SIMONE ROMITI

Born: 25 Aug. 1994 | simone.romiti.1994@gmail.com | Webpage | Github | LinkedIn | Orcid

«««< HEAD Theoretical physicist specialized in lattice QCD and high-performance computing. Expert in Monte Carlo simulations, Machine Learning (PINNs, VAEs, diffusion models), and code optimization. Track record of developing innovative algorithms that achieved substantial performance improvements, and leading collaborative research projects across international institutions. ======= Theoretical physicist specialized in lattice QCD and high-performance computing, expert in Monte Carlo simulations, Machine Learning (PINNs, VAEs, diffusion models), and code optimization. Track record of developing innovative algorithms that achieved substantial performance improvements, and leading collaborative research projects across international institutions. Passionate about expanding expertise and tackling complex computational challenges in collaborative, interdisciplinary environments. »»»»> a74fe5fc7c4c5eee067f6a41383ed5cf6e46d3e3

EDUCATION

Roma Tre University — Rome, Italy
PhD in Theoretical Physics (Dissertation 22~~=April=~~2022)

«««< HEAD — 2018 – 2021

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- **1st in ranking** for public admission exam to PhD program
- Affiliation with **INFN (Istituto Nazionale di Fisica Nucleare)**
- **Tutorial sessions and teaching assistant** for undergraduate courses

Roma Tre University — Rome, Italy
M.S. in Theoretical Physics of Elementary ~~=Particle~~s

«««< HEAD — 2016 – 2018

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- **Final grade**: 110/110 *cum laude*, **GPA: 29.85/30**

Roma Tre University — Rome, Italy
B.S. in Physics =======

«««< HEAD — 2013 – 2016

Oct. 2013 >>>> a74fe5fc7c4c5eee067f6a41383ed5cf6e46d3e3

- **Final grade**: 110/110 *cum laude*, **GPA: 28.84 / 30**
- **Merit Scholarship** awarded for top high school marks and academic excellence.

WORK EXPERIENCE

University of Bern — Apr 2024–Present
Postdoctoral Researcher — Bern, Switzerland

- **Innovative method** using **Physics-Informed Neural Networks (PINNs)** → exponential to polynomial scaling of memory
- **Reference scientist** for Hadronic Vacuum Polarization (HVP) analysis of Bern group → sub-permille precision achievement
- **Pole contribution** to Hadronic Light-by-Light contribution to $(g-2)_\mu$ → achieved N^6 to $N\log(N)$ scaling improvement
- **Main developer** of open-source libraries → my code for Monte Carlo simulations led to scientific publications

- **Supervision of 3 PhD students**

University of Bonn Nov 2021–Mar 2024
Postdoctoral Researcher Bonn, Germany

- Generated ETMC ensembles with O(a)-improved configurations, enabling more accurate lattice QCD calculations for the European Twisted Mass Collaboration
- GPU code optimization → achieved ~ 1.5 improvement by auto-tuning of Multigrid parameters
- **Novel method for SU(2) Hamiltonians** → achieved machine-precision exactness for canonical commutation relations
- **Monte Carlo and Quantum Computing** → obtained Hamiltonian limit and calculations of glueballs spectrum
- **Supervision of 1 Master's and 2 PhD students** of their thesis project, **tutorial sessions of undergraduate courses**

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SKILLS

Programming Languages - C, C++, Python, Bash, R
High-Performance Computing - openMP, MPI, CUDA, GNU/Linux, EasyBuild, SLURM
Frameworks and Libraries - Jupyter, NumPy, SymPy, SciPy, Pandas, Matplotlib, Plotly, PyTorch, Streamlit
Computational Methods - Monte Carlo, Bayesian statistics | Machine Learning (PyTorch): PINNs, VAEs, diffusion models
Tools & DevOps - LaTeX, Markdown, RMarkdown, Quarto, Docker, Git, GitHub Actions
Languages - Italian (native), English (proficient), German (A2.1)

LEADERSHIP & RECOGNITION

Invited speaker at Scale Setting workshop — ECT* | March 2025
Main organizer of Hamiltonian LGTs workshop — ECT* | September 2025
Principal Investigator for 240k GPU node-hours allocation — CSCS (ALPS) | October 2025
«««< HEAD **Developer** of `streamlit` app for patients a74fe5fc7c4c5eee067f6a41383ed5cf6e46d3e3
management ======= **Developer** of Patient and Medical
History Software »»»> — Nutritional Biologist Practice | 2026
Invited speaker at CERN's Lattice seminar — CERN | 2026
UniBe visiting grant Open round 2026/1 — TU Wien | 2026