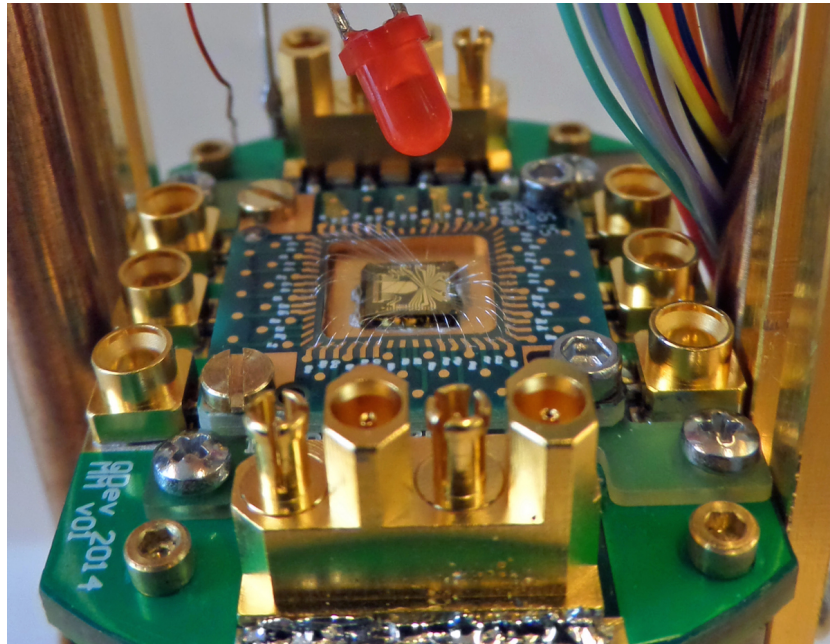




Bachelors and Masters Student Projects: **Spin Qubits**

at the Center for Quantum Devices

Our spin qubit team is looking for bachelor and master students to work on several new projects to *fabricate*, *control*, *read out* and *couple* single electron spins to make quantum mechanical bits, the building block of a future quantum computer.



Using state-of-the-art electron beam lithography at the center's nanofabrication facilities we are able to fabricate semiconducting quantum dots of ~ 100 nm in size. These dots contain a single electron, like an artificial hydrogen atom. We work on the material platforms SiGe, silicon-on-insulator and GaAs.

At sufficiently low temperatures (tens of millikelvin) we can couple these quantum dots to each other. By applying high frequency pulses (MHz to GHz regime) we can control and read out their spin state with high fidelity.

Possible master project: Establishing dispersive charge sensing on spin qubits based on silicon-on-insulator (SOI) quantum dots. The project mainly involves high frequency, low temperature measurements and data analysis.

Possible bachelor project: Simulation of the stray field of micromagnets to implement a single qubit gate in SiGe.

If you are interested in these or other projects of the spin qubit team, please contact Ferdinand Kuemmeth (kuemmeth@nbi.dk).