

ALLEGATO A

UNIVERSITÀ DEGLI STUDI DI MILANO

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[Alessandro Broggio] CURRICULUM VITAE

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Personal Information

Born: Bassano del Grappa, Italy, 29. August 1984

Citizenship: Italian

Employment History

October 2018 -

Research fellow (5 years position), University of Milano-Bicocca, Milano, Italy.

October 2015 - September 2018

Post-doctoral fellow, Technical University of Munich, Munich, Germany.

December 2012 - September 2015

Post-doctoral fellow, Paul Scherrer Institute (PSI), Villigen, Switzerland.

Education

November 2009 - February 2013

Ph.D. in Physics, Johannes Gutenberg University, Mainz.

Fellow of the DFG Graduate School "Symmetry Breaking in Fundamental Interactions".

Thesis title: "*Applications of SCET to the pair production of supersymmetric particles at hadron colliders*"

Adviser: Prof. Dr. M. Neubert

October 2006 - October 2009

Master Degree in Theoretical Physics, 110/110 cum laude, University of Padova.

Thesis title: "*Quantum effects in the two Higgs doublet model*"

Supervisors: Dr. M. Passera (INFN Padova), Prof. Dr. G. Degrossi (University of Rome III)

October 2003 - October 2006

Bachelor Degree in Physics, University of Padova.

Thesis title: *"Search of hidden explosives with the technique of neutron radiography"*

Supervisor: Prof. G. Viesti

Invited Seminars

September 2020, Theory Seminar, University of Padova, Italy, *"Resummation techniques for precision physics at the LHC"*.

May 2020, Theory Seminar, University of Pisa, Italy, *"Sudakov resummation for WIMP dark matter annihilation"*.

October 2019, Heavy-Quark Hadroproduction from Collider to Astroparticle Physics workshop, MITP Mainz, Germany; *"Resummation techniques for heavy-quark production and Dark Matter annihilation"*.

October 2018, Milan Joint Phenomenology Seminar, University of Milano-Bicocca, Milano, Italy, *"Sudakov resummation for WIMP dark matter annihilation processes"*.

July 2018, QFET Seminar, Universität Siegen, Siegen, Germany, *"Sudakov resummation for WIMP dark matter annihilation processes"*.

May 27 - Jun 1, 2018, Heavy Quarks and Leptons 2018, Yamagata, Japan; *"Review talk on $t\bar{t} + V$ processes at the LHC"*.

February 19-23, 2018, The evaluation of the leading hadronic contribution to the muon anomalous magnetic moment, MITP Mainz, Germany; *"Expansion by region analysis for μe scattering"*.

December 2017, HU-DESY Zeuthen Seminar, Humboldt-Universität, Berlin, Germany, *"Associated production of a top-antitop pair with a heavy boson"*.

September 24-29, 2017, RADCOR 2017, St. Gilgen, Austria; *"Associated production of a top-antitop pair with a heavy boson at NLO+NNLL accuracy"*.

September 4-5, 2017, μe scattering Workshop, Padova, Italy; *"Expansion by region analysis for μe scattering"*.

August 27-September 1, 2017, QCD@LHC, Debrecen, Hungary; *"Associated production of a top-antitop pair with a heavy boson at NLO+NNLL accuracy"*.

July 27, 2017, Research area D day, PRISMA Cluster, Munich, Germany; *"Associated production of a top-antitop pair with a heavy boson at NLO+NNLL accuracy"*.

- September 13-16, 2016, Regularization scheme workshop, Zürich, Switzerland; *"SCET approach to regularization-scheme dependence of QCD amplitudes"*.
- May 3-6, 2016, SM@LHC 2016, Pittsburgh, USA; *"Associated production of a top pair and a SM boson beyond NLO"*.
- March 21-24, 2016, SCET Workshop 2016, DESY Hamburg, Germany; *"Associated production of a top pair and a Higgs boson beyond NLO"*.
- November 2014, Particle Physics Seminar, ETH/University of Zürich, Zürich, Switzerland, *"RG-improved predictions for the production of heavy particles at the LHC"*.
- June 18-20, 2014, LoopFest XIII, New York, USA; *"RG-improved fully differential predictions for top-pair production at hadron colliders"*.
- October 2013, New York City College of Technology, CUNY, New York, USA, *"Soft-gluon resummation for the production of supersymmetric particles at the LHC"*.
- May 2013, LTP Seminar, Paul Scherrer Institut, Switzerland; *"Stop-pair production"*.
- March 14-16, 2013, SCET 2013, Durham, USA; *"Approximate NNLO predictions for the stop-pair production cross section at the LHC"*.
- January 2013, Particle Theory Seminar, Paul Scherrer Institut, Switzerland, *"Soft-gluon resummation for the production of supersymmetric particles"*.
- July 21-27, 2011, EPS-HEP 2011, Grenoble, Rhône-Alpes, France; *"Soft-gluon resummation for slepton-pair production"*.

Attended Workshops

- February 4-8, 2019, Theory for muon-electron scattering at 10ppm, Zürich, Switzerland.
- November 5-7, 2018, Next-to-leading power corrections workshop, Amsterdam, Netherlands.
- July 24 - August 5, 2017, Automated, Resummed and Effective: Precision Computations for the LHC and Beyond, München, Germany.
- January 24-29, 2016, Next-to-leading power corrections workshop, Higgs center for theoretical physics, Edinburgh, Scotland.
- September 26-28, 2014, Topical workshop on top quark differential distributions, Cannes, France.
- March 26-28, 2014, SCET 2014, Munich, Germany.

Attended Schools

PSI Summer School, More than Higgs - Effective Theories for Particle Physics, Lyceum Alpinum, Zuoz, Switzerland, August 17-23, 2014.

Summer School on Symmetries, Fundamental Interactions and Cosmology 2011, Island "Frauenchiemsee", Bavaria, Germany, September 11-16, 2011.

Annual Retreat of the Graduate School Symmetry Breaking in Fundamental Interactions and the Research Center Elementary Forces and Mathematical Foundations, Bingen, Germany, September 27-29, 2010.

Students Supervision

2013 - 2020: Joint supervision of four Ph.D. students: Andrea Visconti (PSI, graduated in 2016), Caspar Hasner (TUM), Sebastian Jaskiewicz (TUM) and Kai Urban (TUM).

2016 Summer term: complete supervision of a bachelor thesis at TU Munich.

Teaching Experience

2017 Winter term, Technical University of Munich, exercises classes of "*Quantum Field Theory*".

2016 Winter term, Technical University of Munich, exercises classes of "*Classical Electrodynamics*".

2015 Winter term, Technical University of Munich, exercises classes of "*Quantum Mechanics 2*".

2012 Summer term, Johannes Gutenberg-University Mainz, exercises classes of "*Supersymmetry*".

2011 Winter term, Johannes Gutenberg-University Mainz, exercises classes of "*Symmetries in Physics*".

2011 Summer term, Johannes Gutenberg-University Mainz, exercises classes of "*Quantum Field Theory II*".

Professional Activities

Member of the collaboration "GENEVA" Monte Carlo.

Participation to the "LHC Higgs Cross Section Working Group".

Referee for European Physical Journal C and Physical Review D.

Organization of the “Milan joint phenomenology seminar”.

Organization of PSI/LTP Colloquia at the Paul Scherrer Institute.

Organization of the PSI Summer School, August 17-23, 2014.

Languages

Fluent in English and Italian, working knowledge of German.

Computing Skills

Excellent knowledge: Mathematica, FORM, Fortran, Linux, MacOS X, ~~TeX~~

Good knowledge: C++, git

References

Professor Dr. M. Neubert,
PRISMA Cluster of Excellence & Mainz Institute for Theoretical Physics,
Johannes Gutenberg-Universität, Mainz, Germany.
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Professor Dr. S. Alioli,
University of Milano-Bicocca, Milan, Italy.
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Professor Dr. A. Ferroglia,
New York City College of Technology, CUNY, New York, USA.
E-mail: AFerroglia@citytech.cuny.edu

Professor Dr. A. Signer,
Paul Scherrer Institut, Villigen PSI, Switzerland,
Physik-Institut, Universität Zürich, Zürich, Switzerland.
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Professor Dr. B. D. Pecjak,
Institute for Particle Physics Phenomenology,
University of Durham, Durham, United Kingdom.
E-mail: ben.pecjak@durham.ac.uk

Publications

1. M. Beneke, A. Broggio, S. Jaskiewicz, L. Vernazza,
Threshold factorization of the Drell-Yan process at next-to-leading power,
JHEP 20 (2020) 078, [arXiv:1912.01585].

2. S. Alioli, A. Broggio, S. Kallweit, M.A. Lim, L. Rottoli,
Higgsstrahlung at NNLL'+NNLO Matched to Parton Showers in GENEVA,
Phys. Rev. D 100, 096016, [arXiv:1909.02026].
3. A. Broggio, A. Ferroglia, R. Frederix, D. Pagani, B. D. Pecjak, I. Tsirikos,
Top-quark pair hadroproduction in association with a heavy boson at NLO+NNLL including EW corrections, JHEP 1908 (2019) 039, [arXiv:1907.04343].
4. M. Beneke, A. Broggio, C. Hasner, K. Urban, M. Vollmann,
Resummed photon spectrum from dark matter annihilation for intermediate and narrow energy resolution, JHEP 1908 (2019) 103, [arXiv:1903.08702].
5. M. Beneke, A. Broggio, M. Garny, S. Jaskiewicz, R. Szafron, L. Vernazza, J. Wang,
Leading-logarithmic threshold resummation of the Drell-Yan process at next-to-leading power, JHEP 1903 (2019) 043, [arXiv:1809.10631].
6. R. Bonciani, A. Broggio, L. Cieri, A. Ferroglia,
Master Integrals for double real radiation emission in heavy-to-light quark decay, Eur.Phys.J. C 78 8 (2018) 674, [arXiv:1807.01681].
7. M. Beneke, A. Broggio, C. Hasner, M. Vollmann,
Energetic γ -rays from TeV scale dark matter annihilation resummed, Phys.Lett. B 786 (2018) 347-354, [arXiv:1805.07367].
8. A. Broggio, A. Ferroglia, M. C. N. Fiolhais, A. Onofre,
Pseudoscalar couplings in $t\bar{t}H$ production at NLO+NLL accuracy, Phys. Rev. D 96, 073005, [arXiv:1707.01803].
9. C. Gnendiger et al.,
To d , or not to d : recent developments and comparisons of regularization schemes, Eur.Phys.J. C 77 (2017) no. 7, 471, [arXiv:1705.01827].
10. A. Broggio, A. Ferroglia, G. Ossola, B. D. Pecjak, R. D. Sameshima,
Associated production of a top pair and a Z boson at the LHC to NNLL accuracy, JHEP 1704 (2017) 105, [arXiv:1702.00800].
11. A. Broggio, A. Ferroglia, B. D. Pecjak, L. Yang,
NNLL resummation for the associated production of a top pair and a Higgs boson at the LHC, JHEP 1702 (2017) 126, [arXiv:1611.00049].
12. A. Broggio, A. Ferroglia, G. Ossola, B. D. Pecjak,
Associated production of a top pair and a W boson at next-to-next-to-leading logarithmic accuracy, JHEP 1609 (2016) 089, [arXiv:1607.05303].
13. A. Broggio, A. Ferroglia, B. D. Pecjak, A. Signer, L. Yang,
Associated production of a top pair and a Higgs boson beyond NLO, JHEP 1603 (2016) 124, [arXiv:1510.01914].

14. A. Broggio, C. Gnendiger, A. Signer, D. Stöckinger, A. Visconti,
SCET approach to regularization-scheme dependence of QCD amplitudes,
JHEP 1601 (2016) 078, [arXiv:1506.05301].
15. A. Broggio, C. Gnendiger, A. Signer, D. Stöckinger, A. Visconti,
*Computation $H \rightarrow gg$ in DRED and FDH: renormalization, operator mixing,
and explicit two-loop results*, Eur.Phys.J. C75 (2015) no. 9, 418, [arXiv:1503.09103].
16. T. Becher, A. Broggio, A. Ferroglia,
Introduction to Soft-Collinear Effective Theory,
Lecture Notes in Physics vol. 896 (2015), Springer, [arXiv:1410.1892].
17. A. Broggio, A. Ferroglia, B.D. Pecjak, Z. Zhang,
NNLO hard functions in massless QCD,
JHEP 1412 (2014) 005, [arXiv:1409.5294].
18. A. Broggio, E.J. Chun, M. Passera, K.M. Patel, S.K. Vempati,
Limiting two-Higgs-doublet models,
JHEP 1411 (2014) 058, [arXiv:1409.3199].
19. A. Broggio, A.S. Papanastasiou, A. Signer,
*Renormalization-group improved fully differential cross sections for top pair
production*, JHEP 1410 (2014) 98, [arXiv:1407.2532].
20. A. Broggio, A. Ferroglia, M. Neubert, L. Vernazza, L. Yang,
NNLL Momentum-Space Resummation for Stop-Pair Production at the LHC,
JHEP 1403 (2014) 066, [arXiv:1312.4540].
21. A. Broggio, A. Ferroglia, M. Neubert, L. Vernazza, L. Yang,
*Approximate NNLO Predictions for the Stop-Pair Production Cross Section
at the LHC*, JHEP 1307 (2013) 042, [arXiv:1304.2411].
22. A. Broggio, M. Neubert, L. Vernazza,
Soft-gluon resummation for slepton-pair production at hadron colliders,
JHEP 1205 (2012) 151, [arXiv:1111.6624].

September 10, 2020

Alessandro Broggio

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	BROGGIO
NOME	ALESSANDRO
DATA DI NASCITA	[29, 08, 1984]

Data 10/09/2020

Luogo Monza