Niccolò **Laurenti**

PH.D. RESEARCHER IN PARTICLE PHYSICS · SCIENTIFIC SOFTWARE DEVELOPER

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Summary

Ph.D. researcher at the University of Milan specialised in applying artificial intelligence to particle physics. I have experience working with different programming languages, in particular with C++ and Python. I have hands-on experience with various machine learning tools like Keras and Tensorflow. Passionate about the field of computer science and open to opportunities in industry to futher improve my skills.

Personal Informations

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

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, that 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.

Skills

Programming	C, C++, Python, Fortran, Bash, Git, Docker
Operating systems	Linux, MacOS, Windows
Scientific packages	GSL, Numpy, Scipy, Matplotlib, Pandas, Keras, Tensorflow, SQLite
Scientific programs	Matlab, Mathematica
Writing	Latex, Markdown, Microsoft Office

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.*

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, *Nucl. Part. Phys. Proc.*	
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*