv:1407.0561 [hep-ph];

28. C. Biggio and M. Bordone, *Minimal muon anomalous magnetic moment*, **JHEP 1502 (2015) 099**, [arXiv:1411.6799 [hep-ph]];

29. C. Biggio, J. A. Dror, Y. Grossman, W. H. Ng, *Probing a slepton Higgs on all frontiers*, **JHEP 1604 (2016) 150**, [arXiv:1602.02162 [hep-ph]];

30. C. Biggio, M. Bordone, L. Di Luzio and G. Ridolfi, *Massive vectors and loop observables: the $g-2$ case*, **JHEP 1610 (2016) 002**, [1607.07621 [hep-ph]];

31. CMS Collaboration, *Search for Evidence of the Type-III Seesaw Mechanism in Multilepton Final States in Proton-Proton Collisions at $\sqrt{s} = 13$ TeV*, **Phys. Rev. Lett. 119 (2017) no.22, 22180** [1708.07962 [hep-ex]];

32. C. Biggio, E. Fernández-Martínez, M. Filaci, J. Hernandez-Garcia, J. Lopez-Pavón, *Global Bounds on the Type-III Seesaw*, **JHEP 05 (2020) 022**, [1911.11790 [hep-ph]];

33. C. Biggio, L. Calibbi, T. Ota, S. Zanchini, *Type-II Majoron Dark Matter*, arXiv: 2304.12527, submitted to JHEP.

Teaching Activities

- Teaching Assistant at the Spanish Summer School for Ph.D. students "Taller de Altas Energias", Santander, Spain, 02-07/07/2006 for the courses of quantum field theory and of flavour physics.

- Discussion leader at the "European School of High Energy Physics" (CERN School), Cheile Gradistei, Romania, 7-20/09/2011.

- Teaching Assistant at Genova University for the academic year 2012-13 in the courses of

  - FISICA 2: mechanics and fluids (for physicists; 24 hours);
  - FISICA 3: electromagnetisms and relativity (for physicists; 24 hours);
  - FISICA GENERALE: electromagnetism (for engineers; 16 hours).

- Teaching Assistant at Genova University for the academic year 2013-14 in the courses of
  - FISICA 2: mechanics and fluids (for physicists; 25 hours);
  - FISICA 3: electromagnetisms and relativity (for physicists; 25 hours);
  - FISICA GENERALE: electromagnetism (for engineers; 15 hours).
- Teaching Assistant at Genova University for the academic year 2014-15 in the courses of
  - FISICA 2: mechanics and fluids (for physicists; 25 hours);
  - FISICA 3: electromagnetisms and relativity (for physicists; 25 hours);
  - FISICA GENERALE: electromagnetism (for engineers; 20 hours).
- Professor in the course of FISICA DELLE PARTICELLE ELEMENTARI 2, Genova University, academic year 2015-16 (48 hours).
- Teaching Assistant at Genova University for the academic year 2015-16 in the courses of
  - FISICA 3: electromagnetisms and relativity (for physicists; 25 hours);
  - FISICA GENERALE: electromagnetism (for engineers; 15 hours).
- Professor at Genova University for the academic year 2016-17 in the courses of [3]
  - FISICA GENERALE (Corso di Laurea in Ingegneria Civile e Ambientale, 60 hours);
  - FISICA DELLE PARTICELLE ELEMENTARI 2 (Corso di Laurea Magistrale in Fisica, 48 hours).
- Professor at Genova University for the academic year 2017-18 in the course of [4]
  - FISICA GENERALE (Corso di Laurea in Ingegneria Elettrica, 60 hours).
- Professor at Genova University for the academic year 2018-19 in the courses of
  - FISICA DELLE PARTICELLE ELEMENTARI 2 (Corso di Laurea Magistrale in Fisica, 48 hours);
  - FISICA GENERALE (Corso di Laurea in Ingegneria Elettrica, 60 hours) [5].
- Professor at Genova University for the academic year 2019-20 in the courses of
  - TEORIA DELLE INTERAZIONI FONDAMENTALI (Corso di Laurea Magistrale in Fisica, 48 hours);
  - FISICA GENERALE (Corso di Laurea in Ingegneria Elettrica, 60 hours);
  - FONDAMENTI DI OTTICA (Corso di Laurea Magistrale in Chimica, 12 hours).
- Professor at Genova University for the academic year 2020-21 in the courses of

[3] I only taught 35 hours in the course of Fisica Generale, due to parental leave.
[4] I only taught in the second semester due to parental leave.
[5] I taught less hours due to parental leave.

- TEORIA DELLE INTERAZIONI FONDAMENTALI (Corso di Laurea in Fisica, 48 hours);
- FISICA GENERALE (Corso di Laurea in Ingegneria Elettrica, 60 hours);
- FISICA GENERALE (Corso di Laurea in Ingegneria Navale, 12 hours).

- Professor at Genova University for the academic year 2021-22 in the courses of
  - TEORIA DELLE INTERAZIONI FONDAMENTALI (Corso di Laurea in Fisica, 48 hours);
  - FISICA GENERALE (Corso di Laurea in Ingegneria Elettrica, 60 hours);
  - FISICA GENERALE (Corso di Laurea in Ingegneria Navale, 6 hours).

Master thesis

- Advisor for the master thesis of M. Bordone entitled "Contributi di nuova fisica al momento magnetico anomalo del muone";
- Advisor for the master thesis of M. Filaci entitled "Limiti di validità del modello di seesaw di tipo III minimale inverso";
- Advisor (together with Prof. S. Marzani) for the master thesis of A. Fontanarossa entitled "Heavy-Particle Decays as a Probe of Axion-like Particles";
- Advisor for the master thesis of S. Zanchini entitled "Phenomenology of the Majoron in a Generalized Type-II Seesaw Model";
- Advisor (together with L. Ubaldi) for the master thesis of V. Benzi entitled "Interpretazione quantistica dell'assione come materia oscura".

Ph.D. thesis

- Advisor (together with Prof. P. Martinetti) for the Ph.D. thesis of M. Filaci entitled "Neutrino Mass Models: From Type III See-saw to Non-Commutative Geometry".

Conferences and seminars organization

- Co-organizer of astroparticle seminars at Max Planck Institute fuer Physics during the academic year 2009-2010;
- Organizer of seminars at IFAE during the academic year 2011-2012;
- Organizer of phenomenology seminars at the Dipartimento di Fisica dell'Università di Genova from 2013 to 2016;
- Co-organizer of the conference "Physics on the Riviera 2015: an isthmus between condense matter and high energy theoretical physics", Sestri Levante, Italy, 16-18/09/2015;

- Co-organizer of the conference “Incontri di Fisica delle Alte Energie 2016”, Genova, Italy, 30/03-01/04/2016;
- Co-organizer of the GGI School for Theoretical Physics, Florence, Italy, 9-27/01/2017;
- Co-organizer of the ISAPP School, Arenzano, Italy, 13-24/06/2017;
- Co-organizer of the conference “Asimmetrie di genere: il caso delle STEM”, Genova, 17/06/2022.

Participation in Collaborations and Working Groups

1. International Scoping Study of a future Neutrino Factory and super-beam facility (arXiv: 0710.4947[hep-ph]);
2. Flavour in the era of LHC (arXiv:0801.1826[hep-ph]);
3. Member of the PAU (Physics of the Accelerating Universe) Collaboration (http://www.ice.csic.es/research/PAU/PAU-welcome.html).

Journals Referee

Referee for JHEP, PRD, PLB and EPJC.

CURRICULUM VITAE

PERSONAL DATA

Name: Gennaro Corcella

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ACADEMIC CAREER

July 1995: Master ("Laurea") Degree in Physics, University of Bari.
Thesis title: "Simmetria CPT nel Sistema dei Mesoni B" ("CPT Symmetry in the B-Meson System"), in Italian.

November 1995 - October 1999: Graduate student at the University of Milano, Italy.

February 2000: Ph.D. Degree in Physics, University of Milano.
Thesis title: "Parton Showers in High Energy Physics".

November 1999 - October 2001: Postdoctoral Research Associate, University of Rochester, NY, U. S. A.

November 2001 - November 2003: Postdoctoral Research Associate, Max-Planck-Institut für Physik, Werner-Heisenberg-Institut, München, Germany.

December 2003 - November 2005: Postdoctoral Fellow, CERN, Department of Physics, Theory Division, Genève, Switzerland.

December 2005 - September 2007: Postdoctoral Research Associate, University of Rome 'La Sapienza', Italy.

January 2008 - December 2010: Research Associate at Scuola Normale Superiore, Pisa, supported by a Junior Grant of the Enrico Fermi Centre, project 'New Physics Signals and Standard Model Backgrounds at the LHC'.

January 2011 - April 2019 : Permanent Staff Member at INFN ('Ricercatore', 3rd level Researcher, equivalent to a University Assistant Professor), Laboratori Nazionali di Frascati, Italy.

April 2019 - Present : Permanent Staff Member at INFN ('Primo Ricercatore', 2nd level Researcher, equivalent to a University Associate Professor), Laboratori Nazionali di Frascati, Italy.

2013-2018: Habilitation as a University Associate Professor of Theoretical Particle Physics (expires automatically after 6 years)

Visiting appointments:

September 1998 - June 1999: Visitor at Rutherford Appleton Laboratory, U. K., Particle Physics Department, Theory Group.

July 1999 - October 1999: Visitor at CERN Theory Division, Geneva, Switzerland.

August 2001: Visitor at Fermilab Theory Division, Batavia, IL, U. S. A.

March 2006: Visitor at UNAM, Mexico City, Mexico, supported by a fellowship of the HELEN (High Energy Physics Latinamerican-European Network) project.

August 2007 - September 2007: Visitor at the University of Buenos Aires, Argentina, supported by a fellowship of the HELEN (High Energy Physics Latinamerican-European Network) project.

October 2007 - December 2007: Visitor at CERN, Theory Division, Geneva, Switzerland.

Conference and Workshop talks:

"Tests of CPT in the B Meson System", Italian Conference on Theoretical Physics, Como, Italy, June 1997.

"Gluon Radiation in Top Decays", ECFA/DESY Linear Collider Workshop (top quark working group), Frascati, Italy, November 1998;

"Simulation of Gluon Radiation in Top Production and Decay", Workshop on Standard Model Physics (and more) at the LHC (top quark working group), CERN, Geneva, Switzerland, January 1999.

"Radiative Corrections to Monte Carlo Simulations of Drell–Yan Processes", Workshop on Standard Model Physics (and more) at the LHC (QCD working group), CERN, Geneva, Switzerland, January 1999.

"Matrix Element Corretions to Top Decays and Impact on Jet Activity at the LHC", Workshop on Standard Model Physics (and more) at the LHC (top quark working group), CERN, Geneva, Switzerland, April 1999.

"Parton Shower Simulations in High Energy Physics", Graduate Student Symposium, Oxford, U. K., May 1999.

"Gluon Radiation in Vector Boson Production at Hadron Colliders", UK Phenomenology Workshop on Collider Physics (QCD working group), Durham, U. K., September 1999.

"Issues on the Top Mass Reconstruction" UK Phenomenology Workshop on Collider Physics, (QCD working group), Durham, U. K., September 1999.

"Parton Showers in Vector Boson Production", Workshop on Standard Model Physics (and more) at the LHC (QCD working group), CERN, Geneva, Switzerland, October 1999..

"Parton Showering in Top Production and Decay", Berkeley 2000, Linear Collider Workshop (top quark working group), Berkeley, CA, March 2000.

"Gluon Radiation in Vector Boson Production", Pheno 2000 Symposium, Madison, WI, U. S. A., April 2000.

"Vector Bosons at Hadron Colliders: Parton Showers and Resummations" MRST Meeting, Rochester, NY, U. S. A., May 2000.

"Studies on the Top Mass Reconstruction at the Linear Collider" Linear Collider Workshop (top quark working group), Columbus, OH, U. S. A., August 2000.

"Top Mass Reconstruction at the LHC", DPF 2000, Columbus, OH, U. S. A., August 2000.

"Monte Carlo Studies of Top Production and Decay", Linear Collider Workshop - LCSW2000, Fermilab, October 2000.

"HERWIG for Top Physics", Thinkshop [2], Fermilab, November 2000.

"Matrix-element Corrections to HERWIG", Monte Carlo Generator Physics for Run II at the Tevatron, Fermilab, April 2001.

"Challenges in QCD Event Generators", Second Young-Researchers QCD-Network Meeting, Parma, Italy, February 2002.

"Top Decay and Bottom Fragmentation in NLO QCD", Recontres de Moriond, Les Arcs, France, March 2002.

"Resummation in Top Quark Decay", Workshop on Tev-Scale Physics, Cambridge, U. K., July 2002.

"Challenges in Heavy Quark Fragmentation", Max-Planck-Institut Young Scientists' Workshop 2002, Ringberg Castle, Germany, July 2002.

"Bottom Quark Mass Determination", QCD 03, Montpellier, France, July 2003.

"Bottom Quark Mass Determination from Low-n Sum Rules", CERN Phenomenology Club, March 2004.

"Matching HERWIG Parton Showers and Exact Matrix Elements", HERA and the LHC Workshop (multi-jet final states and energy flows working group), CERN, March 2004.

"Bottom Quark Fragmentation in Top Quark Decay", Incontri di Fisica delle Alte Energie, Torino, Italy, April 2004.

"Bottom Quark Mass Determination from Relativistic Sum Rules", Incontri di Fisica delle Alte Energie, Torino, Italy, April 2004.

"Bottom Quark Fragmentation in Top Decay", QFTHEP 2004, Peterhof, S. Petersburg, Russia, June 2004.

"Impact of Soft Resummation on Structure Functions" (parton distribution functions working group), HERA and the LHC Workshop, CERN, October 2004.

"Resummed Parton Distributions from Neutrino Data" (parton distribution functions working group), HERA and the LHC Workshop, CERN, January 2005.

"Bottom Fragmentation in $H \to b\bar{b}$ Events", Incontri di Fisica delle Alte Energie, Catania, March 2005.

"Impact of large-x Resummation on parton distributions", DIS05, Madison, WI, April 2005.

"Summary talk of the Heavy Flavour Working Group", DIS05, Madison, WI, May 2005.

"Bottom Fragmentation in Higgs and Top Decay", Workshop "Physics at TeV Colliders", Les Houches, France, May 2005.

"Soft-resummation effects on parton densities", CERN Phenomenology Club, August 2005.

"Bottom Quark Fragmentation in Top Quark Decay", TOP 2006, Coimbra, Portugal, January 2006.

"Soft Resummation Corrections to Parton Distributions", Diffraction 2006, Adamantas, Milos, Greece, Settembre 2006.

"Comparing Tuned Event Generators and Resummed Calculations for Bottom Quark Fragmentation", Monte Carlo Workshop MCWS, Laboratori Nazionali di Frascati, Italy, October 2006.

"Studies of QCD and Top Quark Physics at the Linear Collider", Linear Collider Workshop, Laboratori Nazionali di Frascati, Italy, October 2006.

"Monte Carlo generators for present and future colliders", Journal Club, Laboratori Nazionali di Frascati, Italy, March 2007.

"Parton showers and resummations for non-global QCD observables", HERA and the LHC Workshop, DESY, Hamburg, Germany, March 2007.

"Monte Carlo Generators for Top Physics at the LHC", V Workshop Italiano sulla Fisica *pp* a LHC, Perugia, Italy, January 2008.

"Heavy-Quark Fragmentation with an Effective Coupling Constant", Workshop on Parton Fragmentation Processes in the Vacuum and in the Medium, ECT*, Trento, Italy, February 2008.

"Standard Model and New Physics: summary talk", IFAE, Bologna, March 2008.

"Bottom quark fragmentation and impact on the uncertainty on the top mass reconstruction", workshop "Top quark physics: from the Tevatron to the LHC", CERN, June 2009.

"Heavy-quark Fragmentation", International School of Subnuclear Physics, Erice, Italy, September 2009.

"Towards Q-HERWIG: an angular-ordered parton shower generator for jet quenching", Brookhaven National Laboratory, TECHQM workshop, December 2009 (via videoconference).

"Parton showers with medium-modified splitting functions", DIS 2010, Firenze, April 2010.

"Heavy Flavours in DIS and Hadron Colliders: Theory Summary", DIS 2010, Firenze, April 2010.

"Theoretical issues in top mass reconstruction at hadron colliders", TOP 2010, 3rd International Workshop on Top Quark Physics, Bruges, June 2010.

"Summary of the Open Heavy Flavour Working Group", Quarkonium 2010, Palaiseau, France, July 2010.

"Parton showers with medium-modified splitting functions", Institute on "The first heavy ion collisions at the LHC", CERN, August 2010.

"Progress in medium-modified parton showers", Spring Institute, Laboratori Nazionali di Frascati, Italy, March 2011.

"Z' production in an extended MSSM", DIS2012, Bonn, Germany, March 2012.

"Z' production at the LHC in an extended MSSM", Rencontres de Blois, Blois, France, May 2012.

"Supersymmetric contributions to Z' decays", Bari Theory Christmas Workshop, Bari, December 2012.

"Searching for supersymmetry in Z' decays", LHCP 2013, Barcelona, Spain, May 2013.

"Bottom fragmentation in top decays and impact on the top mass reconstruction", Top Quark Working Group Plenary Meeting, CERN, November 2013.

'Bottom fragmentation in top decays and impact on the top mass reconstruction", Bari Theory Christmas Workshop, Bari, December 2013.

"Hadronization systematics and top-quark mass", Top Quark Working Group Plenary Meeting, CERN, May 2014.

"Bottom fragmentation in top decays and impact on the top mass measurement", QCD@work, Giovinazzo (BA), June 2014.

"Large-x resummation and impact on parton densities", HiX2014, November 2014, Laboratori Nazionali di Frascati, Italy.

"Perspectives in top quark and electroweak precision physics", What Next mid-term meeting, Laboratori Nazionali di Frascati, April 2015.

"Summary of LNF workshop on the top-quark mass", Top Quark Working Group Plenary Meeting, CERN, May 2015.

"Searching for supersymmetry in Z' decays at the LHC", PLANCK 2015, Ioannina, Greece, May 2015.

"Interpretation of the top-quark mass measurements: a theory overview", TOP 2015, Ischia, Italy, September 2015.

"Precision measurements of the top mass: theory vs experiment" FCC-ee Mini-Workshop 'Physics Behind Precision', CERN, February 2016.

"Searching for Supersymmetry and Dark Matter in Z' decays at LHC", DM 2016, Santander, Spain, June 2016.

"Challenges in Heavy-Quark Fragmentation", Workshop on Parton Radiation and Fragmentation from LHC to FCC-ee, CERN, November 2016.

"Interpretation of the top-quark mass results", DIS 2017, Birmingham, UK, April 2017.

"Supersymmetric signals in Z' decays", DIS 2017, Birmingham, UK, April 2017.

"Supersymmetric signals in Z' decays", Spring Institute, Laboratori Nazionali di Frascati, May 2017.

"Top-quark mass determination at LHC: a theory overview", EPS-HEP, Venice, July 2017.

"Supersymmetric signals in Z' decays at the LHC", EPS-HEP, Venice, July 2017.

"The top-quark mass: uncertainties due to b-quark fragmentation", QCD@LHC, Debrecen, Ungheria, September 2017.

"Non-standard heavy vector bosons at the LHC", QCD@LHC, Debrecen, Ungheria, September 2017.

"Z' bosons in supersymmetric and leptophobic scenarios", HL/HE-LHC Workshop, CERN, June 2018.

"Bileptons at LHC", SUSY 2018, Barcelona, Spain, July 2018.

"The top-quark mass: uncertainties due to bottom fragmentation", SUSY 2018, Barcelona, Spain, July 2018.

"Loopholes in Z' searches: exploring supersymmetry and leptophobia", SUSY 2018, Barcellona, Spain, July 2018.

Seminar Talks:

"QCD Event Generators", University of Bari, Italy, November 1999.

"Matrix Element Corrections to Parton Shower Simulations", Michigan State University, East Lansing, MI, U. S. A., December 1999.

"Matrix Element Corrections to Parton Shower Simulations", University of Rochester, NY, U. S. A., January 2000.

"Matrix Element Corrections to Parton Shower Simulations": Rutherford Appleton Laboratory, U. K., February 2000.

"Matrix Element Corrections to Parton Shower Simulations", University of Edinburgh, U. K., October 2000.

"Matrix Element Corrections to Parton Shower Simulations", University of Manchester, U. K., October 2000.

"Recent Progresses in the Physics of QCD Event Generators", University of Pavia, Italy, October 2000.

"Monte Carlo Parton Showers for High Energy Colliders", University of Michigan, Ann Arbour, MI, U. S. A., March 2001.

"Theory and Simulation of Multiple Radiation in QCD", University of Bari, Italy, May 2001.

"Challenges in the Physics of QCD Event Generators", Fermilab, August 2001.

"Physics of QCD Event Generators", Colloquium at Max-Planck-Institut für Physik, München, Germany, January 2002.

"Bottom Fragmentation in Top Quark Decay", University of Milano–Bicocca, Italy, February 2002.

"QCD Analysis of Bottom Fragmentation in Top Decay", University of Cambridge, U. K., May 2002.

"QCD Analysis of Bottom Fragmentation in Top Decay", University of Manchester, U. K., May 2002.

"Fragmentation Functions and B-Hadron Production in Top Quark Decay", University of Bari, Italy, July 2002.

"Heavy Quark Fragmentation and B-Hadron Production in Top Quark Decay", Max-Planck-Institut für Physik, München, Germany, November 2002.

"Physics of QCD event generators", University of Lecce, Italy, January 2003.

"Fragmentation functions and B-Hadron production in Top Quark Decay", University of Lecce, Italy, January 2003.

"Top Quark Decay and Bottom Quark Fragmentation", University of Uppsala, Sweden, March 2003.

"Matrix-element corrections to Monte Carlo parton showers", University of Uppsala, Sweden, March 2003.

"Top Quark Decay and Bottom Quark Fragmentation", University of Lund, Sweden, March 2003.

"Matrix-element corrections to Monte Carlo parton showers", University of Lund, Sweden, March 2003.

"Precise QCD Calculations for Charged Current Deep Inelastic Scattering", University of Milano–Bicocca, Italy, October 2003.

"Precise QCD Calculations for Charged Current Deep Inelastic Scattering", Max-Planck-Institut für Physik, München, Germany, November 2003.

"Soft and Collinear Resummation from Top Decay to Deep Inelastic Scattering", CERN, March 2004.

"Radiative Corrections to Deep Inelastic Scattering Processes", University of Bari, Italy, March 2004.

"Soft and Collinear Resummation from Top Decay to Deep Inelastic Scattering", University of Florence, Italy, May 2004.

"Event Generators and Matrix Element Corrections", University of Pisa, May 2004.

"Matrix Element Corrections to Parton Shower Simulations", Moscow State University, Moscow, Russia, June 2004.

"Progresses in Heavy Quark Fragmentation", University of Milano–Bicocca, Italy, October 2004.

"Event Generators and Matrix Element Corrections", University of Trento, January 2005.

"Progress in Heavy-Quark Fragmentation and Soft Resummation", University of Rome 'La Sapienza', June 2005.

"Monte Carlo Generators for High Energy Colliders", University of Rome 'La Sapienza', Italy, February 2006.

"Monte Carlo Generators for High Energy Colliders", UNAM, Mexico City, March 2006.

"Monte Carlo Generators for High Energy Colliders", CINVESTAV, Mexico City, March 2006.

"Monte Carlo Generators for High Energy Colliders", University of Padua, October 2006.

"Monte Carlo Generators for High Energy Colliders", University of Pavia, December 2006.

"Monte Carlo Generators for High Energy Colliders", Scuola Normale Superiore, Pisa, January 2007.

"Monte Carlo Generators for High Energy Colliders", Università della Calabria, Arcavacata di Rende (CS), February 2007.

"Monte Carlo Generators for the LHC", University of Buenos Aires, Argentina, August 2007.

"Challenges in Heavy Quark Fragmentation", University of la Plata, Argentina, August 2007.

"New Physics Signals and Standard Model Backgrounds at the LHC", Centro Enrico Fermi, Rome, Italy, September 2007.

"Simplified Models for New Physics Searches at the LHC", Scuola Normale Superiore, Pisa, Italy, November 2008.

"Monte Carlo Generators for High Energy Colliders", University of Ferrara, Italy, May 2009.

"Monte Carlo Generators for the LHC", Universidad Autonoma de Madrid, Spain, October 2010.

"Challenges in heavy quark fragmentation", Scuola Normale Superiore, Pisa, Italy, November 2010.

"Parton showers with medium-modified splitting functions", Laboratori Nazionali di Frascati, Italy, March 2011.

"Towards angular-ordered parton showers for heavy-ion collisions", Laboratori Nazionali di Frascati, Italy, March 2011.

"Supersymmetric contributions to Z' decays", University of Louvain-la-Neuve, Belgium, Italy, November 2012.

"Supersymmetric contributions to Z' decays", University of Bruxelles, Belgium, October 2012.

"Supersymmetric contributions to Z' decays", CERN, November 2012.

"Bottom fragmentation in top decays and impact on the top mass reconstruction", University of Barcelona, Spain, December 2013.

"Theoretical uncertainties in the determination of the top mass", SISSA, Trieste, Italy, September 2014.

"Interpretation of the top mass measurements", University of Manchester, UK, November 2015.

"The top-quark mass: interpretation of the measurements and theoretical uncertainties", University of Turin, Italy, February 2016.

"Parton showers and resummation for bottom-quark fragmentation in top decays", University of Vienna, Austria, April 2016.

"The top-quark mass: interpretation of the measurements and theoretical uncertainties", University of Rome Tor Vergata, Italy, February 2017.

"Non-standard heavy vector bosons at the LHC", University of Münster, Germany, October 2017.

Talks to the D0 Collaboration:

I was invited to join meetings of the D0 Collaboration and gave the following presentations:

"Matrix Element Corrections to Parton Showers", D0 Collaboration Meeting, plenary talk, Fermilab, April 2000. The talk was attended by the CDF Collaboration as well.

"Cards in HERWIG", meeting of the Monte Carlo event generator working group, Fermilab, November 2000.

Talks to the CDF Collaboration:

I was invited to join meetings of the CDF Collaboration and gave the following presentations:

"The New HERWIG Monte Carlo Event Generator", meeting of the Supersymmetry working group, Fermilab, August 2001.

"HERWIG Progress Report", meeting of the QCD working group, Fermilab, August 2001.

"Bottom Quark Fragmentation in Top Quark Events", CDF-Italia meeting, Trento, March 2004.

Talks to the CMS Collaboration:

I was invited to join meetings of the CMS Collaboration and gave the following presentations:

"Bottom Quark Fragmentation in Higgs decays", CERN, October 2004.

"Theoretical issues on b-quark fragmentation in top-quark decays", CERN, April 2013.

Talks to the ATLAS Collaboration:

I was invited to join meetings of the ATLAS Collaboration and gave the following presentations:

"Prospects for top quark phenomenology at the Large Hadron Collider", ATLAS Italy Meeting, Bologna, January 2014.

"Searching for supersymmetry in Z' decays", ATLAS SUSY Working Group, May 2015.

"The top-quark mass: exploring the hadronization uncertainties", ATLAS Top Working Group, February 2018.

Talks to the ALICE Collaboration:

I was invited to join meetings of the ALICE Collaboration and gave the following presentation:

"Towards angular-ordered parton showers for heavy-ion collisions", Laboratori Nazionali di Frascati, Italy, May 2011.

Supervising activity:

I collaborated with Prof. Lynne H. Orr on the supervision of the research activity of two graduate students at the University of Rochester: Elinor K. Irish and Alexander D. Mitov (currently postdoctoral research associate at SUNY Stony Brook, NY, U. S. A.). Such a work has been published and presented in several workshops and conferences.

In particular, the work with E.K. Irish has been carried out throughout the top-quark working group of the American Linear Collider workshop and published in Refs. [14,16].

The work with A.D. Mitov has been devoted to the topic of heavy-quark fragmentation and soft-gluon resummation. It was published in Refs. [18,20,21,24] and in his Ph.D. thesis "Applications of perturbative QCD to process with heavy quarks", hep-ph/0311101.

I collaborated with Dr. Ugo Aglietti on the supervision of Giancarlo Ferrera, currently postdoctoral fellow at the University of Florence, former graduate student at the University of Rome 'La Sapienza'. The publications [40,41], discussing a model for non-perturbative effects in bottom and charm-quark fragmentation, is part of his Ph.D. thesis 'Threshold resummation in heavy flavour physics'.

Together with Prof. Riccardo Barbieri, I have been following the Ph.D. thesis work of Antonio Enrique Cárcamo Hernández, currently fourth-year graduate student at Scuola Normale Superiore in Pisa. His thesis will deal with heavy composite-vector production at the Large Hadron Collider in Higgsless models and has led to the publication [53].

I have been involved in the supervision of the Master Thesis of Filippo Sala, undergraduate student at Scuola Normale Superiore, who has been working on Dark Matter interactions into Standard Model particles, and subsequent parton showers and hadronization. The title of his thesis is: 'Radiative Corrections to Dark Matter Indirect Signals'; the main aspects of this work are discussed in Ref. [58] of the publication list.

I have supervised Francesca Pelusi, Summer Student at the Frascati National Labs, on a project on the searches for Axion-Like Particles (ALPS) at the PADME experiment.

Lecturing activity:

I gave lectures on perturbative QCD at "Max-Planck-Institut Young Scientists Workshop on Hot Topics in Particle and Astroparticle Physics 2003", Ringberg Castle, Germany, July 2003. The course was followed by undergraduate and graduate students from Max-Planck-Institut für Physik, Ludwig-Maximilian-Universität and Technische Universität in Munich.

I lectured on "Monte Carlo tools for the LHC" at the "Italo-Hellenic School of Physics 2005. The Physics of LHC: theoretical tools and experimental challenges", Martignano (Lecce), Italy, June 2005.

I gave a course on "Selected topics in perturbative QCD" at UNAM, Mexico City, March 2006, during my visit associated with the HELEN project.

I lectured on "Physics of QCD event generators" to graduate and undergraduate physics students at the University of Rome Tor Vergata in April 2008.

I taught classes on perturbative QCD to graduate students at Scuola Normale Superiore in Pisa in March 2010.

Referee activity:

I have been a referee for Physics Letters B, European Physical Journal, Physical Review D, Physical Review Letters, JHEP, Canadian Journal of Physics and Nuovo Cimento, Computer Physics Communication.

I have been a reviewer for projects submitted to Fonds Wetenschappelijk Onderzoek (Belgium), Swiss National Foundation, Iran National Science Foundation, Estonian Research Concil and for the Evaluation of the Research Quality (VQR) of Italian universities.

Community service:

I was the theory convener at the "Heavy Flavours" session at DIS 2005, 13th International Workshop on Deep Inelastic Scattering, April 2005, Madison, WI, U. S. A.

I was a Discussion Leader at the 2006 European School of High Energy Physics Aronsborg, Sweden, June 2006, organized by CERN (Geneva) and JINR (Dubna).

I have been the convener of the "QCD and top-quark physics" working group of the Italian initiative for the future Linear Collider. The related meetings have so far been: "ILC in Florence", Florence, September 2007; "LC08: e^+e^- Physics at the TeV Scale", Frascati, September 2008; "LC09 - e^+e^- Physics at the TeV Scale and the Dark Matter Connection", Perugia, September 2009; "LC10 - New Physics: complementarities between direct and indirect searches", Frascati, December 2010. -LC11 Workshop - Understanding QCD at linear colliders in searching for old and new physics, ECT*, Trento, Italy, September 2011; -LC13: exploring QCD from the infrared regime to heavy-flavour scales at B-factories, the LHC and a Linear Collider, ECT*, Trento, Italy, September 2013.

I have been an organizer of 'LFC15: physics prospects for Linear and other Future Colliders after the discovery of the Higgs', September 2015, and the Chairman of 'LFC17: Old and New Strong Interactions from LHC to Future Colliders', September 2017, 'LFC19:

Strong Dynamics for Physics within and beyond the Standard Model at LHC and Future Colliders', September 2019, 'LFC21: Strong Dynamics for Physics within and beyond the Standard Model at LHC and Future Colliders' (online workshop), September 2021, all held at ECT*, Trento, Italy.

I co-organized the top quark session at the workshop on *pp* physics at the LHC in Perugia, January 2008, and the Standard Model and New Physics working group at the "IFAE" conference, Bologna, March 2008.

I was a scientific secretary for the lectures on "Orientifold/Flux String vacua, supersymmetry breaking and Strings at the LHC", given by Prof. D. Lüst at the International School of Subnuclear Physics, Erice, September 2009.

I have been a member of a few committees to evaluate Master and Ph.D. theses in theoretical particle physics at Scuola Normale Superiore, Pisa, in 2009 and 2010.

I have been a member of the selection committee for the admission to the graduate school in Rome 3 Univrsity, October 2020.

I have been the theory convener of the session on "Heavy Flavours in Deep Inelastic Scattering and Hadron Colliders" at the 18th International Workshop On Deep Inelastic Scattering And Related Subjects (DIS 10), Florence, Italy, April 2010.

I have been a convener of the working group on 'Open heavy flavour (vs hidden)' at the workshop 'Quarkonium 2010 - Three days of Quarkonium Production', which took place at the École Polytechnique in Palaiseau, France, in July 2010.

I have been the Colloquium Organizer at INFN, Laboratori Nazionali di Frascati, 2018-2020.

Publications and contributions to conference proceedings:

[1] P. Colangelo, G. Corcella and G. Nardulli, "$\Upsilon(4S) \to B^0\bar{B}^0\gamma$ Background at B Factories", hep-ph/9510337, Phys. Rev. D54 (1996) 1212.

[2] P. Colangelo and G. Corcella, "Investigations on CPT Invariance at B-Factories", hep-ph/9704375, Eur. Phys. J. C1 (1998) 515.

[3] G. Corcella and M.H. Seymour, "Matrix Element Corrections to Parton Shower Simulations of Heavy Quark Decay", hep-ph/9809451, Phys. Lett. B442 (1998) 417.

[4] G. Corcella and M.H. Seymour, "Initial State Radiation in Simulations of Vector Boson Production at Hadron Colliders", hep-ph/9908388, Nucl. Phys. B565 (2000) 227.

[5] G. Corcella and M.H. Seymour, "Simulations of Top Production and Decay at the Linear Collider", hep-ph/9911335, in "2nd ECFA/DESY Study 1998-2001", pp. 265-270.

[6] G. Corcella, "On the Top Mass Reconstruction Using Leptons", hep-ph/9911477, in Proceedings of UK Phenomenology Workshop on Collider Physics, J. Phys. G26 (2000) 634.

[7] G. Corcella, I.G. Knowles, G. Marchesini, S. Moretti, K. Odagiri, P. Richardson, M.H. Seymour and B.R. Webber, "HERWIG 6.1 Release Note", hep-ph/9912396.

[8] G. Corcella and M.H. Seymour, "Vector Boson Transverse Momentum Distributions at the Tevatron", hep-ph/9911536, in Proceedings of UK Phenomenology Workshop on Collider Physics, J. Phys. G26 (2000) 643.

[9] M. Beneke, G. Corcella et al., "Top Quark Physics", hep-ph/0003033, in Proceedings of the Workshop on Standard Model Physics (and more) at the LHC, edited by G. Altarelli and M.L. Mangano, pp.419-529.

[10] G. Corcella, M.L. Mangano and M.H. Seymour, "Jet Activity in $t\bar{t}$ Events and Top Mass Reconstruction at Hadron Colliders", hep-ph/0004179, JHEP 0007 (2000) 004.

[11] S. Catani, G. Corcella et al., "QCD", hep-ph/0005025, in Proceedings of the Workshop on Standard Model Physics (and more) at the LHC, edited by G. Altarelli and M.L. Mangano, pp. 1-115.

[12] G. Corcella, "Vector Boson Production at Hadron Colliders: Results From HERWIG and Resummed Calculations", hep-ph/0007295, in "Rochester 2000. Theoretical High Energy Physics" Proceedings of MRST Meeting, edited by C.R. Hagen, pp. 190-201.

[13] G. Corcella, "Top Mass Measurement and Bottom Fragmentation at the LHC", hep-ph/0009320, in Proceedings of DPF 2000 Meeting, Int. J. Mod. Phys. A 16S1A (2001) 372.

[14] G. Corcella, E.K. Irish and M.H. Seymour, "HERWIG for Top Physics at the Linear Collider", hep-ph/0012319, in "Batavia 2000, Physics and Experiments with Future Linear e^+e^- Colliders", pp. 356-359.

[15] G. Corcella, I.G. Knowles, G. Marchesini, S. Moretti, K. Odagiri, P. Richardson, M.H. Seymour and B.R. Webber, "HERWIG 6: an Event Generator for Hadron Emission Reactions with Interfering Gluons (Including Supersymmetric Processes)", hep-ph/0011363, JHEP 0101 (2001) 010.

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in “HERA and the LHC - A workshop on the implications of HERA for LHC physics”, Editors A. De Roeck and H. Jung, Geneva 2005, Part III - Working Group 2: Multi-Jet Final States and Energy Flows, Parton Density Function, pag. 274-187. hep-ph/0508096.

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[55] G. Corcella, "Parton showers with medium-modified splitting functions", arXiv:1008.2634 [hep-ph], PoS DIS2010:102, 2010.

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[57] Heavy flavour production at the LHC: Theoretical aspects. Z. Conesa del Valle, G. Corcella et al., "Quarkonium production in high energy proton-proton and proton-nucleus collisions", Nucl. Phys. Proc. Suppl. 214 (2011) 3.

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[75] P. Azzi, G. Corcella et al, "Physics Behind Precision", Proceedings of FCC-*ee* miniworkshop 'Physics beyond precision', e-Print: 1703.01626 [hep-ph].

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Frascati, 17.09.2021 Gennaro Corcella

Curriculum Vitae – Vittorio Del Duca

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Education
1985: laurea in Fisica, magna cum laude, University of Torino. Thesis *Simboli 3-j per l'estensione centrale di gruppi finiti*; adviser Prof. T. Regge
1990: Ph.D. in Physics, State University of New York at Stony Brook. Thesis *The infrared behavior of gauge theories*; adviser Prof. G. Sterman.

Current Positions and Affiliation
Since 2006: Primo Ricercatore, INFN, Laboratori Nazionali di Frascati, Italy.

Previous Positions and Employment History
1990 - 1993: Research Associate, Stanford Linear Accelerator Center (SLAC), USA
1993 - 1995: Scientific Associate, Deutsches Elektronen-Synchrotron (DESY), Germany
1996 - 1998: Lecturer, University of Edinburgh, UK
1997 - 2006: Ricercatore INFN
1999 - 2000: Scientific Associate, CERN
2003: Scientific Associate, CERN
2010: Scientific Associate, CERN
2015 - 2021: Scientific Associate, Institute for Theoretical Physics, ETH Zürich, Switzerland
2021 - 2023: Scientific Associate, Physik-Institut, University of Zürich, Switzerland.

Scientific production
Publications in refereed journals: 90
Proceedings of conferences and workshops, and contributions to compiled volumes: 55
Invited talks: 105.

Institutional responsibilities
1999 - 2000: Member of UK PPARC Panel charged to evaluate bids to establish IPPP.
2000: PPARC referee for UK JIF funds to house and equip IPPP and IAAC.
2003: PI of the proposal *HardQCD@LHC* for an EC Research Training Network.
2005: PI of the proposal *QCD@LHC* for an EC Research Training Network.
2005 - 2008: Theory member of the INFN high-energy EXP National Scientific Committee (CSN1).
2009 - 2014: Italian Delegate to the Plenary European Committee Future Accelerators (ECFA).
2011 - 2014: Italian Coordinator of the EC Initial Training Network *LHCPhenoNet*.
2017 - 2021: STSM Coordinator of the EC COST Action *PARTICLEFACE*.

Scientific reviewing activities
External examiner: EPFL Lausanne, University of Edinburgh, Université Catholique de Louvain
Journal referee: Eur. Phys. J. C, JHEP, Nucl. Phys. B, Phys. Lett. B, Phys. Rev. D, Phys. Rev. Lett.
Expert evaluator: European Research Council; American Physical Society; Fonds Recherche Scientifique - FNRS, Belgium; Israel Science Foundation; Ministero Istruzione Università Ricerca, Italy; Particle Physics Astronomy Research Council, UK; Royal Society, UK.

Supervision and mentoring of students and junior researchers
Postdoc's: Fabio Maltoni (1998-1999), Giuseppe Bevilacqua (2013-2015), Francesco Moriello (2017-2020).
PhD students: Alberto Frizzo (1998-2000), Claude Duhr (2006-2009), Francesco Moriello (2013-2016), Hjalte Frellesving (2013-2014), Omer Gurdogan (2013-2014), Oyvind Almelid (2014), Simone Lionetti (2017-2018), Giulio Salvatori (2019), Rayan Haindl (2019-2022).

MSc students: Francesco Moriello (2012-2013) → PhD Sapienza; Rayan Haindl (2017-2018) → PhD ETH; Marc Canay (2019) → PhD Saclay; Konstantin Leyde (2020) → PhD APC Paris; Coralie Rouat (2021); Qiu Zizang (2022); Chava Sai Sasank (2023) → PhD Northwestern U.

Teaching activities

1994: Graduate lectures on *L'equazione di BFKL*, University of Torino, Italy
1994: Graduate lectures on *Fisica dei jet*, University of Salerno, Italy
1995: Academic Training Course on *The perturbative QCD pomeron*, DESY, Germany
1996: Graduate lectures on *The perturbative QCD pomeron*, Michigan State Uni, USA
1996 - 1997: Lectures on *Quantum Physics*, University of Edinburgh, UK
1997: Graduate lectures on *A Path to QCD*, University of Edinburgh, UK
1998: Graduate lectures on *Renormalisation*, Universities of Edinburgh, UK, and Torino, Italy
1999: Graduate lectures on *Parton model and QCD*, Weizmann Institute, Israel
1999 and 2003: Graduate lectures on *Parton Model and QCD*, University of Torino, Italy
2008: Graduate lectures on *QCD in the LHC era*, University of Salerno, Italy
2009 and 2011: Graduate lectures on *QCD at the LHC*, University of Roma Tre, Italy
2015: Lectures on *Classical Mechanics*, ETH Zürich.
2016: Graduate lectures on *An Introduction to the Perturbative Pomeron and to the BFKL Equation in QCD and in N=4 SYM*, ETH Zürich
2017: Graduate lectures on *The BFKL Equation Reloaded and the Multi-Regge Kinematics in QCD and in N=4 SYM*, ETH Zürich
2017: Graduate lectures on *A subtraction method for QCD cross sections*, ETH Zürich
2019 - 2020: Graduate lectures on *Introduction to Quantum Chromodynamics*, ETH Zürich
2020: Graduate lectures on *Scattering Amplitudes in Quantum Field Theories*, ETH Zürich
2022: Graduate lectures on *Scattering Amplitudes*, ETH Zürich.

Organisation of conferences, workshops and schools

1998: Discussion leader at the CERN European School, St. Andrews, Scotland.
2000: Coordinator of workshop on *Standard Model Physics at the LHC*, CERN.
2004 - 2010: Co-organizer of School on the *Physics of LHC*, Lecce.
2006 - 2008: Co-organizer of workshop *Monte Carlo, Physics and Simulations at LHC*, LNF.
2007: Co-organizer of GGI workshop *Advancing Collider Physics: from Twistors to Monte Carlos.*
2012: Organizer of the Mid-Term Meeting of *LHCPhenoNet*, Ravello, Italy.
2017: Co-organizer of workshop *The elliptic/missing Feynman integrals*, ETH Zürich.
2017: Co-organizer of workshop *Iterated Integrals and the Regge Limit*, Higgs Centre, Edinburgh.
2017: Co-organizer of workshop *Elliptic integrals in math and physics*, CSF Ascona & ETH Zürich.
2018: Co-organizer of workshop *Subtracting Infrared Singularities beyond NLO*, Higgs Centre, Ed.
2018: Co-organizer of GGI workshop *Amplitudes in the LHC era*, Firenze.
2019: Co-organizer of the conference *Amplitudes 2019*, Dublin.
2019: Co-organizer of workshop *Towards accuracy at small x*, Higgs Centre, Edinburgh.
2011 - 2023: Founder and Co-organizer of the *School of Analytic Computing in Theoretical High-Energy Physics*, Atrani, Italy.
2022: Co-organizer of workshop *From Scattering Amplitudes to Gravitational-Wave Predictions for Compact Binaries*, Uni. Zürich.

Outreach

2008: Articles on "La Stampa", an Italian newspaper, on the start of LHC at CERN.
2008: an interview with P. Higgs, "www.lnf.infn.it/theory/delduca/higgsinterview.pdf", published in INFN journal *Asimmetrie* and in the Italian edition of *Scientific American*
2011 - 2015: lectures on *The Large Hadron Collider and the Standard Model of particles*, for high-school students and teachers, LNF

CURRICULUM VITÆ

GIANCARLO FERRERA

Academic Positions and Fellowships

2018-now Associate Professor (permanent) at Physics Department, Milan University.

2011-2017 Assistant Professor (permanent) at Physics Department, Milan University.

2011 Academic Visitor, Physics Department, Zurich University.

2007-2011 Postdoc position, Physics Department, Florence University.

2007 Research Training grant (High Energy Physics LatinAmerican-European Network), Buenos Aires University. Supervisor: Prof. D. de Florian.

2006-2007 Postdoc position at Department E.C.M., Barcelona University. Early Stage Researcher (Marie Curie RTN HEPTOOLS). Supervisors: Prof. F. del Águila, Prof. J. Solà (7 months).

Education

2004-2006 Ph.D. in Physics, Rome University "La Sapienza". Thesis Title: *Threshold resummation in heavy flavour physics*; Supervisor: Dr. U. Aglietti. Graduation: 23/01/2007.

2001-2002 Master in Theoretical Physics, Rome University "La Sapienza" ; Thesis Title: *Associated production of Higgs bosons and charginos in the MSSM at linear colliders;* Supervisors: Prof. G. Martinelli and Dr. B. Mele. Graduation: 25/09/2003. Degree: 110/110 cum laude.

1999-2000 Master studies of Physics at "Scuola Normale Superiore" Pisa and Pisa University.

Qualifications

2017 Italian Professorship Qualification as Full Professor.

2015-now INFN Scientific Research Appointment.

2014-now Visiting Scientist at CERN.

2013 Italian Professorship Qualification as Associate Professor.

Academic and scientific responsabilities

2020-now Coordinator of the INFN Milan Theory Group (about 80 members).

2012-now Group convener of *VH* subgroup of the CERN "LHC Higgs Cross Section Working Group" (2012-2014,2019-now).

2012-2013 Convener of the section "WH/ZH production mode" of the CERN Report "Handbook of LHC Higgs Cross Sections: Higgs properties".

2019 Member of local organizing committee of the Workshop: "Workshop on Photon Physics and Simulation at Hadron Colliders", INFN-LNF, Frascati (Rome), Italy, June 2019

2015-2019 Organizer and Convener of the "QCD session" of the workshop "Linear and Future Colliders", ECT* Trento, Italy, September 2015/2017/2019.

2010 Member of local organizing committee of the Workshop: "HP2.3rd - High Precision for Hard Processes at the LHC", Florence U., Italy, September 2010

2013-2017 Person in charge for the Theoretical Physics Seminars of the Phys. Dept., Milan U.

Funded grants as Principal Investigator (PI)

Project Title	*Funding source*	*Amount (Euro)*	*Period*	*Role of the PI*
Transition Grant (for reaching II step in ERC-StG)	Milan University	80 000	2017-2019 (2 years)	Project PI
Towards a competitive ERC project in High-Energy Physics	Cariplo Foundation & Regione Lombardia	131 368	2015-2017 (2 years)	Project PI
GPU computing in Theoretical Physics	Milan University	$\sim$35 000	2014-2018 (5 years)	Project PI

Publications

Representative publications (among more than 70 publications)

[1] S. Catani, L. Cieri, G. Ferrera, D. de Florian and M. Grazzini, *"Vector boson production at hadron colliders: a fully exclusive QCD calculation at NNLO"*, Phys. Rev. Lett. **103** (2009) 082001. "Renowed paper" on INSPIRE (808 cits.).

[2] D. de Florian, G. Ferrera, M. Grazzini and D. Tommasini, *"Transverse-momentum resummation: Higgs boson production at the Tevatron and the LHC"*, JHEP **1111** (2011) 064. "Famous paper" on INSPIRE (290 cits.).

[3] G. Ferrera, M. Grazzini and F. Tramontano, *"Associated WH production at hadron colliders: a fully exclusive QCD calculation at NNLO"*, Phys. Rev. Lett. **107** (2011) 152003. "Very well known paper" on INSPIRE (245 cits.).

[4] G. Bozzi, S. Catani, G. Ferrera, D. de Florian and M. Grazzini, *"Production of Drell–Yan lepton pairs in hadron collisions: transverse-momentum resummation at next-to-next-to-leading logarithmic accuracy"*, Phys. Lett. **B696** (2011) 207. "Very well known paper" on INSPIRE (167 cits.).

[5] S. Catani, L. Cieri, D. de Florian, G. Ferrera and M. Grazzini, *"Diphoton production at hadron colliders: a fully-differential QCD calculation at NNLO"*, Phys. Rev. Lett. **108** (2012) 072001. "Famous paper" on INSPIRE (254 cits.).

[6] D. de Florian, G. Ferrera, M. Grazzini and D. Tommasini, *"Higgs boson production at the LHC: transverse momentum resummation effects in the $H \to 2\gamma$, $H \to WW \to l\nu l\nu$ and $H \to ZZ \to 4l$ decay modes"*, JHEP **1206** (2012) 132. "Very well known paper" on INSPIRE (199 cits.).

[7] S. Catani, L. Cieri, D. de Florian, G. Ferrera and M. Grazzini, *"Universality of transverse-momentum resummation and hard factors at the NNLO"*, Nucl. Phys. B **881** (2014) 414. "Very well known paper" on INSPIRE (128 cits.).

[8] G. Ferrera, G. Somogyi and F. Tramontano, *"Associated production of a Higgs boson decaying into bottom quarks at the LHC in full NNLO QCD,"* Phys. Lett. B **780** (2018) 346.

[9] G. Ferrera and J. Pires, *"Transverse-momentum resummation for Higgs boson pair production at the LHC with top-quark mass effects,"* JHEP **1702** (2017) 139.

[10] L. Cieri, G. Ferrera and G. F. R. Sborlini, *"Combining QED and QCD transverse-momentum resummation for Z boson production at hadron colliders,"* JHEP **1808** (2018) 165.

Citesummary (01/2021)

Database	*citations*	*ciatations/paper (avg.)*	*H-index*
Scholar Google	9313	-	44
INSPIRE	4616	87.1	23
Scopus	2626	43.43	24
Web of Science	1905	47.63	20

CV Martina Gerbino

PERSONAL INFORMATION

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CURRENT POSITION

2019 – date Researcher (Prima Ricercatrice), Istituto Nazionale di Fisica Nucleare (INFN), Ferrara Unit, Italy

PREVIOUS POSITIONS

2018 – 2019 Postdoctoral Appointee
High-Energy Physics Division, Argonne National Laboratory, USA

2015 – 2018 Postdoctoral Researcher
Oskar Klein Centre for Cosmoparticle Physics (OKC), Stockholm University, Sweden

EDUCATION

2012 – 2015 PhD in Physics, *Current and future constraints on fundamental physics in light of the results from Planck satellite*, defended in Jan 2016, classification: with honors
"Sapienza" University, Rome, Italy
PhD Supervisor: Prof. Alessandro Melchiorri

2010 – 2012 Master's degree in Astronomy and Astrophysics, mark: 110/110 cum laude
"Sapienza" University, Rome, Italy

2007 – 2010 Bachelor's degree in Physics, mark: 110/110 cum laude
"Sapienza" University, Rome, Italy

GRANTS, FELLOWSHIPS AND AWARDS

2023 ERC-Starting Grant "RELiCS – Revealing Elusive Light particles with Cosmic microwave background surveys across cosmological Scales", PI (1.5M€)

2023 FIS - Fondo Italiano per la Scienza 2021 "CMBNous - The definitive route to constrain neutrino properties from Cosmic Microwave Background experiments", PI, declined (1M€)

2023 PRIN, Progetti di Ricerca di Interesse Nazionale, "SHIFT – Statistically enHanced Investigation oF Tensions in cosmic microwave background data ", national PI (250k€)

2021 – date National scientific habilitation to full professor for the Astronomy and Astrophysics sector and to associate professor for the Theoretical Physics sector of the Italian academic system

2019 Official certificate in recognition of the "important contribution to the final results published by the Planck Collaboration" by Jan Tauber, Planck Project Scientist.

2018 – 2019 Associate Fellow (non-stipendiary), KICP, University of Chicago, USA

2018 Gruber Prize in Cosmology 2018 as a member of the Planck Team; Group Achievement Award (Royal Astronomical Society) as a member of the Planck Team

2016 Grant from Nordic Institute for Theoretical Physics - NORDITA for the organization of a month-long scientific program and a one-week conference (400k SEK)

2015 Best talk, Nordita Day, NORDITA, *A Tale of a Bright Guy: Listening to the CMB old story*

2014 Grant for junior researchers ("Avvio alla ricerca") from "Sapienza" University (2k€) to carry on research on "Neutrino physics in the era of precision cosmology" (PI)

2012 Corso di eccellenza (award for outstanding Master students), "Sapienza", Rome

2011 ISSNAF-INAF Fellowship (subsistence and ~400$/week for research) for a summer internship at NASA Goddard Space Flight Center, USA, supervisor: Dr. Neil Gehrels

2008 – 2010 Corso di eccellenza (award for outstanding Bachelor students), "Sapienza" University

2007 – 2012 Scholarship, Collegio Universitario "Lamaro-Pozzani", Rome

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

Master Nicolò Elia Raffuzzi, co-supervisor, 2020 ("Impact of instrumental systematics on future Cosmic Microwave Background observations: half-wave plate non-idealities and the quest for V modes", defended), Ferrara University, Italy; Francesco Sorrenti, external supervisor, 2020-date (constraints on neutrino masses from the reconstruction of the large-scale matter power spectrum, in preparation), Perugia University, Italy

PhD Giorgia Zagatti, supervisor, 2022-date (physical modelling of extragalactic emissions); Luca Caloni, co-supervisor, 2019-2022 (astroparticle physics), Ferrara University; Serena Giardiello, supervisor, 2019-2022 (science performance of the LiteBIRD satellite), Ferrara University; Sunny Vagnozzi, mentor, 2015-2018 (constraining fundamental physics with cosmological data), Stockholm University

TEACHING ACTIVITIES

2020 – date "Neutrino Cosmology", lectures for the PhD program in Physics, Ferrara University

2019 – date Mentor of junior members (PhD students) of the Simons Observatory collaboration

2013 – 2014 Tutor, "Mathematics pre-courses" and "Mechanics and thermodynamics" (Bachelor, Mathematic Department, "Sapienza" University), "Mechanics" (Bachelor, Physics Department, "Sapienza" University)

ORGANISATION OF SCIENTIFIC MEETINGS

2023 "New frontiers in theoretical physics – XXXVII Convegno di Fisica Teorica", Cortona, Italy, SOC member

2022 LOC member, "From Planck to the future of CMB", Ferrara, Italy (conference); SOC member, "Simons Observatory Face-to-face 2022", San Diego, USA (collaboration meeting); Convener of the parallel session "Particle Physics in the Cosmos" of the NOW 2022 workshop, Ostuni, Italy

2021 Invited member of the TAUP 2021, TAUP 2023 International Advisory Committee

2021 CMB-S4 Spring Collaboration Meeting, LOC member (fully online event)

2019 "Next-generation Spectroscopy with LSST" workshop, Argonne National Laboratory, USA, SOC and LOC member

2017 "Advances in Theoretical Cosmology in Light of Data" program, Stockholm, Sweden, SOC and LOC member. Main scientific coordinator of the week "Messengers: Astroparticles and Gravitational Waves"; co-coordinator of the conference "Inflation and the CMB"

2017, 2019 Convener of the parallel session "Cosmology" of the "TeVPA 2017" conference, Columbus, USA and of the "TeVPA 2019" conference, Sydney, Australia

INSTITUTIONAL RESPONSIBILITIES

2022 – date Local coordinator (elected) of the INFN Theory group (CSN4) including budget management, Ferrara Unit

2022 – date Invited member of the Astrophysics Working Group, ASI (Italian Space Agency) Decadal Survey

2022, 2021 Member of the selection committees for INFN postdoc positions in Ferrara (2021) and Parma (2022)

2022 INFN Fubini award committee member; SISSA PhD admission committee member

2021 – date Faculty member, PhD program in Physics, Ferrara University

2020 Admission committee to the PhD program in Physics, Ferrara University

2019 – date Organiser of cosmology seminars, weekly journal clubs and cosmology group meetings, Ferrara University

2018 – 2019 Coordinator of the Cosmic Infrared Background working group, Organiser of HEP division and HEP Lunch seminars, Argonne National Laboratory

2015 – 2018 PhD student advisor, Stockholm University, Sweden

2016 – 2018 Organiser of weekly colloquia on behalf of the OKC colloquium committee, Convener of the Cosmology&Gravity working group, OKC, Stockholm University

REVIEWING ACTIVITIES

2016 – date Reviewer for PRD, PRL, JCAP, Annalen der Physik, Int.J.Mod.Phys.D

2017 – date Invited reviewer for NASA Experimental Program to Stimulate Competitive Research (EPSCoR); Invited panelist of NASA Astrophysics Data Analysis Program (ADAP) and NASA's ROSES/APRA Program, declined

MAJOR COLLABORATIONS

2013 – date Full member of the ESA's Planck collaboration. Core Team Member since 2016.

2016 – date Full member, member (elected) of the "Theory and Analysis Committee" since 2023, co-leader of the "Likelihood and Theory" Analysis Working Group since 2018, co-leader of the "Education and Public Engagement" committee in 2017-2021, member of the "Mentorship" committee of the Simons Observatory collaboration since 2021

2018 – date Full member of the CMB-S4 collaboration, chair of the Governing Board (elected member since 2020 for 2 terms) and of the Publication committee since 2018

2020 – date Full member of the LiteBIRD collaboration and of the Euclid consortium

VISITING

Mar-Sep 2020 Visiting scientist, by invitation of Prof. K. Heitmann, HEP Division, Argonne National Laboratory, canceled due to COVID-19 emergency

Feb-Jun 2016 Visiting postdoc, by invitation of Prof. K. Freese, University of Michigan

May-Jul 2015 Visiting PhD student, KICP, University of Chicago, advisor: Prof. E. Kolb

OUTREACH

2020 – date Coordinator of cosmology laboratories for high-school students, Ferrara University

2019 Selected as a speaker at the Soapbox science event at Chicago Navy Pier

2017 – date Co-leader of the "Education and Public Engagement" committee, Simons Observatory (SO) collaboration; content creator for the SO public website; SO social media organizer

2018 Organizer of outreach laboratories for high-school students during the European Researcher Nights in Stockholm (Forskarfredag and FysikFest)

2018 Interview for the video-documentary "The Eternal Sky" by the Simons Foundation

2012 Contributed author of S. Semplici, Editrice La Scuola, ISBN 9788835036234

Paolo Torrielli

Academic Positions

as of 12/2019: Associate Professor
Physics Department, UNITO, Turin, Italy.
12/2016-11/2019: Assistant Professor (RTDB tenure-track position)
Physics Department, UNITO, Turin, Italy.
09/2014-11/2016: PostDoctoral research fellow, partly under Ma rie Sklodowska Curie Actions, Physics Department, UNITO, Turin, Italy.
09/2012-08/2014: PostDoctoral research fellow
Physics Institute, University of Zürich (UZH), Zürich, Switzerland.

Education

08/2012: PhD in Theoretical Particle Physics, Ecole P olytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland.
Thesis unanimously proposed for the EPFL annual prize.
09/2007: Master's Degree in Physics
Università degli Studi di Genova (UNIGE), Genoa, Italy
Evaluation: 110/110 with honours.
09/2005: Bachelor's Degree in Physics
Università degli Studi di Genova (UNIGE), Genoa, Italy
Evaluation: 110/110 with honours.

Additional Training

06/2009 CERN-Fermilab HCP Summer School, CERN, Switzerland

Research Grants and Awards

as of 06/2023: National PI of the MUR PRIN (Research Project of National Interest) project PRIN 2022BCXSW9 (200K euros)
as of 10/2022: National Scientific Qualification to Full Professor in Theoretical Physics of Fundamental Interactions, Italy.

as of 12/2021: PI of the Compagnia di San Paolo Ex-post grant TORP_S1921_EX-POST_21_01 (100K euros).
as of 06/2020: Member of the MUR PRIN (Research Project of National Interest) grant 20172LNEEZ.
06/2019: Excellence Department Award for researchers, Physics Department, UNITO, Italy.
as of 03/2019: International Co-PI in the competitively awarded Indian SPARC project Perturbative QCD for Precision Physics at the LHC.
as of 03/2017: National Scientific Qualification to Associate Professor in Theoretical Physics of Fundamental Interactions, Italy.
07/2015-11/2016: EU-FP7-PEOPLE-COFUND Train to Move PostDoctoral fellowship, Physics Department, UNITO, Italy.
2003 - 2006: Four awards proclaimed by Cassa Edile of Alessandria (Italy) for excellent-graded students with parents working in the construction sector.

Memberships
as of 2017: Affiliate of the Arnold Regge Center for Algebra, Geometry and Theoretical Physics, UNITO, Italy.
as of 2014: Associate of INFN (National Institute for Nuclear Physics) - Sezione di Torino.

Institutional roles
as of 05/2023: Tutor within the national INFN project "Più donne nella fisica" (More Women in Physics).
as of 04/2023: National responsible of the INFN SPIF (Precision Studies of Fundamental Interactions) national project, INFN Sezione di Torino.
06-07/2022: Member of the Physics Department Committee for the selection of doctoral candidates, UNITO
09/2020 - 03/2023: Local responsible of the INFN SPIF (Precision Studies of Fundamental Interactions) national project, INFN Sezione di Torino.
as of 09/2020: Member of the Physics Department Work Space Committee, UNITO.
as of 11/2016: Member of the Physics Department Outreach and Public Engagement Committee, UNITO.
as of 11/2016: Faculty member, Physics Department, UNITO.
as of 11/2016: Member of the Physics Bachelor's Degree Council, UNITO.

as of 11/2016: Member of the Materials Science Master's Degree Council, UNITO.
as of 09/2014: Member of the Department Council, Physics Department, UNITO.

Organisation activities
as of 12/2022: Organiser of the HP2 (High precision for hard processes) 2024 international conference, UNITO.
05/2020, 05/2021: Organiser of the Cortona Young conference on New Frontiers in Theoretical Physics, Cortona, Italy.
09/2014-06/2020: Organiser of the High-Energy Physics Seminar, Physics Department, UNITO.
09/2014-09/2017: Organiser of the Theoretical Physics Colloquium, Physics Department, UNITO.

Peer-reviews
as of 2012: Referee for Journal of High Energy Physics, Physical Review D, Physical Review Letters.

Long Research Stays
08/2018: MITP, Mainz, Germany, during the program High Time for Higher Orders.
07/2012: CERN Theoretical Division.
01/2008: Physics Department, UNIGE, Genoa, Italy.

Supervision activities
as of 11/2022: Supervisor of Giovanni Limatola (PostDoc, UNITO).
as of 11/2021: Supervisor of Calum Milloy (PostDoc, UNITO).
as of 10/2020: Co-supervisor of Gloria Bertolotti (PhD, UNITO).
10/2017-09/2020: Co-supervisor of Chiara Signorile (PhD, UNITO).
10/2016-09/2019: Co-supervisor of Giovanni Pelliccioli (PhD, UNITO).
2023: Co-supervision of A. Magone (Master, UNITO).
2023: Co-supervision of E. Maiolo (Master, UNITO).
2012: Co-supervisor of S. Neithardt (Master, EPFL).
2023: Supervisor of Oliver Borgogno Benitez (Bachelor, UNITO)
2023: Supervisor of Alessandro Ottoboni (Bachelor, UNITO).
2022: Supervisor of Francesco Maniaci (Bachelor, UNITO).

2022: Supervisor of Mattia Brunacci (Bachelor, UNITO).
2021: Supervisor of Edoardo Ferrando (Bachelor, UNITO).
2021: Supervisor of Martina Beccaria (Bachelor, UNITO).
2021: Supervisor of Paolo Garbarino (Bachelor, UNITO).
2020: Supervisor of Gianni Vurchio (Bachelor, UNITO).
2020: Supervisor of Christian Biello (Bachelor, UNITO).
2020: Supervisor of Andrea Bulgarelli (Bachelor, UNITO).
2019: Supervisor of Marco Barbieri (Bachelor, UNITO).
2019: Supervisor of Marta Baratto (Bachelor, UNITO).

Publications and bibliometrics
as of 2010: 27 articles published in leading peer-reviewed journals (JHEP, Phys. Lett. B, Phys. Rev. Lett.), 6 CERN Yellow Reports, 2 scientific articles (manuals, summary reports, sprints), 8 conference proceedings.

	GOOGLE SCHOLAR	INSPIRE	SCOPUS	WOS
citations (*published*)	22270	15524 (10160)	(*5699*)	(*5449*)
h-index (*published*)	31	28 (*23*)	(*19*)	(*19*)

PhD Thesis (2012):
Perturbative Techniques in Hadron Collider Physics
Supervisor: Dr. Stefano Frixione.

Master's Thesis (2007):
QCD and Heavy Quarks
Supervisors: Prof. Carlo M. Becchi, and Prof. Giovanni Ridolfi.

Talks and seminars
Regular invitation to give seminars at Physics Departments.
Regular invitation to give talks at international conferences and workshops, recent ones including:
05/2023: RADCOR 2023, Crieff, Scotland (105 participants)
11/2022: QCD@LHC 2022, Paris-Orsay, France (170 participants).
09/2022: Diffraction & Low-x 2022, Corigliano, Italy (97 participants).

10/2021: Higgs 2021, remote (654 participants).
03/2021: Rencontres de Moriond 2021, remote (120 participants).
07/2020: Taming the Accuracy of Event Generators, CERN, Switzerland (57 participants).
01/2020: International Workshop on Precision QCD @ LHC, Hyderabad, India (34 participants).
11/2019: Resummation, Evolution, Factorisation 2019, Pavia, Italy (68 participants).
10/2018: High Accuracy Resummation and Parton Showers, Genoa, Italy (19 participants).
10/2018: High Precision for Hard Processes 2018, Freiburg, Germany (79 participants).
02/2018: PARTICLEFACE 2018, Valencia, Spain (38 participants).
09/2017: RADCOR 2017, St. Gilgen, Austria (80 participants).
08/2017: QCD@LHC 2017, Debrecen, Hungary (93 participants).
04/2017: Illuminating standard candles at the LHC - V+jets, London, UK (20 participants).
08/2016: QCD@LHC 2016, Zürich, Switzerland (164 participants).
05/2016: Rencontres de Blois 2016, Blois, France (145 participants).

Teaching: lecture courses
as of 2023: Phenomenology of fundamental interactions (Master in Physics, UNITO)
as of 2017: Mathematical Methods of Physics I (Bachelor in Physics, UNITO), Electromagnetism (Bachelor in Physics, UNITO), Laboratory I (Bachelor in Physics, UNITO), Quantum Mechanics (MaMaSELF International Master in Material Science, UNITO).
2015-2016: Teaching Assistant in Classical Mechanics (Bachelor in Physics, UNITO), Waves, Fluids, and Thermodynamics (Bachelor in Physics, UNITO).
2014: Teaching Assistant in the Theoretical Physics Proseminar (Master in Physics, UZH).
2010-2011: Teaching Assistant in Relativistic Quantum Field Theory I and II (Master in Physics, EPFL).
2009-2010: Teaching Assistant in General Physics III and IV (Bachelor in Physics, EPFL).
2008: Teaching Assistant in Group Theory (Master in Physics, EPFL).

Teaching: international schools

10/2012: Lecturer in Parton Showers at the 2012 International MadGraph/FeynRules School on LHC Phenomenology, Natal, Brazil.

12/2011: Lecturer in NLO + Parton Showers at the International School Think Tank on Physics at the LHC, Sariska, India.

Outreach Activities

as of 11/2016: Member of the Physics Department Outreach and Public Engagement Committee, UNITO.

05/2012: Talk on Einstein's Special Relativity at the Secondary School for Scientific Studies (Liceo Scientifico), Acqui Terme, Italy.

03/2012: Presentation of own research activity to secondary-school students in the context of the annual LHCPhenonet Meeting, Lumley Castle, UK.