

PhD Studentship: Computer Aided Engineering for the Manufacturing of Quantum Technologies

Wed, 2018-04-18 06:22 - [Mark Everitt](#) [1] **At:** Quantum Systems Engineering Research Group
Deadline: 11 May, 2018

Location

Loughborough University Loughborough United Kingdom
See map: [Google Maps](#) [2]

PhD Studentship: Computer Aided Engineering for the Manufacturing of Quantum Technologies

Application details:

Start date of studentship: 1st October 2018

Supervisors:

Primary supervisor: Dr Mark Everitt

Secondary supervisors: Dr Vincent Dwyer/Dr Laura Justham

The Quantum Systems Engineering Research Group is pleased to offer a unique and exciting opportunity to develop the engineering vision and methodology needed to realise quantum technologies. The Group at Loughborough brings together a unique team of leading academics from diverse backgrounds - including quantum technologists, scientists, engineers and end users and is actively researching the following areas: the development of new Systems Engineering methods that will be needed in the quantum technologies industry including quantum design for test, reliability, manufacture, modelling and simulation. The project supervisory team combines expertise in Manufacturing, Reliability Engineering and Quantum Technologies, Physics and Systems Engineering.

Loughborough University is a top-ten rated university in England for research intensity (REF2014). In choosing Loughborough for your research, you'll work alongside academics who are leaders in their field. You will benefit from comprehensive support and guidance from our Doctoral College, including tailored careers advice, to help you succeed in your research and future career.

<http://www.lboro.ac.uk/study/postgraduate/supporting-you/research/> [3]

Full Project Detail:

In 2017 a team of leading quantum technologists (Lekitsch, Weidt, Fowler, Mølmer, Devitt, Wunderlich and Hensinger) proposed a Blueprint for a microwave trapped ion quantum computer [Science Advances DOI: 10.1126/sciadv.1601540]. This work proposed a scheme for producing an ion based scalable quantum computer architecture leveraging silicon microfabrication techniques within reach of current technology. The realisation of machines like this one represents one of the biggest challenges to modern engineering - much more so than faced engineers building the ENIAC in 1943. Your PhD will seek to provide the engineering vision and methodology needed to realise such large-scale quantum technologies especially in the areas of system integration, manufacture, reliability and maintenance.

Find out more:

<http://www.lboro.ac.uk/research/quantum-systems/> [4]

<http://www.lboro.ac.uk/science/study/postgraduate-research/studentships/> [5]

Entry requirements:

Applicants should have, or expect to achieve, at least a 1st class or 2:1 Honours degree (or equivalent) in science or engineering. Experience of modelling and simulation, high value manufacturing, life processing, systems engineering and an interest in developing design, modelling and systems deployment skills is desirable.

Applicants should note, this will not be a physics project, the focus is entirely on delivering engineering solutions derived from challenges such as those outlined in the existing blueprint for a quantum computer. Close collaboration with several groups, including the Ion Quantum Technology group, University of Sussex, is expected and applicants should be willing to travel as required.

Funding information:

This studentship will be awarded on a competitive basis to applicants who have applied to this project and/or any of the advertised projects prioritised for funding by the School of Science.

The 3-year studentship provides a tax-free stipend of £14,777 per annum (in line with the standard research council rates) for the duration of the studentship plus tuition fees at the UK/EU rate. International (non-EU) students may apply however the total value of the studentship will be used towards the cost of the International tuition fee in the first instance.

Contact details:

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How to apply:

Applications should be made online at <http://www.lboro.ac.uk/study/apply/research/> [7]. Under programme name, select Physics.

Please quote reference: ME-2/PH/2018

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