Daniele Artico, Ph.D.

Doctor in theoretical physics

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Summary

I am a highly curious and motivated doctor in theoretical physics, with a research focus on perturbative aspects of Quantum Field Theory. I am working in the Quantum Field Theory and Strings group at Università degli Studi di Parma under the leadership of Prof. Dr. Carlo Meneghelli. I did my doctoral studies at Humboldt-Universität zu Berlin under the supervision of Prof. Dr. Jan Plefka and Prof. Dr. Dirk Kreimer, in the program Research and Training Group 2575 "Rethinking Quantum Field Theory" (link). My research interests are focused on the interplay between symmetries and perturbative calculations in defect Conformal Field Theory. In my career, I also contributed to studies on formal aspects of Feynman parametric integrals and numerical algorithms.

Research Interests

Defect Conformal Field Theory • Supersymmetric Wilson-line CFT • Feynman integral analytic structure

Current Position

2025 – 2027 **Postdoc position at Università degli Studi di Parma**
PRIN Project *Constraining strongly coupled quantum field theories using symmetry*.

Education

2020 – 2025 **Ph.D. in Theoretical Physics., Humboldt-Universität zu Berlin** Thesis title: *Perturbative aspects of Quantum Field Theory: selected contributions on the supersymmetric Wilson-line and the vector space of Feynman Integrals.*
Supervisors: Prof. Dr. Jan Plefka, Prof. Dr. Dirk Kreimer

2017 – 2020 **M.Sc in Physics, Università di Torino**
Grade: 110/110 *cum laude*

2014 – 2017 **B.Sc in Physics, Università di Torino**.
Grade: 110/110 *cum laude*

2014 – 2021 **Excellence Diploma, Scuola di Studi Superiori "Ferdinando Rossi" di Torino**
Grade: 70/70

Research Publications

Journal Articles

- **D. Artico**, C. Meneghelli, M. Savi, and R. Treilis, "New Exotic Operators in the Spectrum of Wilson Lines in General Representations," Jun. 2026. arXiv: 2606.07738 [hep-th].
- **D. Artico**, J. Barrat, and G. Peveri, "Perturbative bootstrap of the Wilson-line defect CFT: multipoint correlators," *JHEP*, vol. 02, p. 190, 2025. DOI: 10.1007/JHEP02(2025)190 arXiv: 2410.08271 [hep-th].
- **D. Artico**, J. Barrat, and Y. Xu, "Perturbative bootstrap of the Wilson-line defect CFT: Bulk-defect-defect correlators," *JHEP*, vol. 03, p. 191, 2025. DOI: 10.1007/JHEP03(2025)191 arXiv: 2410.08273 [hep-th].
- **D. Artico** and L. Magnea, "Integration-by-parts identities and differential equations for parametrised Feynman integrals," *JHEP*, vol. 03, p. 096, 2024. DOI: 10.1007/JHEP03(2024)096 arXiv: 2310.03939 [hep-ph].

- **D. Artico**, S. Durham, L. Horn, F. Mezzenzana, M. Morrison, and A. Norberg, "«Beyond being analysts of doom»: Scientists on the frontlines of climate action," *Frontiers in Sustainability*, vol. 4, 2023, ISSN: 2673-4524. DOI: 10.3389/frsus.2023.1155897

Conference Proceedings

- **D. Artico**, "Loop Tree Duality with generalized propagator powers: numerical UV subtraction for two-loop Feynman Integrals," vol. LL2024, 2024, p. 025. DOI: 10.22323/1.467.0025 arXiv: 2409.01313 [hep-ph].
- **D. Artico** and L. Magnea, "IBPs and differential equations in parameter space," vol. RADCOR2023, 2024, p. 058. DOI: 10.22323/1.432.0058 arXiv: 2311.02457 [hep-ph].

PhD Thesis

- **D. Artico**, "From Loop Integrals to Defect Correlators," Ph.D. dissertation, Humboldt U., Berlin, Humboldt U., Berlin (main), 2025. DOI: 10.18452/36059 arXiv: 2602.09226 [hep-th].

Teaching Experience

During my Ph.D. career, I have been consistently teaching exercise sessions for the following bachelor's and master's courses. The official student feedback reports have always been extremely positive.

Winter Semester 2024/25	**Introduction to Elementary Particle Physics** with Prof. Dr. Christophe Grojean
Summer Semester 2024	**Quantum Mechanics** with Prof. Dr. Peter Uwer
Summer Semester 2023	**Theoretical Physics V: Thermodynamics** with Prof. Dr. Peter Uwer
Winter Semester 2022/23	**Introduction to Elementary Particle Physics** with Prof. Dr. Christophe Grojean
Summer Semester 2022	**Theoretical Physics I: Mechanics and Special Relativity** with Prof. Dr. Peter Uwer

Outreach

From 2021 to 2023 I was part of an outreach project that I initiated with six other PhD students. We created a YouTube channel called Non-Standard Models (link) about theoretical physics and featuring PI's and PhD students of the program RTG 2575: Rethinking QFT. Each episode is about 10 mins long, and the explanations are accompanied by animations. The main target audience of the channel are undergraduates in physics.

Skills

Languages	Proficient in Italian (mother tongue) and English (C1 level) Good knowledge of Spanish Basic knowledge of French and German
Programming	Good knowledge of FORM and Mathematica Working knowledge of Python and C programming, with a focus on numerical integration
Misc.	LaTeX typesetting and publishing, image and video editing, group leadership - I coordinated a climate communication team of more than 20 people

Miscellaneous Experience

2025-2027	Member of *Osservatorio paritetico contro la militarizzazione dell'Università* | Università di Parma
2023-2024	Global Social Media and Communications Coordinator | Scientist Rebellion
2022-2024	Organizer of the DESY-HU Theory Seminars | HU Berlin
2022-2023	Participation in the international *Long Night of Science* outreach project
2020-2021	Organizer of the PhD Student Seminars | HU Berlin
2018-2020	Student Representative in Physics Department | Università di Torino
2017-2020	Student Representative in Commission for Didactics of School of Science | Università di Torino Competing in several mathematics and physics competitions at national and international level

References

The following senior scientists have agreed to act as referees on my behalf, and are available to provide information about myself if contacted at the e-mail addresses listed below.

- Prof. Dr. Carlo Meneghelli | carlo.meneghelli@unipr.it
- Prof. Dr. Jan Plefka | jan.plefka@hu-berlin.de
- Prof. Dr. Valentina Forini | valentina.forini@physik.hu-berlin.de
- Prof. Dr. Lorenzo Magnea | lorenzo.magnea@unito.it