



Chiara Signorile-Signorile

Curriculum Vitae, 19/07/2024

Personal information

Date of birth 7th February 1992
Place of birth Bruxelles, Belgium
Citizenship Italian

Research experience

2023–today **PostDoc Researcher**, *Max Planck Institute of Physics*, Munich, Germany
PI Prof. Giulia Zanderighi
2020–2023 **PostDoc Researcher**, *Karlsruhe Institute of Technology*, Karlsruhe, Germany
PI Prof. Kirill Melnikov

Students supervision experience

2021–today **PhD co-supervisor**, *PhD student: Davide Maria Tagliabue*, University of Milan
Thesis title “Generalisation of the nested soft-collinear subtraction scheme to N -jet processes”

Teaching experience

2023 **Teaching assistant**, *Theoretische Teilchenphysik I*, Master's Degree in Physics, KIT
Lecturer: Prof. Kirill Melnikov
2022 **Teaching assistant**, *Klassische Theoretische Physik III*, Bachelor's Degree in Physics, KIT
Lecturer: Prof. Kirill Melnikov
2021 **Teaching assistant**, *Klassische Theoretische Physik II*, Bachelor's Degree in Physics, KIT
Lecturer: Prof. Kirill Melnikov
2020 **Teaching assistant**, *Mathematical Methods of Theoretical Physics*, Master's Degree in Physics, KIT
Lecturer: Prof. Kirill Melnikov
2018–2019 **Teaching assistant**, *Physics*, Bachelor's Degree in Chemistry, University of Torino
Lecturer: Prof. Simonetta Marcello, Prof. Mariaelena Boglione

- 2018 **Teaching assistant**, *Electricity and Magnetism*, Bachelor's Degree in Physics, University of Torino
Lecturer: Prof. Fabrizio Bianchi
- 2016–2018 **Laboratory tutor**, *Matter Physics Laboratory*, Bachelor's Degree in Physics, University of Torino
Lecturer: Prof. Ettore Vittore, Prof. Paolo Olivero

Visiting experiences

- May 2022 **University of Oxford**, United Kingdom.

Education

- 2017–2020 **Ph.D. in Physics and Astrophysics**, *Università degli Studi di Torino*, Torino, Italy
Grade *with honour*
Supervisor Prof. Lorenzo Magnea
Thesis title *"Local analytic subtraction of infrared singularities for QCD processes beyond NLO"*
- 2014–2017 **Master of Science in Physics**, *Università degli Studi di Torino*, Torino, Italy
Grade 110/110 *magna cum laude*
Thesis advisor Prof. Lorenzo Magnea
Thesis title *"Next-to-leading-power threshold corrections in hadronic cross sections"*
- 2011–2014 **Bachelor of Science in Physics**, *Università degli Studi di Torino*, Torino, Italy
Grade 110/110 *cum laude*
Thesis advisor Prof. Mariaelena Boglione
Thesis title *"Quantum phenomena in photosynthetic processes"*

Attended conferences and workshops

- 2024 **Amplitudes 2024**, *Princeton*, USA
- 2024 **Ringberg 2024: 2nd Workshop on Tools for High Precision LHC Simulations**, *Ringberg*, Germany
- 2024 **22nd International Workshop on Advanced Computing Analysis Techniques in Physics Research (ACAT2024)**, *Stony Brook*, USA
- 2023 **Milan Christmas Meeting 2023**, *Milan*, Italy
- 2023 **EPS-HEP 2023**, *Hamburg*, Germany
- 2023 **RADCOR 2023**, *Crieff*, England
- 2023 **57th Rencontres de Moriond 2023**, *La Thuile*, Italy
- 2023 **Annual Meeting 2023 of the CRC TRR 257**, *Aachen*, Germany
- 2022 **Milan Christmas Meeting 2022**, *Milan*, Italy
- 2022 **QCD@LHC**, *IJCLab Orsay*, France
- 2022 **Precision calculations for Drell-Yan processes**, *Milan*, Italy
- 2022 **LHC Top Working group**, *online conference*

- 2022 **LFC22**, *Trento, Italy*
- 2022 **ICHEP2022**, *Bologna, Italy*
- 2022 **Young Scientist Meeting of the CRC TRR 257**, *Karlsruhe, Germany*
- 2022 **Loops and Legs 2022**, *Ettal, Germany*
- 2021 **Amplitudes 2021**, *online conference*
- 2021 **Cortona Young**, *online conference*
- 2021 **RadCor-LoopFest 2021**, *online conference*
- 2020 **Cortona Young**, *online conference*
- 2020 **Amplitudes 2020**, *online conference*
- 2020 **Workshop on Precision QCD at LHC**, *Hyderabad, India*
- 2019 **Particleface WG1 Meeting-WorkStop/ThinkStart 3.0: paving the way to alternative NNLO strategie**, *Florence, Italy*
- 2019 **Amplitudes 2019**, *Dublin, Ireland*
- 2019 **10th Young Researcher Meeting**, *Rome, Italy*
- 2019 **IRN Terascale**, *Annecy, France*
- 2019 **XXVII International Workshop on Deep Inelastic Scattering and Related Subjects**, *Torino, Italy*
- 2018 **Workshop on Next-to-leading Power Corrections in Particle Physics**, *Amsterdam, Netherlands*
- 2018 **Workshop on High Precision for Hard Processes at the LHC**, *Freiburg, Germany*
- 2018 **104th SIF National Congress**, *Cosenza, Italy*

[Attended courses and schools](#)

- 2021 **Public Speaking and Presentation Skills Training including Video Analysis**, *Karlsruhe*
- 2020 **2nd SAGEX School**, *Humboldt University, Berlin*
- 2018 **GGI Lectures on the Theory of Fundamental Interactions**, *Galileo Galilei Institute of Theoretical Physics, Firenze*
- 2017-2019 **Torino Graduate School**, *Università degli Studi di Torino*
 - *Computational, simulation and machine methods in high energy physics and beyond: automated computational tools*, Prof. F. Maltoni, Dr. M. Zaro, Dr. O. Mattelaer
 - *Advanced Perturbative QCD for Collider Physics*, Prof. E. Laenen
 - *Particle Dark Matter*, Prof. N. Fornengo, Dr. C. Giunti, Dr. M. Taoso
 - *Introducing Susy*, Prof. I. Pesando
 - *Introduction to lattice field theory*, Prof. M. Panero
 - *Introduction to the Physics of the Quark-Gluon Plasma*, Dr. M. Nardi and Dr. A. Beraudo
 - *Introduction to Flavour Physics*, Prof. E. Lunghi
 - *Large-N limit*, Prof. M. Panero
 - *Standard Model Effective Field Theory and its applications in Flavour*, Prof. M. Jung

List of publications

- 2024 “*Strongly-ordered infrared counterterms from factorisation*”, L. Magnea, C. Milloy, C. Signorile-Signorile, P. Torrielli [JHEP 06 (2024) 021, arXiv:2403.11975 [hep-ph]].
- 2023 “*A fresh look at the nested soft-collinear subtraction scheme: NNLO QCD corrections to N -gluon final state in $q\bar{q}$ annihilation*”, F. Devoto, K. Melnikov, R. Röntsch, C. Signorile-Signorile, D. M. Tagliabue [JHEP 02 (2024) 016, arXiv:2310.17598 [hep-ph]].
- 2022 “*NNLO subtraction for any massless final states: a complete analytic expression*”, G. Bertolotti, L. Magnea, G. Pelliccioli, A. Ratti, C. Signorile-Signorile, P. Torrielli, S. Uccirati [JHEP07(2023)140, arXiv:2212.11190 [hep-ph]].
- 2022 “*Non-factorisable contribution to t -channel single-top production*”, C. Brønnum-Hansen, K. Melnikov, J. Quarroz, C. Signorile-Signorile, C-Y. Wang [JHEP 06(2022)061, arXiv:2204.05770 [hep-ph]].
- 2022 “*Mixed QCD-electroweak corrections to dilepton production at the LHC in the high invariant mass region*”, F. Buccioni, F. Caola, H. A. Chawdhry, F. Devoto, M. Heller, A. von Manteuffel, K. Melnikov, R. Röntsch, C. Signorile-Signorile [JHEP 06 (2022) 022, arXiv:2203.11237 [hep-ph]].
- 2021 “*The infrared structure of perturbative gauge theories*”, N. Agarwal, L. Magnea, C. Signorile-Signorile and A. Tripathi [Phys. Rept. 994 (2023) 1-120, arXiv:2112.07099 [hep-ph]].
- 2021 “*May the four be with you: Novel IR-subtraction methods to tackle NNLO calculations*”, W.J. Torres Bobadilla, G.F.R. Sborlini, P. Banerjee, S. Catani, A.L. Cherchiglia, L. Cieri, P.K. Dhani, F. Driencourt-Mangin, T. Engel, G. Ferrera, C. Gnendiger, R.J. Hernandez-Pinto, B. Hiller, G. Pelliccioli, J. Pires, R. Pittau, M. Rocco, G. Rodrigo, M. Sampaio, A. Signer, C. Signorile-Signorile, D. Stockinger, F. Tramontano, Y. Ulrich. [Eur. Phys. J. C 81 (2021) 3,250, arXiv:2012.02567 [hep-ph]].
- 2020 “*Analytic integration of soft and collinear radiation in factorised QCD cross sections at NNLO*”, L. Magnea, G. Pelliccioli, C. Signorile-Signorile, P. Torrielli, S. Uccirati, [JHEP02(2021)037, arXiv:2010.14493 [hep-ph]].
- 2018 “*Local Analytic Sector Subtraction at NNLO*”, L. Magnea, E. Maina, G. Pelliccioli, C. Signorile-Signorile, P. Torrielli, S. Uccirati, [JHEP1812(2018)107, arXiv:1806.09570 [hep-ph]].
- 2018 “*Factorisation and Subtraction beyond NLO*”, L. Magnea, E. Maina, G. Pelliccioli, C. Signorile-Signorile, P. Torrielli, S. Uccirati, [JHEP1812(2018)062, arXiv:1809.054444 [hep-ph]].

List of proceedings

- 2024 “*Refactorisation and Subtraction*”, L. Magnea, C. Milloy, C. Signorile-Signorile, P. Torrielli [PoS(LL2024)066, 2407.07512 [hep-ph]].
- 2023 “*Non-factorisable contributions to t -channel single top and VBF Higgs production*”, K. Asteriadis, C. Brønnum-Hansen, C. Signorile-Signorile, J. Juvin-Quarroz, C-Y. Wang [PoS(RADCOR2023)011].

- 2023 *"Towards a general nested soft-collinear subtraction method for NNLO calculations"*, C. Signorile-Signorile, D. M. Tagliabue [PoS(EPS-HEP2023)269].
- 2023 *" t -channel single-top production: the contribution of non-factorisable corrections"*, C. Brønnum-Hansen, J. Quarroz, C. Signorile-Signorile, C-Y. Wang [PoS(EPS-HEP2023)310].
- 2023 *"Advances in the nested soft-collinear subtraction scheme"*, C. Signorile-Signorile, D. M. Tagliabue [PoS(RADCOR2023)075, 2308.11982 [hep-ph]].
- 2022 *"Non-factorisable contributions to t -channel single-top production: comparing results for LHC and FCC"*, C. Brønnum-Hansen, J. Quarroz, C. Signorile-Signorile, C-Y. Wang [Frascati Phys. Ser.73 (2022).]
- 2022 *"On the impact of mixed QCD-electroweak corrections to the Drell-Yan process in the high invariant mass"*, C. Signorile-Signorile [PoS(ICHEP2022)1230.]
- 2022 *"Strongly-ordered infrared limits for subtraction counterterms from factorisation"*, L. Magnea, C. Milloy, C. Signorile-Signorile, P. Torrielli, S. Uccirati [PoS(LL2022)075, arXiv:2209.06102 [hep-ph]].
- 2022 *"Mixed QCD-Electroweak corrections to the Drell-Yan process in the high invariant mass region"*, C. Signorile-Signorile [PoS(LL2022)069.]
- 2022 *"Towards the automation of the Local Analytic Sector Subtraction"*, G. Bertolotti, L. Magnea, G. Pelliccioli, A. Ratti, C. Signorile-Signorile, P. Torrielli, S. Uccirati [PoS(LL2022)056.]
- 2022 *"Non-factorisable contribution to t -channel single-top production at the LHC and FCC"*, C. Brønnum-Hansen, J. Quarroz, C. Signorile-Signorile, C-Y. Wang [PoS(LL2022)035, arXiv:2207.10350 [hep-ph]].
- 2020 *"Factorisation and Local Subtraction of Infrared Divergences for QCD processes"*, C. Signorile-Signorile, [IOP Publishing1548(012039)].
- 2019 *"Local analytic sector subtraction for final state radiation at NNLO"*, L. Magnea, E. Maina, G. Pelliccioli, C. Signorile-Signorile, P. Torrielli, S. Uccirati, [PoS RADCOR(2019) 057.]
- 2018 *"Analytical tools for IR subtraction beyond NLO"*, L. Magnea, E. Maina, G. Pelliccioli, C. Signorile-Signorile, P. Torrielli, S. Uccirati, [PoS LL2018(2018)013.]

Communication Skills

Talks and posters

- March 2024 Invited talk at **Amplitudes2024**, "The dark side of precision calculations: subtractions", Princeton.
- March 2024 Summary talk of Track 3 at **ACAT2024**, "Track 3 summary", Stony Brook.
- Dec. 2023 Talk at **Milano Christmas Meeting 2023**, "Local Analytic Sector Subtraction: NNLO subtraction for any massless final state", Milan.
- Dec. 2023 **Interview talk for W1 position in Theoretical Particle Physics**, "Precision calculations in the Standard Model: from theoretical tools to LHC phenomenology", Karlsruhe.

- Nov. 2023 Blackboard talk at **Physics Department of TUM**, “The beauty of the infrared”, Munich.
- Nov. 2023 Talk at **Max Planck Institute of Physics**, “Local Analytic Sector subtraction scheme in a nutshell”, Munich.
- Oct. 2023 Invited talk at **Cambridge University**, “Infrared singularities and subtraction schemes: the Torino method at NNLO”, Cambridge.
- Aug. 2023 Talk at **EPS-HEP 2023**, “ t -channel single-top production: the contribution of non-factorisable corrections”, Hamburg.
- June 2023 Invited talk at **CERN**, “Local Analytic Sector Subtraction: status and perspectives”, CERN.
- June 2023 Invited talk at **RadCor 2023**, “Advances in the nested soft-collinear subtraction scheme”, Crieff.
- March 2023 Invited talk at **57th Rencontres de Moriond 2023**, “Mixed QCD-electroweak corrections to the Drell-Yan process in the high invariant mass region”, La Thuile.
- Nov. 2022 Invited plenary talk at **QCD@LHC**, “Advances in fixed-order computations”, IJCLab Orsay.
- Nov. 2022 Invited talk at **LHC Top Working group**, “Precise predictions for t -channel single-top production at the LHC and FCC”, online.
- Aug. 2022 Invited talk at **LFC22**, “Non-factorisable corrections to t -channel single-top production at the LHC”, Trento.
- July 2022 Talk at **ICHEP2022**, “Mixed QCD-electroweak corrections to the Drell-Yan process in the high invariant mass region”, Bologna.
- June 2022 Invited talk at **DESY-Humboldt**, “The Drell-Yan process at large dilepton invariant mass: studying the impact of mixed QCD-electroweak corrections”, online talk.
- Apr. 2022 Talk at **Loops and Legs in Quantum Field Theory**, “Mixed QCD-Electroweak corrections to the Drell-Yan process in the high invariant mass region”, Ettal.
- March 2022 Invited talk at **Universidad Complutense de Madrid**, “The Drell-Yan process in the high invariant mass region: the impact of mixed QCD-electroweak corrections”, Madrid.
- Dec. 2021 Talk at **TTP Seminars**, “QCD-EW corrections: the Drell-Yan process at high energy”, Karlsruhe.
- Nov. 2021 Invited talk at **Julius Maximilian University**, “Mixed QCD-EW corrections to Drell-Yan process”, Würzburg.
- Aug. 2021 Invited talk at **Amplitudes 2021**, “Precision calculations for collider physics: the subtraction contribution”, online conference.
- June 2021 Plenary talk at **Cortona Young Conference**, “Local Subtraction of Infrared Singularities in QCD”, online conference.
- Dec. 2020 Talk at **TTP Seminars**, “Infrared singularities and their subtraction: the Torino scheme”, online conference.
- May. 2020 Video-poster at **Cortona Young Conference**, “Dealing with Infrared: the Torino scheme”, online conference [**best poster award**].

- Jan. 2020 Talk at **Workshop on Precision QCD at LHC**, “Local analytic sector subtraction: the Torino scheme”, Hyderabad.
- Dec. 2019 Invited talk at **Nikhef**, “Factorisation tools for subtraction beyond NLO”, Amsterdam.
- Oct. 2019 Talk at **Particleface WG1 Meeting-WorkStop/ThinkStart3.0: paving the way to alternative NNLO strategies**, “Torino subtraction scheme for IR singularities at NNLO”, Florence.
- Sep. 2019 Invited talk at **University of Edinburgh**, “Infrared Factorisation and Local Subtraction for QCD processes”, Edinburgh.
- Aug. 2019 Talk at **International Conference of Physics Students**, “Quantum Chromodynamics and the Infrared Catastrophe”, Cologne.
- June 2019 Talk at **Young Researcher Meeting**, “Factorisation and Local Subtraction of Infrared Divergences for QCD processes”, Rome.
- May 2019 Talk at **IRN Terascale**, “Factorisation and Subtraction beyond NLO”, Annecy.
- March 2019 Talk at **Conferenza Italiana Studenti di Fisica**, “Cromodinamica Quantistica e Divergenze: dal Mistero Ultravioletto alla Catastrofe Infrarossa”, Milan.
- Sep. 2018 Talk at **Congresso SIF**, “Infrared Singularities and Local Subtraction beyond NLO”, Cosenza.
- Aug. 2018 Talk at **International Conference of Physics Students**, “Infrared Divergences in Perturbative QCD”, Helsinki.
- April 2018 Talk at **Conferenza Italiana Studenti di Fisica**, “Divergenze Infrarosse e Fattorizzazione”, Pisa.

Additional information

- May 2014 Talk on female scientists in physics at the event *Picture a Scientist*, Liceo Statale “Edoardo Amaldi”, Alessandria, Italy.
- 2023-2024 Organiser of the *Frontiers in precision phenomenology* workshop at CERN.
- 2023-2024 PostDoc Representative in the *MPP board*.
- 2023-2024 Convener Track T3 (Computations in Theoretical Physics: Techniques and Methods), *ACAT2024*, Stony Brook University.
- 2023-2024 Organiser of the *Phenomenology seminars* at the Max-Planck-Institute für Physik, Garching.
- 2023-2024 *Scientific Advisory Committee for the Amplitudes 2024 conference* at the Institute for Advanced Study in Princeton, New Jersey.
- 2023-2024 Postdoc Representative at the *Max-Planck-Institute für Physik Department Council*, Munich.
- 2022-2023 Organiser of the *TTP seminars* at KIT, Karlsruhe.
- 2022 Member of the Organising Committee of the *Young Scientists Meeting of the CRC TRR257*.
- 2021-2023 Young Scientists Representative in the *CRC TRR257 board*.

- 2018-2019 PhD Students Representative in the Physics Department Council, University of Torino.
- 2017-2019 Member of the Executive Committee of the *Italian Association of Physics Student*.
- 2016-2019 Scientific outreach: organisation of public events, such as laboratory experience for kids and informal scientific talks for physics students and for general public.
- 2016-2017 Member of the Organising Committee of the *International Conference of Physics Students* (ICPS2017).
- 2010-2020 Private tutor of high-school students of various age and for different subjects, ranging from mathematics, physics, law rudiments, biology and chemistry (including students with different degrees of learning difficulties, as dyslexia).

Interests

- Scientific outreach in high schools.
- Homework tutoring for elementary and middle-school students for charity organisation in Torino.
- Animals: volunteer in a recovery centre for laboratory animals.
- Sailing: member of a women's sailing team during 2010 Winter Cup in Bari.