

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 further 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 with 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	LO, NLO, and NNLO Parton Distributions for LHC Event Generators , J. Cruz-Martinez, S. Forte, N. Laurenti, T. R. Rabemananjara, J. Rojo, <i>JHEP</i>	
2024	NNPDF4.0 at N³LO PDFs with QED corrections , A. Barontini, N. Laurenti, J. Rojo, <i>Contribution to DIS2024</i>	
2024	The Path to N³LO Parton Distributions , The NNPDF Collaboration, R. D. Ball et al., <i>Eur. Phys. J. C</i>	
2024	Determination of the theory uncertainties from missing higher orders on NNLO parton distributions with percent accuracy , The NNPDF Collaboration, R. D. Ball et al., <i>Eur. Phys. J. C</i>	
2024	Photons in the proton: implications for the LHC , The NNPDF Collaboration, R. D. Ball et al., <i>Eur. Phys. J. C</i>	
2023	Inclusion of QED corrections in PDFs fits , N. Laurenti, <i>Nucl. Part. Phys. Proc.</i>	
2022	Approximating missing higher-orders in transverse momentum distributions using resummations , N. Laurenti, T. R. Rabemananjara, and R. Stegeman, <i>Contribution to DIS2022</i>	

Talks

2024	The inclusion of QED corrections in the NNPDF4.0 fitting framework , Prague, Czech Republic	ICHEP2024
2024	The inclusion of QED corrections in the NNPDF4.0 fitting framework , National Laboratory of Frascati, Italy	IRN Terascale@LNF
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