

Exploring KTH's Programmable 12-Mode Photonic Quantum Computer

In this project, students will get hands-on experience with KTH's programmable 12-mode photonic quantum computer, a chip-based device that uses light instead of electrons to perform calculations. Photons travel through tiny waveguides on the chip, and by programming their paths the system can carry out different quantum operations and explore new ways of computing beyond the limits of classical machines. You will learn the essentials of quantum photonics—how photons carry information, how interference enables quantum operations—and use the existing control software to run small demonstrations and simple single qubit gates. The student will help to develop the platform further, with the aim of generating results toward a future publication to simulate Hamiltonians in the tight-binding approximation.

