Gabriele Fazio

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ABOUT ME

I am a Physics Master's student, published researcher, and an Italian & Swiss citizen with a dedicated specialization in quantum technologies. I stay actively engaged with the field by regularly attending the quantum seminars held at my university. I am seeking a PhD position in Quantum Computing where I can apply my robust theoretical foundation to complex challenges.

EDUCATION

Università degli Studi di Milano — Milan, Italy
Master's Degree in Physics — *[September 2024 – Expected Graduation: September 2026]*

- **Master's Thesis:** *Block-encoding techniques for quantum computing applications*

Bachelor's Degree in Physics — *[October 2021 – July 2024]*

- **Bachelor's Thesis:** *Cartan quantum metrology*
- *Graduated with 105/110*

Liceo Scientifico Statale Orazio Grassi — Savona, Italy
High school diploma — *[September 2016 - June 2021]*

- *Graduated with* 100/100

Relevant Coursework:
Quantum algorithms, Deep learning, Quantum Walks, Continuous Variable Systems, Decoherent dynamics, QFT.

Università degli Studi di Genova — Genoa, Italy
Cybersecurity training (Cyberchallenge program) — *[February 2019 – May 2019]*

PUBLICATIONS

Peer-Reviewed Journal Articles

Fazio G, He J and Paris M G A (2026). "Order matters: tight bounds on the precision of sequential quantum estimation for multiparameter models" *Journal of Physics A: Mathematical and Theoretical*, 59(4), 045304. **[DOI]**

Fazio G, He J and Paris M G A (2025). "Cartan quantum metrology" *Physics Open*, 23, 100260. **[DOI]**

Preprints

He J, **Fazio G** and Paris M G A (2025). "Weight-dependent and weight-independent measures of quantum incompatibility in multiparameter estimation" *arXiv*, 2510.18864. **[arXiv]**

RESEARCH EXPERIENCE

Master's Research:
*Supervised by **Prof. Enrico Prati** & Sebastiano Corli*

- **Focus:** Investigating the implementation of **Block Encoding** techniques and **QRAM** (Quantum Random Access Memory) architectures to execute linear algebra routines on quantum hardware for **Neural Network** models.
- **Interdisciplinary Tools:** Utilizing **Random Matrix Theory** to model singular value distributions of neural network layers to properly characterize the scaling of **Circuit Complexities**.
- **Key Skills:** Advanced algorithms knowledge, Python/Pennylane simulations, and high-level mathematical modeling.

Quantum Metrology Research:
*Research Assistant, Supervised by **Prof. Matteo Paris***

- **Project:** Comprehensive study of the landscape of bounds (Cramér-Rao, Holevo) in **Quantum Multiparameter Metrology**.
- **Key Skills:** Mastered the transition from theoretical derivation to publication-ready manuscripts.

TECHNICAL SKILLS

Programming Languages: Python, Mathematica, C++, C, Bash, JavaScript, SQL
Quantum & Scientific Tools: PennyLane, Qiskit, NumPy, TensorFlow, Keras, PyTorch, scikit-learn, Matplotlib, Jupyter
Software & Environments: Git/GitHub, Unix, LaTeX, Microsoft 365 Suite

LANGUAGES

Italian: Native | **English:** Advanced | **French:** Elementary

WORK EXPERIENCE

Magic Pizza Cadorago Cadorago, Italy
Part-Time Staff *[February 2022 - Present]*
Maintained strong time-management skills by balancing a rigorous Physics degree with active research/publishing, and part-time employment. Developed excellent communication and teamwork skills in a fast-paced environment.

AWARDS & COMPETITIONS

- **Bronze medal** in Italian Cybersecurity Olympiads, Edition 2021.
- **National Finalist - OIS:** Ranked 1st in the region to represent Liguria at the OIS (Olimpiadi di Informatica a Squadre) National Finals in both 2018/19 and 2019/20 editions.

COMMUNITY OUTREACH

Giovani per la Scienza (Cultural association) Savona, Italy
Member & group leader *[September 2017 - April 2019]*

- **Leadership:** Promoted to Group Leader in the second year, coordinating a team to design and execute technical projects.
- **Scientific Outreach:** Presented live physics experiments at public exhibitions, simplifying complex physical phenomena for diverse audiences to promote scientific literacy.
- **Active Membership:** Participated as a regular member, attending weekly physics lessons and collaborative group activities.