

CURRICULUM VITAE

AI FINI DELLA PUBBLICAZIONE

MARCO NARDECCHIA

PROFESSIONAL POSITIONS

- 12/2017 - present **INFN Researcher** (permanent position)
INFN Section of Trieste
- 10/2016 - present **Research Fellow** (on leave of absence from INFN since 3/2018)
Theoretical Physics Department, CERN
- 10/2013 - 09/2016 **Research Associate**
Department of Applied Mathematics and Theoretical Physics (DAMTP),
University of Cambridge
- 10/2010 - 09/2013 **Research Associate**
 CP^3 -Origins Centre, University of Southern Denmark

QUALIFICATIONS AND EDUCATION

- 11/2017 **Italian Academic Qualification as Associate Professor**
(Abilitazione Scientifica Nazionale, Settore Concorsuale 02/A2, valid until 11/2023)
- 09/2010 **Ph.D. in High Energy Physics** at the International School for Advanced Studies (SISSA), Trieste.
Thesis Title: *Phenomenological Aspects of Supersymmetry Breaking*.
Supervisor: Prof A. Romanino.
- 09/2006 **Master of Science in Physics** at the University of Rome “Sapienza”.
Thesis Title: *Chargino Contribution to Flavor and CP violation in the Minimal Supersymmetric Standard Model*.
Supervisors: Prof G. Martinelli and Dr L. Silvestrini.
Grade: 110/110 *cum laude*.
- 01/2005 **Bachelor of Science in Physics** at the University of Rome “Sapienza”.
Thesis Title: *Mechanism of Spontaneous Symmetry Breaking in the Spherical Limit*.
Supervisors: Prof A. Crisanti and Prof P. Tartaglia.
Grade: 110/110 *cum laude*.

FELLOWSHIPS AWARDED

- 10/2014 - 09/2016 **King’s College Research Associate**, Cambridge
- 06/2006 **INFN Fellowship** for bachelor students
- 08-09/2005 **Summer Student Fellowship**, at Fermilab (US) in collaboration with the CDF experiment.

RESEARCH INTERESTS

Theory and phenomenology of fundamental interactions. In particular:

- Physics beyond the Standard Model of elementary particles
- Physics of flavour and CP violation
- Astroparticle Physics (Dark Matter and Baryogenesis)

SUMMARY OF SCIENTIFIC ACTIVITY AND ITS IMPACT

- Author of 41 scientific publications, out of which 27 original articles on international peer-reviewed journals. Full list of publications available below (Annex 1).
- Bibliometric data according to Inspire, Web of Science (WOS) and Scopus at 01/06/2018:

	Inspire	WOS	Scopus		Inspire	WOS	Scopus
All papers	39	33	35	Articles only	27	27	27
Citations (total)	1427	630	559	Citations (total)	1211	630	559
Citations (avg)	36.6	19.1	16.0	Citations (avg)	44.9	23.3	20.7
H-index	19	14	13	H-index	18	14	13

- Overall 65 talks at conferences, universities, and other scientific institutions (out of which 27 since March 2016). Full list of talks available below (Annex 2).
- Organizer of 3 Scientific Workshops and 1 Theory Institute at CERN (see Fundings and Workshops section below).

TEACHING ACTIVITY

Upon CERN invitation:

- Discussion Leader, 2017 CERN-JINR European School of High-Energy Physics, Evora, Portugal, 6-19 September 2018

At the University of Cambridge:

- Student supervisor for the course “Principles of Quantum Mechanics”, Michaelmas Term 2013, 2014 and 2015
- Class supervisor for the course “Gauge Field Theory”, Lent Term 2014, 2015 and 2016
- Class supervisor for the course “Supersymmetry and Extra Dimensions”, Lent Term 2015
- Co-supervisor of a PhD student, Dr Sophie Renner
- Supervisor of summer projects for undergraduates: “Higgs Boson Machine Learning Challenge”, Mr. Jay Jadav, King’s College London (Summer 2014)

At the University of Southern Denmark:

- Leading training sessions on “Discovering SUSY” for PhD and master students during the “Mass 2011 LHC Training School” (May 9-13, 2011)
- Teaching assistant for the course “Quantum Field Theory I” (2013)
- Teaching assistant for the course “Quantum Field Theory II” (2013)

At the University of Trieste:

- Supervisor of first-year students at the Physics Department (Academic years 2008/2009 and 2009/2010)

REFEREE ACTIVITY

- External Referee for the PhD Thesis of Marzia Bordone, University of Zurich. Supervisor Prof. Gino Isidori.
- Referee for major scientific journal in high energy physics: Physics Letters B (PLB), Physical Review D (PRD), European Physical Journal C (EPJC), Journal of High Energy Physics (JHEP)

FUNDINGS AND WORKSHOPS

- INFN Grant for young researchers (20k EUR)
- Workshop, “Instant workshop on B -Physics anomalies”, 17-19 May 2017, (15k CHF funded by CERN)
- Workshop and CERN Theory Institute, “From flavour anomalies to direct discoveries of New Physics”, 22 October - 2 November 2018, (40k CHF funded by CERN)
- Mainz Institute Theoretical Physics (MITP) topical workshop, “Belle II opportunities for model builders”, 28 January - 1 February 2019 (funded by MITP)

OTHER PROFESSIONAL ACTIVITIES

At CERN:

- Since November 2017: official CERN guide
- Since March 2017: convener of the Collider Cross Talk
- Since October 2016: organiser of the Beyond Standard Model Forum

At the University of Cambridge:

- October 2013 - September 2016: organiser of the joint DAMTP-Cavendish seminars

At the University of Southern Denmark:

- July 2011 - September 2012: organiser of the Lecture series and Seminars at the CP^3 -Origins Center

At the International School for Advanced Studies (SISSA):

- Academic years 2008/2009 and 2009/2010: students’ representative of the High Energy sector and member of the School Council
- Academic years 2008/2009 and 2009/2010: organiser of the Journal Club of the High Energy sector

Geneva, 1 June 2018

ANNEX 1: PUBLICATIONS

Publications in peer-reviewed journals:

1. L. Di Luzio, A. Greljo and M. Nardecchia, “Gauge leptoquark as the origin of B-physics anomalies,” *Phys. Rev. D* **96**, no. 11, 115011 (2017) [arXiv:1708.08450 [hep-ph]].
2. G. D’Amico, M. Nardecchia, P. Panci, F. Sannino, A. Strumia, R. Torre and A. Urbano, “Flavour anomalies after the R_{K^*} measurement,” *JHEP* **1709**, 010 (2017) [arXiv:1704.05438 [hep-ph]].
3. L. Di Luzio and M. Nardecchia, “What is the scale of new physics behind the B -flavour anomalies?,” *Eur. Phys. J. C* **77**, no. 8, 536 (2017) [arXiv:1706.01868 [hep-ph]].
4. L. Di Luzio, J. F. Kamenik and M. Nardecchia, “Implications of perturbative unitarity for scalar di-boson resonance searches at LHC,” *Eur. Phys. J. C* **77** (2017) no.1, 30 [arXiv:1604.05746 [hep-ph]].
5. B. Gripaios, M. Nardecchia and T. You, “On the Structure of Anomalous Composite Higgs Models,” *Eur. Phys. J. C* **77**, no. 1, 28 (2017) [arXiv:1605.09647 [hep-ph]].
6. B. Gripaios, M. Nardecchia and S. A. Renner, “Linear flavour violation and anomalies in B physics,” *JHEP* **1606**, 083 (2016) [arXiv:1509.05020 [hep-ph]].
7. F. Goertz, J. F. Kamenik, A. Katz and M. Nardecchia, “Indirect Constraints on the Scalar Di-Photon Resonance at the LHC,” *JHEP* **1605**, 187 (2016) [arXiv:1512.08500 [hep-ph]].
8. E. Del Nobile, M. Nardecchia and P. Panci, “Millicharge or Decay: A Critical Take on Minimal Dark Matter,” *JCAP* **1604**, no. 04, 048 (2016) [arXiv:1512.05353 [hep-ph]].
9. G. Arcadi, L. Covi and M. Nardecchia, “Gravitino Dark Matter and low-scale Baryogenesis,” *Phys. Rev. D* **92**, 115006 (2015) [arXiv:1507.05584 [hep-ph]].
10. A. Falkowski, M. Nardecchia and R. Ziegler, “Lepton Flavor Non-Universality in B -mesons Decays from a $U(2)$ Flavor Model,” *JHEP* **1511** (2015) 173 [arXiv:1509.01249 [hep-ph]].
11. L. Di Luzio, R. Gröber, J. F. Kamenik and M. Nardecchia, “Accidental matter at the LHC,” *JHEP* **1507**, 074 (2015) [arXiv:1504.00359 [hep-ph]].
12. B. Gripaios, M. Nardecchia and S. A. Renner, “Composite leptoquarks and anomalies in B -meson decays,” *JHEP* **1505**, 006 (2015) [arXiv:1412.1791 [hep-ph]].
13. D. Becciolini, M. Gillioz, M. Nardecchia, F. Sannino and M. Spannowsky, “Constraining new coloured matter from the ratio of 3- to 2-jets cross sections at the LHC,” *Phys. Rev. D* **91**, 015010 (2015) [arXiv:1403.7411 [hep-ph]].
14. D. Ghosh, M. Nardecchia and S. A. Renner, “Hint of Lepton Flavour Non-Universality in B Meson Decays,” *JHEP* **1412**, 131 (2014) [arXiv:1408.4097 [hep-ph]].
15. J. Kopp and M. Nardecchia, “Flavor and CP violation in Higgs decays,” *JHEP* **1410** (2014) 156 [arXiv:1406.5303 [hep-ph]].
16. G. Arcadi, L. Covi and M. Nardecchia, “Out-of-equilibrium Baryogenesis and SuperWIMP Dark Matter,” *Phys. Rev. D* **89**, 095020 (2014) [arXiv:1312.5703 [hep-ph]].
17. L. Di Luzio, M. Nardecchia and A. Romanino, “A framework for baryonic R-parity violation in grand unified theories,” *Phys. Rev. D* **88** (2013) 115008 [arXiv:1305.7034 [hep-ph]].
18. B. Keren-Zur, P. Lodone, M. Nardecchia, D. Pappadopulo, R. Rattazzi and L. Vecchi, “On Partial Compositeness and the CP asymmetry in charm decays,” *Nucl. Phys. B* **867** (2013) 394 [arXiv:1205.5803 [hep-ph]].
19. T. Hapola, F. Mescia, M. Nardecchia and F. Sannino, “Pseudo Goldstone Bosons Phenomenology in Minimal Walking Technicolor,” *Eur. Phys. J. C* **72** (2012) [arXiv:1202.3024 [hep-ph]].
20. G. Arcadi, L. Di Luzio and M. Nardecchia, “Minimal Flavour Violation and Neutrino Masses without R-parity,” *JHEP* **1205** (2012) 048 [arXiv:1111.3941 [hep-ph]].

21. G. Arcadi, L. Di Luzio and M. Nardecchia, “Gravitino Dark Matter in Tree Level Gauge Mediation with and without R-parity,” JHEP **1112**, 040 (2011) [arXiv:1110.2759 [hep-ph]].
22. M. Monaco, M. Nardecchia, A. Romanino and R. Ziegler, “Extended Tree-Level Gauge Mediation,” JHEP **1110** (2011) 022 [arXiv:1108.1706 [hep-ph]].
23. J. R. Andersen *et al.*, “Discovering Technicolor,” Eur. Phys. J. Plus **126**, 81 (2011) [arXiv:1104.1255 [hep-ph]].
24. M. Mojaza, M. Nardecchia, C. Pica and F. Sannino, “Dual of QCD with One Adjoint Fermion,” Phys. Rev. D **83**, 065022 (2011) [arXiv:1101.1522 [hep-th]].
25. M. Nardecchia, A. Romanino, R. Ziegler, “General Aspects of Tree Level Gauge Mediation.” JHEP **1003**, 024 (2010). [arXiv:0912.5482 [hep-ph]].
26. M. Nardecchia, A. Romanino and R. Ziegler, “Tree Level Gauge Mediation.” JHEP **0911** (2009) 112 [arXiv:0909.3058 [hep-ph]].
27. G. F. Giudice, M. Nardecchia and A. Romanino, “Hierarchical Soft Terms and Flavor Physics.” Nucl. Phys. B **813** (2009) 156 [arXiv:0812.3610 [hep-ph]].

Contributions to academic conferences and workshops:

28. M. Nardecchia, “Flavour Anomalies and UV completion after the measurement of R_{K^*} ”, to appear in the Proceedings of the 53rd Rencontres de Moriond EW 2018
29. L. Di Luzio, J. F. Kamenik and M. Nardecchia, “Perturbative unitarity bounds on di-boson scalar resonances,” EPJ Web Conf. **164**, 07026 (2017).
30. M. Nardecchia, “The diphoton anomaly,” Nuovo Cim. C **39**, no. 4, 345 (2017).
31. M. Nardecchia, “New Physics and flavour-violating processes,” Nuovo Cim. C **40**, no. 1, 33 (2017).
32. G. Brooijmans *et al.*, “Les Houches 2015: Physics at TeV colliders - new physics working group report,” arXiv:1605.02684 [hep-ph].
33. J. Brehmer *et al.*, “The Diboson Excess: Experimental Situation and Classification of Explanations; A Les Houches Pre-Proceeding,” arXiv:1512.04357 [hep-ph].
34. L. Di Luzio, R. Grober, J. F. Kamenik and M. Nardecchia, “Accidentally safe extensions of the Standard Model.” Proceedings of the 27th Rencontres the Blois on Particle Physics and Cosmology, arXiv:1509.00367 [hep-ph].
35. M. Nardecchia, “Working Technicolor at the LHC”, Il Nuovo Cimento C **035** (2012).
36. M. Nardecchia, “Flavor in supersymmetry: The hierarchical scenario”, Il Nuovo Cimento C **033** (2010).
37. M. Nardecchia, “Tree Level Mediation of Supersymmetry Breaking.” J. Phys. Conf. Ser. **259** (2010) 012069.
38. M. Nardecchia, “A New Gauge Mediation Mechanism.” Proceedings of the 45th Rencontres de Moriond EW 2010.
39. B. O’Leary *et al.* [SuperB Collaboration], “SuperB Progress Reports – Physics.” [arXiv:1008.1541 [hep-ph]].
40. M. Nardecchia, “Flavor Violation and Hierarchical Sfermions.” Proceedings of the 44th Rencontres de Moriond EW 2009, arXiv:0905.4856 [hep-ph].
41. G. F. Giudice, M. Nardecchia and A. Romanino, “SUSY contributions to $\phi(B(s))$ from hierarchical sfermions,” J. Phys. Conf. Ser. **171** (2009) 012059.

ANNEX 2: TALKS

1. Heidelberg, Germany (planned on September 2018), talk at the “10th International Workshop on the CKM Unitarity Triangle”
Talk Title: *TBA*
2. Geneva, Switzerland (planned on June 2018), talk at the Cern at the “Workshop on the physics of HL-LHC, and perspectives at the HE-LHC”
Talk Title: *Flavour anomalies and interplay at high- p_T*
3. Lyon, France (April 2018), talk at LIO “International Conference on Flavour Physics”
Talk Title: *BSM options for Neutral Current Anomalies*
4. Murten, Switzerland (April 2018), talk at SWICH for the Swiss Institute of Particle Physics
Talk Title: *Flavour physics beyond the SM: a theoretical prospective*
5. Annecy, France (March, 2018), theory introduction at the “3rd Workshop on LHCb Upgrade II”
Talk Title: *What is the scale of New Physics? Status and prospects at LHCb*
6. La Thuile, Italy (March, 2018), talk at the “Rencontres de Moriond EW 2018”
Talk Title: *Flavour anomalies and UV completions after the measurement of R_{K^*}*
7. La Thuile, Italy (March, 2018), talk at “Les Rencontres de Physique de la Vallée d’Aoste”
Talk Title: *Collider implications of Flavour Anomalies*
8. Trieste, Italy (February 2018), joint th-exp seminar with M. Dorigo (LHCb) at the Univerisity of Trieste
Talk Title: *Flavour: a theoretical viewpoint*
9. Zurich, Switzerland (January 2018), joint round table with R. Barbieri and J.F. Kamenik at the “Zurich Phenomenology Workshop 2018”
Talk Title: *UV completion and high- p_T physics*
10. Trieste, Italy (December 2017), seminar at SISSA
Talk Title: *Flavour anomalies*
11. Brussels, Belgium (November, 2017), seminar at the ULB
Talk Title: *UV aspects of B-physics anomalies*
12. Annecy, France (November, 2017), seminar at the LAPTh
Talk Title: *UV aspects of B-physics anomalies*
13. Zurich, Switzerland (September 2017), seminar the University of Zurich
Talk Title: *UV aspects of B-physics anomalies*
14. Naples, Italy (May 2017), talk at the “XIIth Meeting on B Physics”
Talk Title: *Theory of Lepton Flavour Violation*
15. Online seminar, (April 2017), LAWPHYSICS series
Talk Title: *Flavour Anomalies and Lepton Flavour Universality*
Link: <https://lawphysics.wordpress.com/2017/04/22/>
16. Trieste, Italy (April 2017), talk at the ICTP
Talk Title: *B-physics discussion sessions*
17. Geneva, Switzerland (April 2017), talk at the Cern BSM Forum
Talk Title: *B-physics discussion sessions*
18. Paris, France (March 2017), talk at the conference “Current Trends in Flavour Physics”
Talk Title: *Structure of Yukawa couplings and prospects for Higgs flavour physics era*
19. Rehovot, Israel (March 2017), talk at the Weizmann Institute of Science
Talk Title: *Aspects of Accidental Symmetries*

20. Montpellier, France (December 2016), talk at the University of Montpellier
Talk Title: *Aspects of Accidental Symmetries*
21. Brussels, Belgium (December 2016), talk at the Vrije Universiteit Brussels
Talk Title: *On the Recent Flavour Anomalies*
22. Lion, France (September 2016), talk at the “International conference on Composite Models, Electroweak Physics and the LHC”
Talk Title: *Flavoured opportunities from strong dynamics*
23. Rome, Italy (June 2016), seminar at the University of Rome Tre
Talk Title: *On the recent flavour anomalies*
24. Paris, France (June 2016), seminar at the LPTHE, UPMC
Talk Title: *Indirect constraints on the scalar di-photon resonance*
25. Oxford, England (June 2016), seminar at the University of Oxford
Talk Title: *Flavour physics beyond the Standard Model*
26. Odense, Denmark (June 2016), talk at the conference “Origin of Mass 2016”
Talk Title: *On the recent flavour anomalies*
27. Frascati, Italy (April 2016), seminar at the Laboratori Nazionali di Frascati
Talk Title: *A discussion on the 750 GeV di-photon anomaly*
28. Genova, Italy (March 2016), talk at the conference “Incontri di Fisica della Alte Energie”
Talk Title: *Nuova fisica e processi di violazione del sapore*
29. La Thuile, Italy (March, 2016), talk at the conference “Les Rencontres de Physique de la Vallée d’Aoste”
Talk Title: *The diphoton anomaly at the LHC*
30. Genova, Italy (September 2015), seminar at the University of Genova
Talk Title: *Flavour Physics after LHC-1, what’s next?*
31. Frascati, Italy (September 2015), seminar at the Laboratori Nazionali di Frascati
Talk Title: *Flavour Physics after LHC-1, what’s next?*
32. Mainz, Germany (July 2015), seminar at the University of Mainz,
Talk Title: *New Physics and Experimental Anomalies in B-meson decays*
33. Pisa, Italy (April, 2015), seminar at the Scuola Normale Superiore
Talk Title: *Composite Leptoquarks with Partial Compositeness*
34. Florence, Italy (April, 2015), seminar at the University of Florence
Talk Title: *Flavour Physics after LHC1: a review*
35. Portoroz, Slovenia (April, 2015), talk at the conference “Particle Phenomenology From the Early Universe to the High Energy Colliders”
Talk Title: *Composite Leptoquarks with Partial Compositeness*
36. Edinburgh, England (March, 2015), seminar at the University of Edinburgh
Talk Title: *New Physics in semileptonic B-meson decays?*
37. Annecy, France (January, 2015), seminar at the LAPTh
Talk Title: *Accidental matter at the LHC*
38. Zuirch, Switzerland (January, 2015), workshop “ZPW2015, The flavor of new physics”
Talk Title: *Composite Leptoquarks with Partial Compositeness*
39. Cambridge, England (November 2014), graduate lecture series King’s College
Talk Title: *A journey to the physics of elementary particles*
40. Ljubljana, Slovenia (June 2014), seminar at the Josef Stefan Institute
Talk Title: *Flavor and CP violation in Higgs decays*

41. Durham, England (March 2014), seminar at IPPP
Talk title: *Aspects of R-parity violation at the LHC*
42. Perugia, Italy (January 2014), seminar at the University of Perugia
Talk title: *Flavor Physics in the LHC era*
43. Isola d'Elba, Italy (June 2013), workshop on "Tau-Charm at High Luminosity"
Talk title: *Flavor violation and partial compositeness*
44. Cambridge, England (May 2013), joint DAMTP and Cavendish High Energy Physics seminar
Talk title: *Aspects of R-parity violation*
45. Portoroz, Slovenia (April 2013), talk at the conference "Probing the Standard Model and New Physics at Low and High Energies"
Talk title: *A natural framework for baryonic R-parity violation in Grand Unified Theories*
46. Odense, Denmark (April 2013), lecture for master and bachelor students at the University of Southern Denmark
Talk title: *An Introduction to the Standard Model*
47. Odense, Denmark (January 2013), lecture for the Danish Institute for Advanced Study (DIAS)
Talk title: *Quantum game theory*
48. Trieste, Italy (September, 2012), seminar at the SISSA
Talk Title: *On partial compositeness and the CP asymmetry in charm decays*
49. Munich, Germany (September, 2012), seminar at the TUM
Talk Title: *On partial compositeness and the CP asymmetry in charm decays*
50. Barcelona, Spain (March, 2012), seminar at the IFAE
Talk Title: *Minimal Flavor Violation and Neutrino Masses without R-parity*
51. Pisa, Italy (February, 2012), seminar at the Scuola Normale Superiore
Talk Title: *Minimal Flavor Violation and Neutrino Masses without R-parity*
52. Lausanne, Switzerland (February, 2012), seminar at the EPFL
Talk Title: *Minimal Flavor Violation and Neutrino Masses without R-parity*
53. Odense, Denmark (January, 2012), seminar for the Danish National Research Foundation (DNFR)
Talk Title: *Higgs Now: Experiments vs Theories*
54. Rome, Italy (January, 2012), seminar at the University of Rome
Talk Title: *Minimal Flavor Violation and Neutrino Masses without R-parity*
55. Trieste, Italy (November, 2011), seminar at the ICTP
Talk Title: *Minimal Flavor Violation and Neutrino Masses without R-parity*
56. Padova, Italy (November, 2011), seminar at the University of Padova
Talk Title: *Minimal Flavor Violation and Neutrino Masses without R-parity*
57. Ljubljana, Slovenia (October, 2011), seminar at the Josef Stefan Institute
Talk Title: *Pseudo-Goldstone Bosons from Minimal Walking Technicolor*
58. La Thuile, Italy (March, 2011), Results and Prospective in Particle Physics
Talk Title: *Working Technicolor at the LHC*
59. Barcelona, Spain (February, 2011), seminar at the Univesitat de Barcelona
Talk Title: *Phenomenological Aspects of Supersymmetry Breaking*
60. Valencia, Spain (July, 2010), PASCOS 2010
Talk Title: *Tree Level Mediation of Supersymmetry Breaking*
61. Odense, Denmark (May, 2010), Origin of Mass 2010
Talk Title: *Naturalness and Flavor Problem in the MSSM*
62. Rome, Italy (April, 2010), Incontri di Fisica delle Alte Energie 2010
Talk Title: *Il sapore in SUSY: scenario gerarchico*

63. La Thuile, Italy (March, 2010), Rencontres de Moriond EW 2010
Talk Title: *Tree Level Gauge Mediation*
64. Barcelona, Spain (December, 2009), seminar at the Univesitat Autònoma de Barcelona
Talk Title: *Hierarchical Soft Terms and Flavor Physics*
65. Warwick, England (April, 2009), SuperB Physics Workshop
Talk Title: *Hierarchical Squarks and B Physics*
66. La Thuile, Italy (March, 2009), Rencontres de Moriond EW 2009
Talk Title: *Flavor Violation and Hierarchical Sfermions*
67. Frascati, Italy (May, 2008), Frascati Spring School 2008
Talk Title: *FCNC from hierarchical sfermions*

Geneva, 1 June 2018