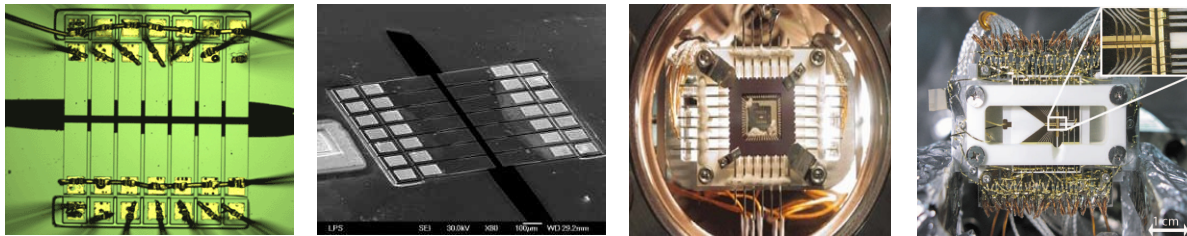


## PhD position in trapped ion quantum technology and nanoscience at the University of Sussex, Brighton, UK

A 3.5 year PhD position is available in the Ion Quantum Technology Group in the Department of Physics & Astronomy at the University of Sussex. 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 build a quantum computer with trapped ions. Research in the group focuses on the borderland of nanoscience and quantum technology. We develop on-chip architectures for the implementation of an ion trap quantum technology device. Single ytterbium ions are trapped inside a vacuum system within an integrated ion trap chip using laser cooling. We inscribe quantum states onto the ions using specialized lasers. A second complementary research direction is the exploration of quantum phenomena and their connection to our "classical" world. One key interest is the interaction of atomic and condensed matter systems in the quantum domain.



Research aims for this particular position are to develop integrated ion chip architectures, to operate an experiment to control the motion and quantum state of single atoms directed towards building a device enabling quantum information processing, and to explore the foundations of quantum mechanics.

You will learn all the experimental skills and theoretical background needed in this emerging field of science. Some of the skills you will acquire include nano-fabrication, lasers and optics, ultra-high vacuum techniques, quantum information science, electronics and many other skills. The group currently spans 5 PhD students, 5 undergraduate students and one faculty member with a postdoctoral fellow expected to join the group soon. The group has collaborations with universities and other research facilities around the world. The position consists of current UK/EU fees and a yearly stipend of £13290 which can be supplemented by tutoring.

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 the group,  
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