

## PhD Project

## Nonlinear dynamics in dark potentials

Prof. Romain Quidant  
Nano-Photonic Systems Laboratory



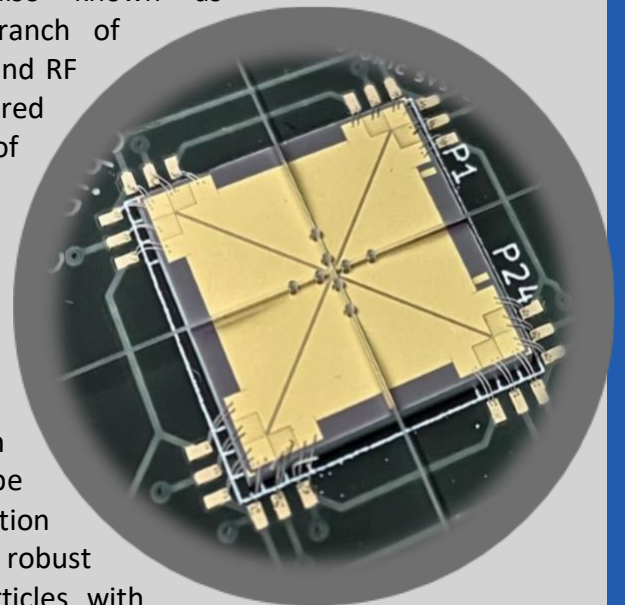
We are seeking for a curious and motivated PhD student to join our optomechanics team and work at the interface between integrated photonics /nanophotonics and optical levitation of nanoparticles in ultrahigh vacuum.

**Project background** – Optical levitation (also known as Levitodynamics) in vacuum is an emerging branch of optomechanics exploiting lasers, optical cavities, and RF traps for motion control of nanoparticles in engineered potentials. Motivated by exploring the limits of quantum mechanics, Levitodynamics is striving to enter unexplored physical regimes and to develop robust experimental platforms. Hereby, one essential milestone is the development of on-chip non-linear dark potentials.

**Project description** – Your project aims at conducting on-chip experiments for quantum levitated optomechanics. In this context, you will be involved in the design, fabrication and characterization of new integrated hybrid platforms that allow for a robust and repeatable interfacing of levitated nanoparticles with nonlinear, dynamic potentials, enabling new parameter regimes and therefore a manifold of unprecedented experiments, including non-gaussian quantum experiments.

**Working in our group** – We are an international and interdisciplinary research group at the ETH Zürich with extensive expertise in optomechanics, nanophotonics and integrated optoelectronics. During your PhD, you will get exposed to a multitude of technologies including nanofabrication, numerical simulations, optics, lasers, data analysis and vacuum technology.

**Candidate requirements** – The successful candidate shares our passion for cutting edge research, brings in his/her motivation and creativity, can clearly communicate, enjoys working closely and respectfully within a team and has experience in laboratories and in data analysis. Prior experience in optomechanics, optics, vacuum technology, nanofabrication, programming for experiment control and data evaluation is highly valued but not mandatory.



Contact: [rquidant@ethz.ch](mailto:rquidant@ethz.ch) or [nmeyer@ethz.ch](mailto:nmeyer@ethz.ch)