

Master Thesis Project

Fully Integrated on-chip platforms for Levitodynamics

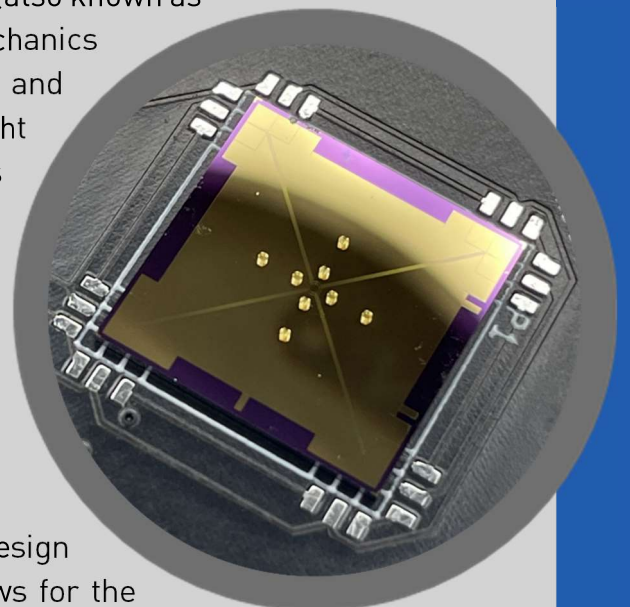
Prof. Romain Quidant

Nano-Photonic Systems Laboratory



We are seeking a curious and motivated master student to join our team and work on the packaging of integrated photonics chips for optical levitation in vacuum.

Project background – Optical levitation in vacuum (also known as Levitodynamics) is an emerging branch of optomechanics exploiting lasers and optical cavities for trapping and manipulating nanoparticles in engineered light fields. Motivated by both fundamental physics questions and applications to sensing, Levitodynamics has recently striven for miniaturization as a way to boost physical effects and increase the robustness of experimental platforms. Hereby, one basic milestone stone is the optical interfacing between optical fibers and the experimental on-chip platform.



Project description - Your project aims at the design and characterization of an optical setup that allows for the robust and repeatable interfacing of arbitrary on-chip experimental platforms and macroscopic optics, enabling a manifold of experiments, such as quantum experiments with optical nanocavities and levitated nanoparticles without moving parts. You will investigate different packaging options, ranging from fiber arrays to microfabricated optics. Your work will be 50% computational and 50% experimental.

Working in our group – We offer you close supervision through PhD and Postdocs but also expect that you work independently. In your project, you will get into contact with a multitude of technologies like optics, lasers, microfabrication, data evaluation and vacuum technology among others. Experience with optical setups is beneficial but not mandatory.

Contact: rquidant@ethz.ch or nmeyer@ethz.ch

Period: 6 months

Place: ETH Zurich, CLA E11-19

