Niccolò **Laurenti**

Researcher in Particle Physics · Scientific Software Developer

(+39) 3382971956 | niclaurenti@gmail.com | niclaurenti | niccolò-laurenti-35a0052a9 | 0009-0001-0718-0409

Personal Informations

Birth 1997, Rome, Italy
Citizenship Italian
Languages Italian (native language), English (fluent)

Education

Ph.D. in Physics

Milan, Italy

University of Milan — *Oct. 2021 - current*

- Field of study: Theoretical Particle Physics, Computational Physics.
- Graduating in fall 2024.

M.S. in Physics

Rome, Italy

University of Rome "La Sapienza" — *Sep. 2019 - Oct. 2021*

- Field of study: Theoretical Particle Physics.
- Grade: 110/110 (cum laude).
- Thesis: *Construction of a next-to-next-to-next-to-leading order approximation for heavy flavour production in deep inelastic scattering with quark masses*.

B.S. in Physics

Rome, Italy

University of Rome "La Sapienza" — *Sep. 2016 - Nov. 2019*

- Grade: 110/110 (cum laude).
- Thesis: *Particle identification with the time of flight method and applications to the CMS experiment*.

Skills

Programming C, C++, Python, Fortran, Bash, Git
Scientific packages GSL, Numpy, Scipy, Matplotlib, Pandas, Keras, Tensorflow, SQLite
Scientific programs Matlab, Mathematica
Writing Latex, Microsoft Office

Experience

Ph.D. Researcher

Milan, Italy

Researcher in Theoretical Particle Physics at the University of Milan and INFN — *Oct. 2021 - current*

- Worked under the supervision of Prof. Stefano Forte in the NNPDF collaboration as a developer of the NNPDF code.
- Developed techniques and computational programs applied to particle physics, aiming to utilize artificial intelligence for investigating the internal structure of the proton with high precision using experimental data collected at CERN.
- Published research results in various papers and presented them in conferences.

Undergraduate Researcher

Rome, Italy

Researcher in Theoretical Particle Physics at the University of Rome "La Sapienza" — *Mar. 2021 - Oct. 2021*

- Worked under the supervision of Dr. Marco Bonvini and another Master student to develop theoretical methods and computational programs for producing high-precision theoretical predictions in particle physics.
- Focused on describing experimental data collected at the particle accelerator HERA.
- Developed two programs, `Adani` and `DIS_TP`, resulting in a published paper and presentations at conferences.

Publications

2024 **The Path to N^{3}LO Parton Distributions**, The NNPDF Collaboration, R. D. Ball et al., *Eur. Phys. J. C*

2024 **Determinantion of the theory uncertainties from missing higher orders on NNLO parton distributions with percent accuracy**, The NNPDF Collaboration, R. D. Ball et al., *Eur. Phys. J. C*

2024 **Photons in the proton: implications for the LHC**, The NNPDF Collaboration, R. D. Ball et al., *Eur. Phys. J. C*

2023 **Inclusion of QED corrections in PDFs fits**, N. Laurenti, *Nuclear and Particle Physics Proceedings*

2022 **Approximating missing higher-orders in transverse momentum distributions using resummations**, N. Laurenti, T. R. Rabemananjara, and R. Stegeman, *Contribution to DIS2022*

Talks

2023	**Evidence of intrinsic charm quarks in the proton**, Mainz, Germany	*MENU23*
2023	**Including QED corrections in PDF fits: The NNPDF4.0QED PDF set**, Durham, UK	*QCD@LHC23*
2023	**Inclusion of QED corrections in PDFs: The NNPDF4.0QED PDF set**, Montpellier, France	*QCD23*
2021	**Construction of a third order approximation for heavy flavour production in deep inelastic scattering**, Milan, Italy	*MCM 2021*

Teaching activity

2024	**TA for the course of Quantum Physics I**, Introduction to Quantum Mechanics	*University of Milan*
2024	**TA for the course of Physics**, Basics of Classical Mechanics and Thermodynamics	*University of Milan*
2024	**TA for the course of Quantum Physics II**, Advanced course on Quantum Mechanics	*University of Milan*
2023	**TA for the course of Theoretical Physics I**, Introduction to Quantum Field Theory	*University of Milan*
2023	**TA for the course of Physics**, Basics of Classical Mechanics and Thermodynamics	*University of Milan*
2023	**TA for the course of Quantum Physics II**, Advanced course on Quantum Mechanics	*University of Milan*
2023	**Exercise classes for the course of Quantum Physics II**, Advanced course on Quantum Mechanics	*University of Milan*
2022	**TA for the course of Quantum Physics I**, Introduction to Quantum Mechanics	*University of Milan*