

## EXPERIENCE

### Consulting Quantum architecture scientist

'23 - present

*Xanadu*

As a part-time member of the MBQC subteam of the Architecture division, I contribute to the development of the cross-platform Python package FlamingPy, supporting a variety of backends for efficient simulations of error correction in fault-tolerant quantum computers. I am involved in researching new strategies for decoding GKP concatenated codes [1]. I significantly sped up their pipeline using my thorough understanding of vectorised code.

## EDUCATION

### PhD Physics

2022-2026

*Heriot-Watt University*

During my PhD I am engaged in several projects that allow me to explore the full range of Quantum technology. I have developed a C extension for Python that allows for incredibly fast processing of photon detection data [2]. This has allowed me to investigate the performance of the entangled photon source I built with an extraordinary level of control. We plan to demonstrate satellite QKD with this source in 2025. [3]. I have sharpened my skills at using cluster resource for large scale computations [4]. Currently, I'm working on a novel quantum metrology scheme and the spectral characterisation of a custom domain-engineered non-linear crystal.

### Erasmus Mundus Master Nanotechnology

2020-2022

*Chalmers tekniska högskola & KU Leuven*

Magna Cum Laude, Consortium Scholarship from EU Commission

Thesis: Towards fault-tolerant quantum error correction with the surface-GKP code

Chalmers is a leader in superconducting quantum computing and my course material was heavily geared towards that.

### B.Sc. Electrical Engineering

2017-2020

*KU Leuven*

Magna Cum Laude

## SKILLS

<i>Languages</i>	Dutch (native), English (C2)
<i>Software</i>	PYTHON, C, GIT
<i>Qualities</i>	Inquisitive, Diligent, Goal-Driven

## References

- [1] B. W. Walshe, B. Q. Baragiola, H. Ferretti, J. Gefaell, M. Vasmer, R. Weil, T. Matsuura, **Jaeken, Thomas**, G. Pantaleoni, Z. Han, T. Hillmann, N. C. Menicucci, I. Tzitrin, and R. N. Alexander, "Linear-optical quantum computation with arbitrary error-correcting codes," Aug. 2024.

- [2] T. Jaeken, “TomTag.” <https://github.com/Thomas-Jaeken/tomtag>.
- [3] A. Pickston, **Jaeken, Thomas**, F. Redza, J. Ho, and A. Fedrizzi, “Uplink Simulation for Entanglement-based Satellite Communication,” in *Quantum 2.0 Conference and Exhibition (2024)*, Paper QTu4B.1, p. QTu4B.1, Optica Publishing Group, June 2024.
- [4] F. Chiriano, C. L. Morrison, J. Ho, **Jaeken, T**, and A. Fedrizzi, “Purifying quantum-dot light in a coherent frequency interface,” *Quantum Science and Technology*, vol. 10, p. 015004, Jan. 2025.