

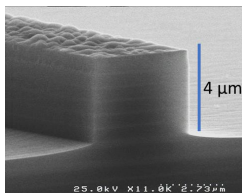
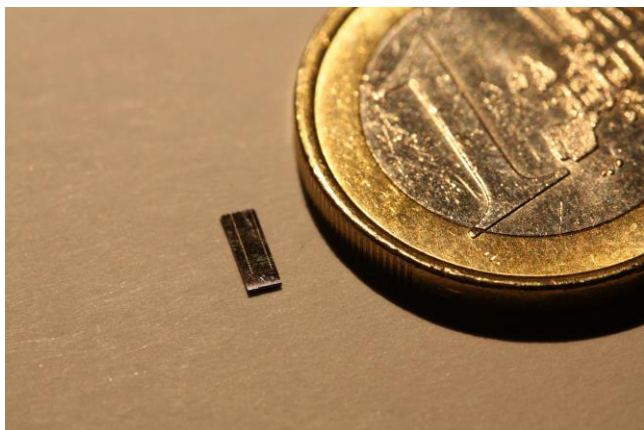
Photonics & Quantum Optics



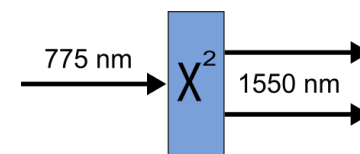
Photonics & Quantum Optics

A.K.A: What are the fancy things
one can do with photons?

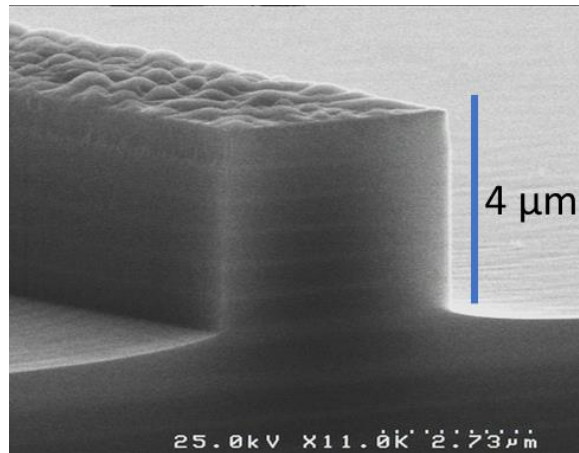
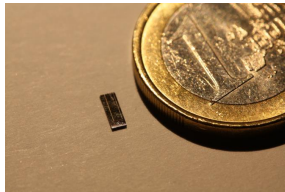
Produce Entangled Photon Pairs:



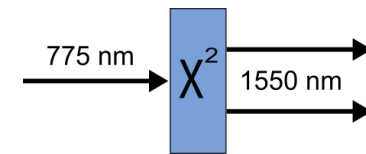
Parametric Down-Conversion



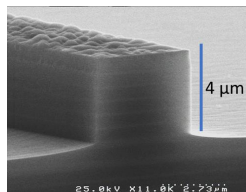
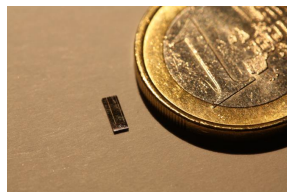
Produce Entangled Photon Pairs:



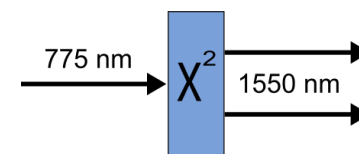
Parametric Down-Conversion



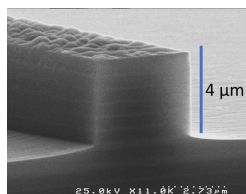
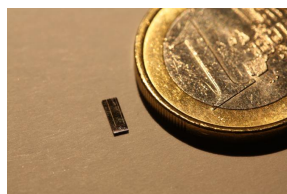
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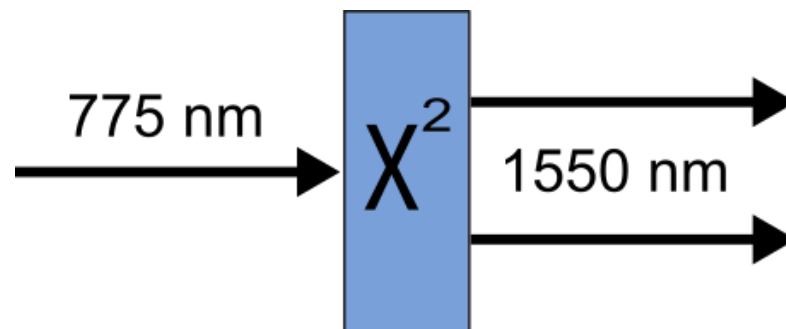
Parametric Down-Conversion



Produce Entangled Photon Pairs:

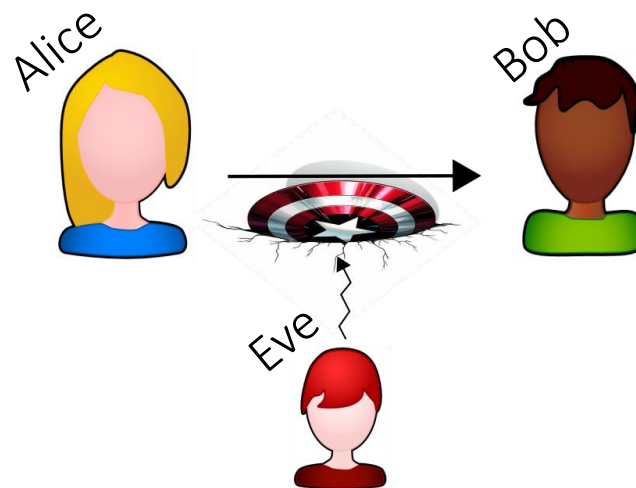


Parametric Down-Conversion



Photon Pairs:

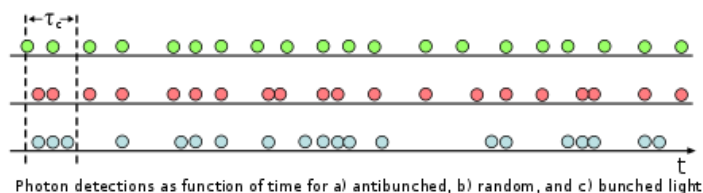
- Correlated (shared information) :
 - Polarization → entanglement
 - Time of creation → heralded single photon source
- Quantum communication schemes



Theses:

Bachelor's Theses:

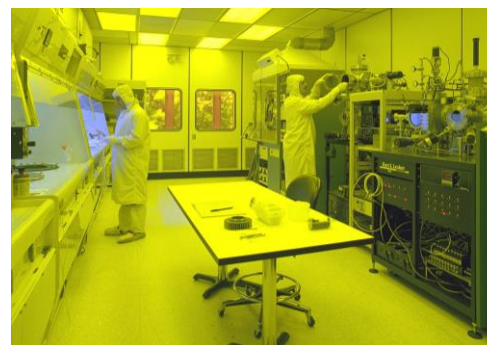
Explore fundamental phenomena behind correlated photon pairs and heralded single photons



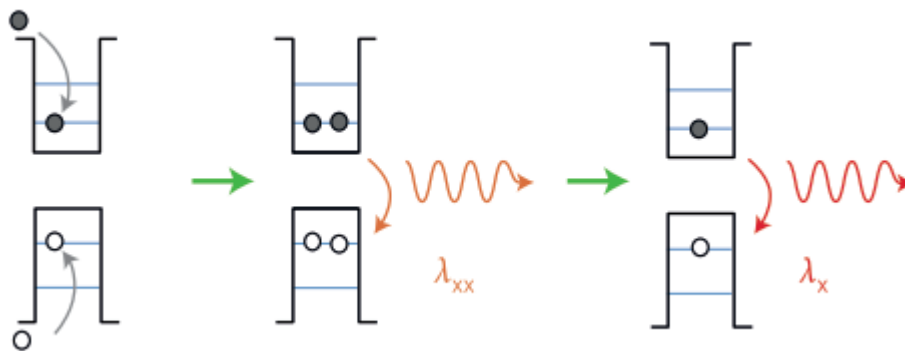
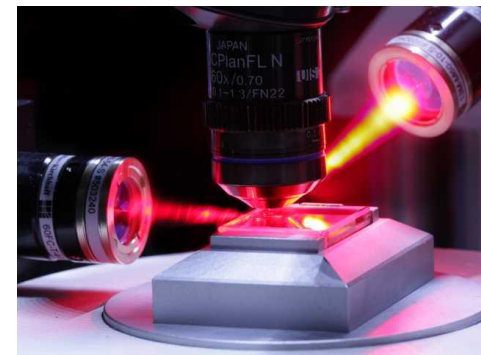
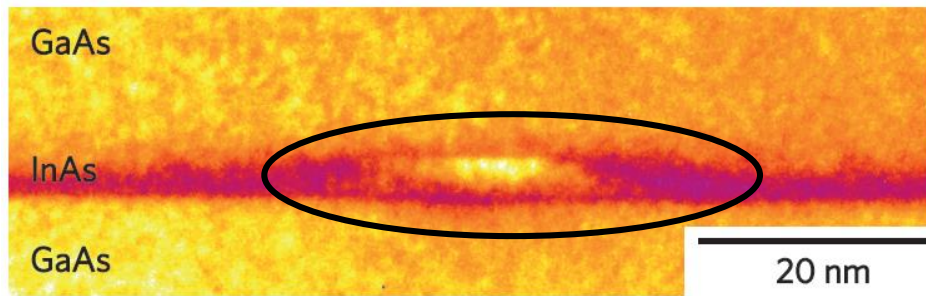
Master's Theses:

Help us work on sources for correlated photon pairs

Fabricate sources in the cleanroom starting from a bare semiconductor wafer



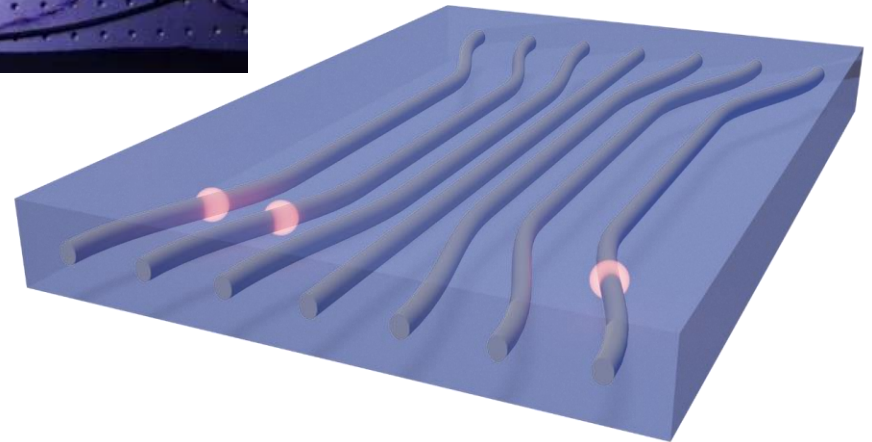
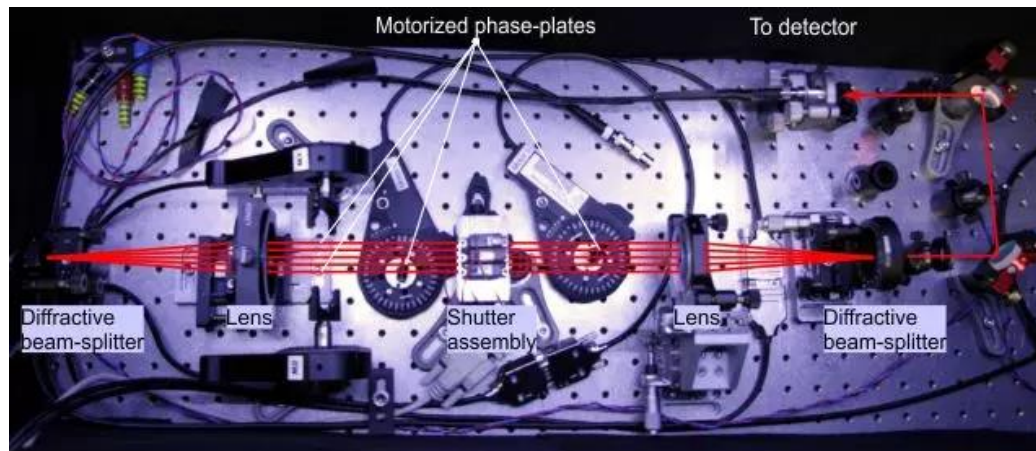
Generation of Single Photons from Quantum Dots and Polaritons



Master's Theses:

- Build and program an electrooptical routing setup to distribute photons emitted from a Quantum Dot into optical fibers
- Perform transmission measurement of a polariton micropillar sample

Quantum Interference Experiments



Theses:

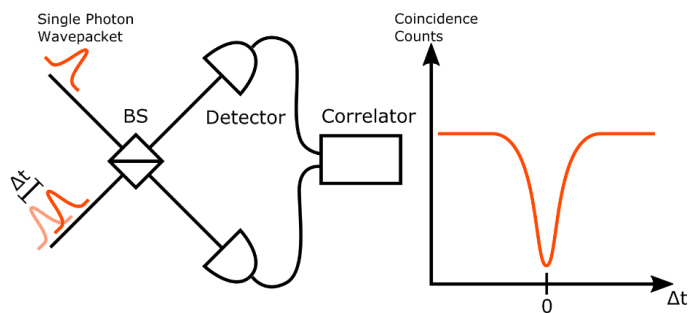
Bachelor's Thesis:

Investigate the interaction of single photons by quantum interference

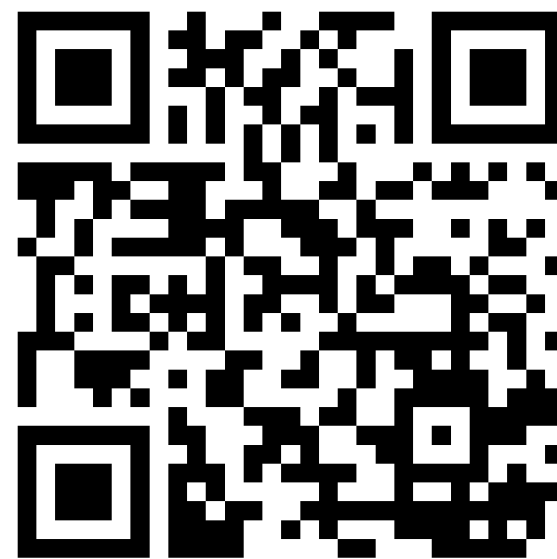
Master's Theses:

Assemble new waveguide interferometer setup to test Born's rule

Build and characterize a Franson-Interferometer for photon-pair spectroscopy



Our website with more details and all Bachelor and Master topics:



<https://www.uibk.ac.at/exphys/photonik/>

Theses under: -> Research -> MSc theses, Bachelorarbeiten