Analysing the thermal properties of microheaters for use in atomic sources

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Arbeitsinhalt

The aim of Quantum Valley Lower Saxony is to realise a 50-qubit quantum computer based on ion trap technology by the end of 2025. This consists of a large number of complex core components that are being developed by scientists from the fields of physics and engineering. One such core component of the quantum computer is the atom source, which ensures the controlled supply of vapour phase atoms of a specific atomic species for the quantum computer or other quantum experiments. The generation of atoms is made possible by micro-technologically manufactured micro-heaters made of silicon or glass, which are characterised by low power consumption and a fast heat-up time.

In order to ensure reliable and stable operation, the thermal properties are to be analysed in this work. As part of electrical tests, the thermal performance is to be characterised and the long-term operation of various operating modes simulated and evaluated. Following the electrical tests, the effects of the thermal loads on the microheaters are to be analysed using various analytical methods so that a statement can be made about the service life, the maximum operating temperature and other characteristic values.

Art der Arbeit

Bachelor Thesis

Voraussetzungen

- Independent, structured and autonomous way of working
- Interest in the field of microtechnology

Starttermin

As of now