



PhD Program between the Freie Universität Berlin (FUB) and the China Scholarship Council (CSC)

Open PhD position at FUB for CSC scholarship candidates 2018

Please note: the PhD position is only offered to Chinese PhD candidates for application in the framework of the FUB-CSC PhD Program.

<u>Department/Institute:</u>	Department of Physics
<u>Subject area:</u>	Theoretical Condensed Matter Physics
<u>Name of Supervisor:</u>	Prof. Felix von Oppen
<u>Number of open PhD positions:</u>	1
<u>Type of the PhD Study:</u>	Full-time
<u>Project title:</u>	Implementations of topological quantum computing

PhD Project description:

Realizing quantum computers is one of the great challenges of our time. With the recent progress in realizing topological superconductors and Majorana bound states, Majorana-based topological quantum computing has become a real possibility and Microsoft is investing heavily in this technology. In view of the topological protection of Majorana-based quantum information storage and processing, it is hoped that there will be rapid progress once a topological qubit has been realized. Even if progress towards topological quantum computation is slow, the field promises fascinating fundamental physics discoveries such as an observation of the predicted nonabelian quantum statistics.

The PhD project will be in theoretical physics and revolve around the underlying physics of topological superconducting phases, their excitations such as Majorana bound states, and develop possible implementations of topological quantum computation. The detailed projects will be adapted to recent developments in this fast moving field. Depending on interest, the focus of the project can be on material platforms, Majorana experiments, or aspects of topological quantum computation.

Language requirements:

IELTS: 6.5 or TOEFL: 95 ibt.

Academic requirements:

Candidates with Bachelor degree in Physics or Chemistry from top institutions will be considered; strong background in theoretical physics or theoretical chemistry

Information of the professor or research group leader:

Our group is one of the leading groups worldwide working on solid state implementations of topological quantum computation. The Microsoft project seeks to exploit hybrid systems of superconductors and semiconductors, which we first suggested in 2010 as a possible platform. Recent graduates went on to postdoctoral positions at, e.g., Harvard or Caltech. For more information including a list of publications, see: <http://www.physik.fu-berlin.de/en/einrichtungen/ag/ag-von-oppen/>

Please note: In a first step, the complete application must be submitted to the Beijing Office for evaluation by January 4th, 2018. Please do not contact the professor before. He/She will get in contact with you after having received the complete application via the Beijing Office in January.