



# PhD Opportunity in Experimental Quantum Physics

## Quantum computation with one-dimensional cold atomic gases in holographic traps

A position is open in the cold atoms group of Dr Donatella Cassettari, within the School of Physics and Astronomy.

The aim of this project is to study atomic Bose-Einstein condensates in one-dimensional optical traps obtained by holographic means. This will lead to the realisation of atomic circuits, also known as atomtronics devices, which are promising for the implementation of SQUID analogues for precision sensors, quantum simulation of condensed-matter systems, and quantum gates for quantum information protocols. In particular, you will explore two different trap geometries: the simulation of Kondo physics in junctions of Tonks-Girardeau gases and the realisation of flux qubits in a ring shaped optical lattice.

More details can be found at [www.st-andrews.ac.uk/coldatoms](http://www.st-andrews.ac.uk/coldatoms)

UK / EU students may apply for funding from the School's Doctoral Training Account, the Scottish Doctoral Training Centre in Condensed Matter Physics, or the SUPA prize studentship scheme. The deadline for these applications is 31<sup>st</sup> January 2016.

International applicants may also apply for funding from the SUPA prize studentship scheme.

Applications are open to students that have, or expect to obtain, a good 2:1 or first class degree in physics.

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