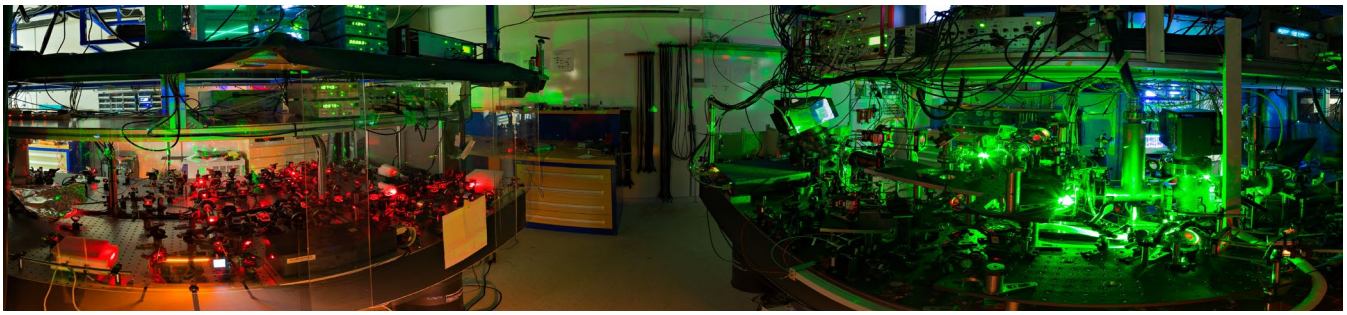

PhD Candidacy on Disorder and Interactions in Topological Lattices

Centre for Quantum Technologies, National University of Singapore

Project Description

Are you looking for an experimental PhD project in the area of ultracold quantum gases? At the Centre for Quantum Technologies (CQT) and the National University of Singapore we have an opening for a PhD research project to study ultracold Fermi gases in optical lattices. In general, our lab develops quantum technologies for the control over quantum matter by selecting internal electronic states by laser spectroscopy, manipulating external degrees of motion by cooling and trapping, and tuning of interactions by magnetic fields. We are extending our tool set to optical lattices where we intend to perform quantum simulations of many-body quantum phases. In this interdisciplinary project we are in particular interested in disordered optical lattice potentials and interacting atoms to study localization effects. In close collaboration with a locally based, internationally leading condensed matter theory group, we intend to explore such systems for topological lattice geometries like the hexagonal symmetry, which is of great interest to real world materials. The project is based to be implemented in our existing experimental platform that allows for the production of a large ultracold sample of fermionic lithium with strong interactions. We are looking for a highly motivated individual who is expected to play a pivotal role in our research team. If you enjoy experimenting with cutting-edge technologies in a state-of-the-art laser cooling laboratory you are welcome to join our team and participate in ongoing measurements from the start. The group is led by principal investigator Kai Dieckmann, who worked throughout his career on topics in ultracold quantum physics. Before coming to Singapore, he worked at leading groups at the Massachusetts Institute of Technology and the Max-Planck-Institute for Quantum Optics.

Postdoc Positions

CQT (www.quantumlah.org/) is situated on the campus of the National University of Singapore. With its over 150 international research staff and students CQT is providing a globally visible and inspiring environment for research in experimental and theoretical quantum physics. The broad range of topics includes ultracold quantum gases, quantum optics, and quantum information. The research fellowships offer generous remunerations that are internationally competitive and match the standard of living in Singapore.

Singapore

Located in the heart of South-East Asia, Singapore is a ultra-modern city-state offering impeccable infrastructure, superb food and celebrated multiculturalism. The climate is warm year-round. The National University of Singapore was ranked 11th in the QS World University Rankings 2019 and identified as the number one in Asia.

Application

You are a motivated and curious junior scientist and have a PhD degree in physics. Ideally, you have built a background in quantum mechanics, atomic physics, and quantum optics, and have already worked in a cold atom or laser laboratory. Application documents should comprise of a CV, a set of transcripts, and a single page motivational statement. Applications will be considered immediately until the position is filled. Please do not hesitate to direct your enquiry to Kai Dieckmann (phydk@nus.edu.sg).