



Bachelor/Master thesis



AG optical Metrology, Quantum Sensors group –Dr. M. Krutzik, M. Christ

Miniaturized optical atom traps and UHV compatible integration technology

As part of our activities on miniaturized optical atom traps utilizing in-vacuum optics we are looking for highly motivated Bachelor and Master students in the fields of experimental physics, optical sciences and/or engineering.

The main task of the Master thesis is the design and assembly of a miniaturized optical cavity allowing the realization of atom traps, which are ultrahigh vacuum (UHV) compatible. For the micro-integration process of the optical cavity, suitable integration techniques are required, which have to be qualified. As part of the thesis, adhesive bonding is investigated regarding its mechanical properties and UHV compatibility. After assembly, the cavity will be tested in an ultra-cold atom setup at Humboldt-University.

The main task of the Bachelor thesis is the test of integration technologies for miniaturized optical atom traps. Advanced micro-integration technology will be used to build test samples of adhesive bonding. These samples will then be tested regarding their mechanical properties and ultrahigh vacuum (UHV) compatibility.

A background in laser physics, spectroscopy or optical technologies is desired, a background in UHV technology is a bonus.

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