

EDOARDO PEDICILLO

PhD Candidate in Physics



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WHO AM I?

I am a passionate physicist and PhD candidate at the University of Milan, specializing in quantum computing and hardware calibration. My research focuses on developing open-source and community driven software aiming a full stack approach on quantum computing and on exploring possible new applications. Beyond my academic pursuits, I have a keen interest in optimizing my computer and coding experience, I enjoy experimenting with tools like Neovim and tmux to create efficient and personalized workflows.

EXPERIENCE

2023 – present **Associate Researcher** **Technology Innovation Institute**
Contributing to quantum hardware calibration research and software development, including tools like Qibocal and Qibolab for quantum systems.

EDUCATION

2022 – present **PhD Candidate in Physics** **University of Milan**
Working on open-source quantum computing tools, focusing on superconducting chip calibration and quantum system software.

2020 – 2022 **Master of Science in Physics** **University of Milan**
Advanced studies in theoretical and computational high energy physics. Grade 110/110 cum laude.

2017 – 2020 **Bachelor of Science in Physics** **University of Milan**
Grade 110/110

PROJECTS

- Qibo**: an open-source full stack API for quantum simulation and quantum hardware control.
- Qibolab**: software providing Quantum Characterization Validation and Verification protocols.
- Qibocal**: software providing Quantum Characterization Validation and Verification protocols.
- Workflow**: collection of reusable Github workflows.

PUBLICATIONS

Peer-review articles

- Stavros Efthymiou et al. "Qibolab: an open-source hybrid quantum operating system". In: *Quantum* 8 (Feb. 2024), p. 1247. ISSN: 2521-327X. DOI: 10.22331/q-2024-02-12-1247. URL: <http://dx.doi.org/10.22331/q-2024-02-12-1247>.

Pre-prints

- Andrea Pasquale et al. *Qibocal: an open-source framework for calibration of self-hosted quantum devices*. Under review. 2024. arXiv: 2410.00101 [quant-ph]. URL: <https://arxiv.org/abs/2410.00101>.
- Matteo Robbiati et al. *Double-bracket quantum algorithms for high-fidelity ground state preparation*. Under review. 2024. arXiv: 2408.03987 [quant-ph]. URL: <https://arxiv.org/abs/2408.03987>.

Proceedings

- Andrea Pasquale et al. *Beyond full statevector simulation with Qibo*. 2024. arXiv: 2408.00384 [quant-ph]. URL: <https://arxiv.org/abs/2408.00384>.
- Edoardo Pedicillo, Andrea Pasquale, and Stefano Carrazza. *Benchmarking machine learning models for quantum state classification*. 2023. arXiv: 2309.07679 [quant-ph]. URL: <https://arxiv.org/abs/2309.07679>.
- Edoardo Pedicillo et al. *An open-source framework for quantum hardware control*. 2024. arXiv: 2407.21737 [quant-ph]. URL: <https://arxiv.org/abs/2407.21737>.
- Li Xiaoyue et al. *Strategies for optimizing double-bracket quantum algorithms*. 2024. arXiv: 2408.07431 [quant-ph]. URL: <https://arxiv.org/abs/2408.07431>.

PARTICIPATION IN EVENTS AND CONTRIBUTION

2024	March meeting 2024 APS March meeting.	Minneapolis, MN
2023	Summer school on Mathematical foundations of Quantum Machine Learning	University of Trento, IT
2023	QTML Quantum Techniques in Machine Learning.	CERN, Geneva, CH

Talks

2024	Towards an open-source hybrid quantum operating system 22nd International Workshop on Advanced Computing and Analysis Techniques in Physics Research.	Stony Brook, NY
2024	Towards an open-source framework to perform quantum calibration and characterization Workshop on Quantum Software.	Copenhagen, DK
2023	Qubit calibration with Qibocal First year workshop.	Milan, IT
2022	Quantum computers: a new frontier in HEP Milan christmas meeting.	Milan, IT

Posters

2025	Quantum Technology Symposium.	Abu Dhabi, UAE
2024	QIP Quantum Information Process.	Taipei, TW

SKILLS

- **Programming Languages:** Python, C, C++, Bash, \LaTeX , HTML, CSS
- **Frameworks & Libraries:** NumPy, TensorFlow, Keras, Scikit-learn, Pandas, SymPy, SciPy, quTiP, Qibo, Qiskit
- **Operating Systems:** Linux, Microsoft, MacOS
- **Tools:** git, tmux, neovim, slurm

LANGUAGES

- **Italian:** Native
- **English:** Fluent
- **German:** Intermediate

REFERENCE

- **Stefano Carrazza:** stefano.carrazza@cern.ch
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