

Postdoctoral researcher – Quantum sensing with bulk acoustic wave resonators

As part of the QuantERA consortium "*Quantum sensing with nonclassical mechanical oscillators*" (ETH Zürich, Aalto, ICFO, USN, U. of Malta), the Hybrid Quantum Systems Group at ETH Zürich is looking for a postdoctoral researcher in the field of experimental quantum science with mechanical systems. The position starts in the summer/fall of 2022.

The Hybrid Quantum Systems Group focuses on experimental research that connects different types of quantum objects, including superconducting microwave circuits, acoustic resonators, and infrared light. The current position will explore the use of quantum states of mechanical systems for sensing. In particular, our approach will focus on bulk acoustic wave resonators, which are massive objects whose quantum states can be controlled and measured using superconducting circuits. The project will involve:

- Performing quantum control of mechanical systems using circuit quantum acousto-dynamics (QAD) devices
- Implementing parameter estimation protocols and demonstrating their use for force/strain sensing.
- Investigating the use of mechanical quantum sensing in various applications, for example dark matter detection and tests of fundamental physics.

The candidate should be highly motivated, able to work independently, and willing to venture into new and potentially unfamiliar topics. Previous experience in quantum sensing, optomechanics, and circuit QED or QAD would be considered especially valuable. Ability to work in teams and collaborate effectively, especially with theorist colleagues, is essential.

Interested candidates should provide apply with a CV and a letter of motivation. For more information and to submit an application, please contact Prof. Yiwen Chu (yiwen.chu@phys.ethz.ch). For information on ETH Zürich's employment policies, including standard salaries for postdoctoral positions, please consult the [ETH employment website](#).