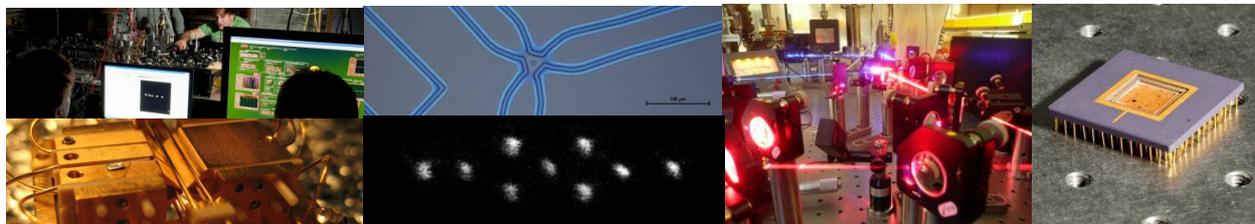


Postdoctoral Research Fellow / Postdoctoral Research Assistant in Trapped Ion Quantum Technology and Nano-science at the University of Sussex, Brighton, UK

A Postdoctoral Research Fellow / Research Assistant position will be available in the Ion Quantum Technology Group in the Department of Physics & Astronomy at the University of Sussex. The duration of the position is originally for 1 year with the possibility of an extension for a further 2.5 years. The position is part of an EPSRC funded £1.4M Leadership fellowship for the development of quantum technology with nanofabricated ion trap chips.

Quantum theory can have powerful applications due to the possibility of implementing new quantum technologies such as the quantum computer. Recent developments in ion trapping technology show that it should be possible to realize advanced quantum technology with trapped ions. Research in our group focuses on the borderland of nano-science and quantum technology. We develop on-chip architectures for the implementation of an ion trap quantum technology device using state-of-the-art nanofabrication techniques. As part of our experiments, ytterbium ions are trapped inside a vacuum system within an integrated ion trap chip using laser cooling. We perform experiments developing quantum gate operations for the practical implementation in quantum simulators and quantum information processing. Another key interest is the realization of quantum hybrid systems incorporating mechanical objects.



Research aims for this particular position are to develop nanotechnology towards realizing integrated ion chip architectures, to operate an experiment to control the motion and quantum state of single trapped ions directed towards building a device enabling quantum information processing, carry out quantum gate operations and to explore the foundations of quantum mechanics. This is an interdisciplinary research position on the interface of nano-science and atomic physics

The successful applicant should have an experimental PhD in a field related to our research area such as atomic physics, optical physics, nano- / micro-fabrication, condensed matter and quantum physics along with a good publication record. Previous ion trapping or micro-fabrication experience would be desirable but is not required. Some of the typical tasks for this position include nano-fabrication, operation of lasers and optics, ultra-high vacuum experimental design, quantum information science, coherent control of ions and many others. The group currently spans 8 PhD students, 5 undergraduate students and one faculty member. The group has collaborations with universities and other research facilities around the world. The successful candidate is expected to actively engage in our research program, provide guidance to undergraduate and postgraduate students and to participate in the strategic planning of the group. The salary offered will be appropriate to the qualifications, standing and experience of the successful candidate.

The city of Brighton & Hove has everything - sun, sea, brilliant clubs, great places to eat, fabulous shops, a truly cosmopolitan vibe and is located only 50min from central London. Located on the beach, Brighton boasts beautiful seaside views and beaches, boating, sports and beach activities. The South Downs provide breathtaking views, tranquil walks and plenty of opportunities for mountain biking, hiking or picnics.

You can find out more about the group at:

<http://www.sussex.ac.uk/physics/iqt/>

For more information, please email the head of group, Dr Winfried Hensinger (Reader in Quantum, Atomic and Optical Physics) (w.k.hensinger@sussex.ac.uk).

