



Institute of Quantum Optics

IQO

The working group C. Ospelkaus at the institute of quantum optics researches to the topic of quantum computing with trapped ions.

HITec – Cryo

The cryo-team at the Hannover Institute of Technology (HITec) develops and operates cryogenic trapped-ions experiments for the research projects ATIQ, QVLS und MIQRO.

Student thesis

Seminar papers, Bachelor's and Master's theses are directly related to current research tasks and offer different weightings of theory and application.

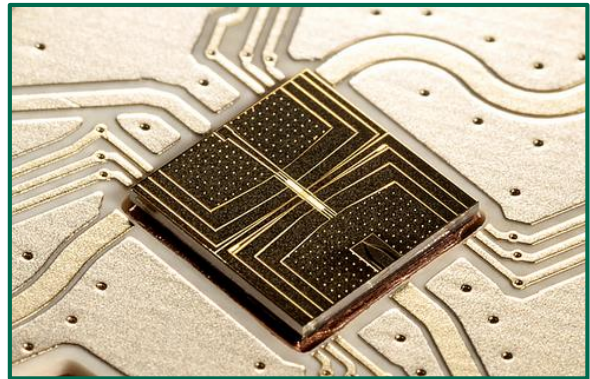
Contact

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MASTER THESIS

Design and construction of a superconducting magnetic field array to generate Zeeman splitting in ions



Background

The aim of the QVLS-Q1 project is to realize an ion trap-based quantum computer. A team of IQO, TUBS and PTB employees is working on the design of the planned quantum computer. The ion traps will be operated at cryogenic temperatures.

Task

The aim of the work is to develop a magnetic field array consisting of superconducting coils. These are to be used in addition to an existing magnetic field array to enable the magnetic field axis to be aligned in two spatial directions. The magnetic field coils are to be operated in persistent mode. A suitable switch must be developed and constructed for this purpose. The magnetic field coils developed are to be characterized in a separate test setup.

Competence

The work will split into the following categories:

Development	<div style="width: 75%;"></div>
Simulation	<div style="width: 30%;"></div>
CAD	<div style="width: 20%;"></div>
Programming	<div style="width: 40%;"></div>
Theory	<div style="width: 25%;"></div>