

# PhDs in Optical Quantum Technologies: Quantum-Enhanced Sensing and Quantum Information Science

Thu, 2014-06-26 14:22 - [Michał Karpinski](#) [1] **At:** University of Oxford  
**Deadline:** 31 July, 2014

## Location

University of Oxford, Oxford, UK United Kingdom  
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51° 45' 7.2756" N, 1° 15' 27.8136" W  
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The Optical Quantum Technologies group at the University of Oxford is looking for two PhD/DPhil students in the general area of quantum optics and quantum information science. The group's research interests are in the general areas of experimental and theoretical quantum optics and related quantum technologies. Recent work has focused on developing methods to create, manipulate and measure non-classical states of light based upon time-frequency pulsed modes. The projects here will build upon the recent successes in these capacities and aim to develop techniques for the control and detection of time-frequency (TF) quantum states of light for few-photon systems and apply these to a variety of quantum-enhanced applications, e.g. the task of precision temporal sensing. To modify the TF quantum state of light we will use a novel phase modulation approach in both the time and frequency domains. In addition, using these high-speed phase modulation techniques to modify the time-frequency state, this project will explore different approaches to implement basic quantum operations, such as single particle logic operations. To achieve these goals we will be applying and extending ultrafast detection schemes and novel quantum state characterization techniques. These advances will ultimately enable precision timing measurements at and beyond the standard quantum limit, as well as open new practical for quantum communication and networks.

The successful candidates will, in addition to receiving state-of-the art research training in optical quantum technologies in a cutting-edge laboratory, gain expertise in experimental and theoretical photonic quantum information.

The positions, which commence October 2014, are fully funded. The support includes stipend and relevant university and college fees. Additional funding for research needs and presentation of results at conferences is also available.

This is an excellent opportunity to join a successful and dynamic research group, with world-class facilities in a newly refurbished laboratory for the coherent control photonic quantum states of light.

Contact:

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- [PhD](#) [3]

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