



Universidade do Minho



**Mestrado em Engenharia Física  
(Ramo Física da Informação)**

**Implementing photonic circuits using Perceval  
A Tutorial by Daphne Wang (QUANDELA)**

**24 April 2025, 9:00 - 13:00h**

**Room A1, Informatics Department**

**Abstract**

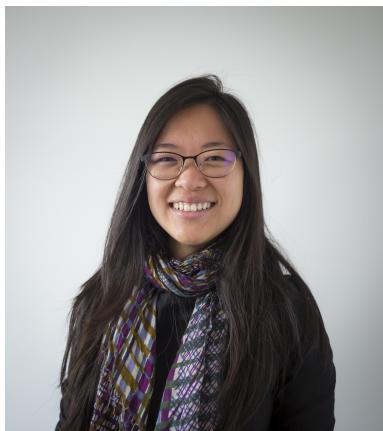
Perceval [1] is an open-source Python package aimed at simulating and implementing linear optical circuits. The platform allows users to easily build photonic circuits from basic components such as phase shifters, beamsplitters, single photon sources, detectors, etc. These circuits can then be used to manipulate Fock states where exact probability distributions or samples can be computed using state-of-the-art simulation methods. In addition, it is possible to implement those circuits on actual photonic hardware through Quandela Cloud. In this hands-on tutorial, we'll start by reviewing the basics of discrete-variable photonics. Then, we'll see how to use the various functionalities of Perceval to create photonic circuits, and apply it to a quantum machine learning task.

[1] Heurtel, Nicolas, et al. *Perceval: A software platform for discrete variable photonic quantum computing*. Quantum 7 (2023): 931.

**Daphne Wang & Quandela**

Founded in 2017, QUANDELA is a world leader in full-stack photonic quantum computing. Based in Paris, QUANDELA develops hardware, middleware, and software for a range of industrial applications, including energy, cybersecurity, and finance, showcasing the versatility of its unique technology.

Daphne Wang joined the *Quantum Algorithms Team* at QUANDELA in 2024, where she mostly focuses on quantum machine learning. She previously did her PhD at UCL, London, in the group of Mehrnoosh Sadrzadeh. Her expertise lies at the intersection of quantum information, artificial intelligence and theoretical computer science.



wangdaphne.github.io