

Davide Maria Tagliabue

Personal Information

Date of birth June 8th, 1996
Place of birth Milan, Italy
Citizenship Italian
Languages Italian (mother tongue), English (C1 level)

Education

2021-2024 **Ph.D.**, *Università degli Studi di Milano - Statale*, Milan, Italy.
Supervisor Prof. Dr. Raoul Röntsch
Co-supervisor Dr. Chiara Signorile-Signorile
Short description My Ph.D. studies focus on perturbative quantum chromodynamics (QCD), and in particular on the treatment of infrared singularities. I also have some familiarity with Standard Model Effective Field Theory and loop amplitudes.

2018-2021 **M.Sc.**, *Università degli Studi di Milano - Statale*, Milan, Italy.
Title *Threshold resummation of rapidity distributions in SCET vs. direct QCD*
Advisor Prof. Dr. Stefano Forte
Co-advisor Prof. Dr. Giancarlo Ferrera
Grade 110/110 cum laude
Short description In the context of threshold resummation theory, a recent study proposed a general result reached through an effective theory approach known as SCET. The goal of my master thesis is to build a bridge between this approach and the standard formalism of QCD. I also conducted an analytical comparison with previous results known in the literature.

2015-2018 **B.Sc.**, *Università degli Studi di Milano - Statale*, Milan, Italy.
Title *Statistical mechanics of error-correcting codes: heuristic analysis of Sourlas codes with finite connectivity* (original title in Italian)
Advisor Prof. Dr. Sergio Caracciolo
Co-advisor Dr. Pietro Rotondo
Grade 110/110 cum laude
Short description In my bachelor thesis I dealt with the theory of error-correcting codes. Specifically, I studied a particular class of correcting codes, known as *Sourlas codes*, and wrote a C++ program that simulated its performance. I then proposed a comparison between the performance of the Sourlas codes and that of other correcting codes known in the literature.

Students supervision experience

01/2023 - **M.Sc. co-supervisor**, *Student: Matteo Tresoldi*, Università degli Studi di Milano - Statale, Milan.

Thesis title *QCD NNLO corrections of the process $e^+e^- \rightarrow 3 \text{ jets}$ computed through the nested soft-collinear subtraction scheme*

Teaching experience

2023/2024 **Teaching assistant**, *Quantum Field Theory 1*, Master's Degree in Physics, Università degli Studi di Milano - Statale.

Lecturers: Prof. Dr. Raoul Röntsch

2023/2024 **Teaching assistant**, *Physics and Informatics*, Bachelor's Degree in Pharmaceutical Sciences, Università degli Studi di Milano - Statale.

Lecturers: Prof. Dr. Giovanni Pietro Rosotti, Prof. Dr. Lidia Dell'Asta

2023/2024 **Teaching assistant**, *Quantum Mechanics 2*, Bachelor's Degree in Physics, Università degli Studi di Milano - Statale.

Lecturers: Prof. Dr. Giancarlo Ferrera, Prof. Dr. Marco Zaro

Other responsibilities

09/2023 - **Organizer of the HEP group seminars**, *Università degli Studi di Milano - Statale*, Milan, Italy.

10/2021 - **PhD Students Representative in the Physics Department Council**, *Università degli Studi di Milano - Statale*, Milan, Italy.

Outreach

06/2020 - **Guidance for high school students**, *Istituto Salesiano Sant'Ambrogio*, Milan, Italy.

ongoing I am involved in providing guidance to high school students for their university path, illustrating the opportunities that physics can unlock for their future.

Research Visits

22-29 Oct. **University of Oxford**, *Oxford*, UK.

2023 I was guest of Prof. Dr. Fabrizio Caola. I presented my studies to his research group and other members of the Physics Department at Oxford.

15-21 Jan. **KIT**, *Karlsruhe*, Germany.

2023 Collaboration with Prof. Dr. Kirill Melnikov and his group.

10-19 Oct. **KIT**, *Karlsruhe*, Germany.

2022 Collaboration with Prof. Dr. Kirill Melnikov and his group.

Conferences and Workshops

03/2024 **ACAT 2024**, *Stony Brook*, New York, USA.

12/2023 **Christmas Meeting 2023**, *Milan*, Italy.

09/2023 **QCD@LHC 2023**, *Durham*, UK.

08/2023 **EPS-HEP 2023**, *Hamburg*, Germany.

11/2023 **Precision calculations for Drell-Yan processes**, *Milan*, Italy.

12/2022 **Christmas Meeting 2022**, *Milan*, Italy.

12/2021 **Christmas Meeting 2021**, Milan, Italy.

Schools

28 Aug - 9 Sept 2022 **28th "Saalburg" Summer School**, Bayrischzell, Germany.

Theory lectures, tutorial and exercise sessions;

- *Spontaneous symmetry breaking and Nambu-Goldstone bosons* (Tomas Brauner),
- *Conformal field theory* (Stefan Fredenhagen),
- *Phase transitions in the early universe* (Marieke Postma),
- *String-inspired methods and the worldline formalism* (Christian Schubert),
- *Modern methods for scattering amplitudes* (Lorenzo Tancredi).

10/2021 - ongoing **Unimi Ph.D. School**, Milan, Italy.

Theory lectures, tutorials and exams;

- *Cosmology*,
- *Observations and theory of large-scale structure formation*,
- *Neutrino physics*,
- *Computational, simulation and machine learning methods in high energy physics and beyond: automated computational tools*,
- *Computational, simulation and machine learning methods in high energy physics and beyond: Monte Carlo methods*.

Seminars

- 13/03/2024 Talk at the **ACAT 2024 conference**, "A fresh look at the Nested Soft-Collinear subtraction scheme: NNLO QCD corrections to N -gluon final state $q\bar{q}$ annihilation", Stony Brook, New York (USA).
- 21/12/2023 Talk at the **Christmas Meeting 2023 workshop**, "A fresh look at the Nested Soft-Collinear subtraction scheme: NNLO QCD corrections to N -gluon final state $q\bar{q}$ annihilation", Milan, Italy.
- 27/10/2023 Invited talk at the **University of Oxford**, "A fresh look at the Nested Soft-Collinear subtraction scheme: NNLO QCD corrections to N -gluon final state $q\bar{q}$ annihilation", Oxford, UK.
- 04/09/2023 Talk at the **QCD@LHC 2023 conference**, "Generalization of the Nested Soft-Collinear subtraction method for NNLO QCD calculation", Durham, UK.
- 22/08/2023 Talk at the **EPS-HEP 2023 conference**, "Towards a general Nested Soft-Collinear subtraction method for NNLO calculations", Hamburg, Germany.
- 22/12/2021 Talk at the **Christmas Meeting 2021 workshop**, "Threshold resummation of rapidity distributions: a translation of the state of the art from SCET to d QCD", Milan, Italy.

List of publications

- 2024 **A fresh look at the nested soft-collinear subtraction scheme: NNLO QCD corrections to N -gluon final states in $q\bar{q}$ annihilation**, [JHEP 02 (2024) 016].
F. Devoto, K. Melnikov, R. Röntsch, C. Signorile-Signorile, [D.M. Tagliabue](#)

List of proceedings

- 2023 **Toward a general nested soft-collinear subtraction method for NNLO calculations**, [PoS(EPS-HEP2023)].
C. Signorile-Signorile, [D.M. Tagliabue](#)

2023 ***Advances in the nested soft-collinear subtraction scheme***, arXiv:2308.11982v1,
[PoS(RADCOR2023)075].
C. Signorile-Signorile, D.M. Tagliabue

Computer skills

Programming languages C++, Fortran, Mathematica, Form
Writing Office package, \LaTeX