SEPTEMBER 18, 2024

M.S. in Physics

UNIVERSITY OF ROME "LA SAPIENZA"

• 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. Inspire

NICCOLÒ LAURENTI · CURRICULUM VITAE

Programming C, C++, Python, Fortran, Bash, Git, Github, CMake, VS Code, Emacs, Vim, Nano, Docker

Operating systems Linux, MacOS, Windows C++ libraries STL, GSL, Pybind11, Boost Python packages Numpy, Scipy, Matplotlib, Multiprocessing, Pandas, Keras, Tensorflow, SOLite Scientific programs Matlab, Mathematica Writing Latex, Markdown, Microsoft Office

Skills _

• Worked under the supervision of Prof. Stefano Forte in the **NNPDF** collaboration as a developer of the **NNPDF** code **Q**. analysing experimental data collected at CERN.

Personal Informations

Languages Italian (native language), English (fluent)

Birth 1997, Rome, Italy

Experience _____

Developed techniques and computational programs that utilize artificial intelligence for investigating the internal structure of the proton

iccolò Lauren

📱 (+39) 3382971956 | 🗷 niclaurenti@gmail.com | 🆀 https://niclaurenti.github.io | 🖸 niclaurenti | 🛅 niccolo-laurenti | 🕼 0009-0001-0718-0409

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.

- Developed programs for solving the so-called DGLAP equations, a linear system of integro-differential equations, with numerical techniques.
- Published research results in various papers and presented them in conferences.
- Technologies: 🕏 Python, 🏟 Numpy, 🎯 Scipy, 🛞 Matplotlib, 🗹 Keras, 🎓 Tensorflow, 🗳 Fortran, 🌶 Bash, 🔶 Git, 😱 Github, 🌞 Mathematica, 🛆 Linux,

Summary _

Citizenship Italian

Ph.D. Researcher

- RESEARCHER IN THEORETICAL PARTICLE PHYSICS AT THE UNIVERSITY OF ROME "LA SAPIENZA" Mar. 2021 - Oct. 2021 • Worked under the supervision of Dr. Marco Bonvini to develop theoretical methods and computational programs for producing high-precision
- **Undergraduate Researcher**

▲ MacOS, ◄ VS Code, ☞ Vim, IATEX Latex, ♥ SQLite

RESEARCHER IN THEORETICAL PARTICLE PHYSICS AT THE UNIVERSITY OF MILAN AND INFN

Rome, Italy

- theoretical predictions in particle physics.
- Focused on describing experimental data of electron-proton collisions, collected at the particle accelerators HERA and SLAC.
- Wrote from zero the C++ library Adani Q, resulting in a published paper and presentations at conferences.
- Technologies: 🞯 C++, 💱 GSL, 🌞 Mathematica, 🔬 Linux, 伊 Bash, 🛦 CMake, 🧐 Emacs, 🖾 Latex

Education

Ph.D. in Physics

UNIVERSITY OF MILAN

- Field of study: Theoretical Particle Physics, Computational Physics. • Thesis: Advancements in PDFs determination: Incorporation of QED effects and new theoretical improvements in a modern deep learning fitting framework.

Milan, Italy

Oct. 2021 - Nov. 2024

Rome, Italy

Sep. 2019 - Oct. 2021

Milan, Italy

Oct. 2021 - Sept. 2024

B.S. in Physics

UNIVERSITY OF ROME "LA SAPIENZA"

• 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,	Inspire
	N. Laurenti, T. R. Rabemananjara, J. Rojo, <i>JHEP</i>	
2024	NNPDF4.0 aN ³ LO PDFs with QED corrections, A. Barontini, N. Laurenti, J. Rojo, Contribution to DIS2024	Inspire
2024	The Path to N 3 LO Parton Distributions $, $ The NNPDF Collaboration, R. D. Ball et al., Eur. Phys. J. C	Inspire
2024	Determination of the theory uncertainties from missing higher orders on NNLO parton distributions	Inspire
	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., Eur. Phys. J. C	Inspire
2023	Inclusion of QED corrections in PDFs fits, N. Laurenti, Nucl. Part. Phys. Proc.	Inspire
2022	Approximating missing higher-orders in transverse momentum distributions using resummations,	Inspire
	N. Laurenti, T. R. Rabemananjara, and R. Stegeman, Contribution to DIS2022	

Talks _____

2024	The inclusion of QED corrections in the NNPDF4.0 fitting framework , <code>Prague</code> , <code>Czech</code> <code>Republic</code>	ICHEP2024
2024	The inclusion of QED corrections in the NNPDF4.0 fitting framework, National Laboratory of Frascati,	IRN Terascale@LNF
	Italy	
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 <code>NNPDF4.0QED</code> <code>PDF</code> set $, Montpellier, France$	QCD23
2021	Construction of a third order approximation for heavy flavour production in deep inelastic scattering,	MCM 2021
	Milan, Italy	

Teaching activity _____

2024	Co-supervisor of a Bachelor thesis , Thesis title: On the fitting scale dependence of the Parton Distributions	University of Milan
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