

Entangled Photons Source

Project Overview:

Quantum technologies like Quantum computing, Quantum key distribution and Quantum communications are expected to be the technologies of tomorrow. These technologies use quantum mechanical properties to encode the information using what is called Qubits. Qubits are like the conventional ones and zeros in classical digital information. This project aims at the implementation of a source of entangled qubits using Spontaneous Parametric Down Conversion (SPDC) technique.

Eligible Departments:

Electronics	X
Communications	-
Networking	-

Software/Hardware:

Matlab/Lumerical/Optical setup.

Quantum Dots in Micro Cavities

Project Overview:

Quantum technologies like Quantum computing, Quantum key distribution and Quantum communications are expected to be the technologies of tomorrow. These technologies use quantum mechanical properties to encode the information using what is called Qubits. Qubits are like the conventional ones and zeros in classical digital information. Semiconductor quantum dots (QD) are promising single photon sources for quantum technologies. This project aims at the characterization of the emission properties of QDs and exploring its non-classical behavior. The performance of QDs in micro cavities will be simulated using Lumerical FDTD simulator.

Eligible Departments:

Electronics	X
Communications	-
Networking	-

Software/Hardware:

Lumerical/Optical setup.

MEMS Based External Cavity Laser

Project Overview:

Semiconductor lasers are essential light sources for sensing and medical imaging applications. Micro Electro Mechanical Systems enable lower cost lasers with enhanced performance. This project aims at implementation and characterization of MEMS based laser for sensing applications. This project is implemented in collaboration with IHFG institute at the University of Stuttgart.

Eligible Departments:

Electronics	X
Communications	-
Networking	-

Software/Hardware:

Matlab/Lumerical/Optical setup.