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

[1] 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

[1] 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.

[2] 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

[1] Andrea Pasquale et al. *Beyond full statevector simulation with Qibo*. 2024. arXiv: 2408.00384 [quant-ph]. URL: https://arxiv.org/abs/2408.00384.

[2] 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.

[3] 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.

[4] 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** **Minneapolis, MN**
2024 APS March meeting.

2023 **Summer school on Mathematical foundations of Quantum Machine Learning** **University of Trento, IT**

2023 **QTML** **CERN, Geneva, CH**
Quantum Techniques in Machine Learning.

Talks

2024 **Towards an open-source hybrid quantum operating system** **Stony Brook, NY**
22nd International Workshop on Advanced Computing and Analysis Techniques in Physics Research.

2024 **Towards an open-source framework to perform quantum calibration and characterization** **Copenhagen, DK**
Workshop on Quantum Software.

2023 **Qubit calibration with Qibocal** **Milan, IT**
First year workshop.

2022 **Quantum computers: a new frontier in HEP** **Milan, IT**
Milan christmas meeting.

Posters

2025 **Quantum Technology Symposium.** **Abu Dhabi, UAE**

2024 **QIP** **Taipei, TW**
Quantum Information Process.

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
- **Frederico Brito**: frederico.brito@tii.ae