Quantum-Limited Atomic Force Microscopy

University of Basel
Department of Physics

PhD position in *Quantum Limited Atomic Force Microscopy*

A fully funded 4-year PhD position is available in the Force Microscopy group of the Department of Physics at the University of Basel.

Introduction

The University of Basel is a full University and has research priorities in the areas of Sustainability and Energy as well as Quantum- and Nanoscale Science. The Department of Physics is the co-leading house of the National Center of Competence in Research (NCCR) "QSIT – Quantum Science and Technology" which combines high-level research in quantum physics and information theory. In various projects researchers focus on the control of quantum systems and aim at providing new impact and ideas to the quantum science and technology, to the sustainable use of resources, and to information and communication technologies.

The Project

The PhD position is part of the EU-project "Q-AFM" which aims to make a radical improvement in **Scanning Probe Microscopy (SPM)** by developing a new type of resonant mechanical force sensor. The goal of your project will be to **apply the quantum-limited force sensor using techniques presently explored in quantum opto-mechanical systems.** The key to reach quantum-limited sensitivity lies in the the electro-mechanical coupling between the resonant mechanical force transducer and the readout circuit. The project brings together three research groups from KTH, Uni Basel and TU Wien, with one SME Intermodulation Products. Your task at University of Basel will be to apply the new sensors to ultrahigh vacuum SPM systems at low temperature, develop advanced measurement procedures and perform high resolution force measurements at atomic scale.

Requirements

We are looking for a motivated candidate with a Master degree in Physics, Material Sciences or Electrical Engineering and preferably, the candidate has some experimental experience in surface science and/or ultrahigh vacuum. In addition, the candidate has good skills in English (oral and written), is a team player, and possesses excellent communication skills and the ability to write scientific papers and deliver presentations.

What we offer

Learn the most advanced SPM techniques at ultrahigh vacuum and low temperature systems for surface science investigations in one of the leading SPM groups. Interact with challenging experiments on molecular and atomic systems by designing, collecting, processing and analyzing experimental data. You will be part of the Quantum Communication and Quantum Technology PhD school and member of an international research team in the group of E. Meyer and Th. Glatzel.

Interested? Send an application containing: a cover letter with background and motivation, curriculum vitae including official transcripts, a description of previous research experience, and contact details of 2 people who can provide information on your suitability for the position. If you have further questions you can contact PD Dr. Thilo Glatzel (thilo.glatzel@unibas.ch) and/or consult the following webpages: https://www.qafm.eu and https://nanolino.unibas.ch/.