Quantum Science Opportunities at Trinity College Dublin:
2 PhD positions, 3 postdoc positions, and MSc degree

Two PhD positions and three postdoctoral positions are available at Trinity College Dublin, in the groups of Prof. Felix Binder and Prof. Mark Mitchison. The studentships are fully funded with a stipend of €18,500 per year and will commence in September 2022. The postdoc positions are to start between 1 August 2022 and 1 March 2023 with a starting salary of €47,406 subject to annual increments. All positions come with adequate access to a travel funding and computing resources. See below for further details of the individual research group interests.

Students interested in pursuing a one-year MSc degree in Quantum Science and Technology at Trinity College Dublin may find further information here: https://www.tcd.ie/Physics/quantumtech/
The next application deadline is 31 July. Scholarships are available for women.

Quantum Information Theory group

Prof. Felix Binder leads the Quantum Information Theory group, currently comprising one PhD student, with two postdocs joining in the coming months. Our research interests span quantum information theory, quantum thermodynamics, and complexity science. The group maintains a collaborative approach to science and an active international collaboration network. The team is recruiting one PhD student with an envisaged start date of 1 September 2022 or 1 March 2023. Possible research topics include the thermodynamics of quantum information processing, quantum resources for the optimal control of complex quantum systems, and quantum models for discrete-time quantum stochastic processes.

Two 24-36 month postdoctoral positions are available from 1 August, and 1 September, respectively (a later start date may be considered). The first of these is focused on the emergence of objectivity from quantum measurement as a thermodynamic process and part of a collaboration with collaboration partners in Austria and Scotland. The second position concerns the modelling of discrete-time quantum stochastic processes and the thermodynamics of information processing.

More information about the group:
https://www.tcd.ie/Physics/research/groups/quantum-information-theory-group/

Theory of Controlled Quantum Systems group

Prof. Mark Mitchison leads the ToCQS group, which currently comprises 3 PhD students and will be augmented by a postdoc joining in September 2022. The group’s research interfaces open quantum systems theory, non-equilibrium statistical physics, and quantum information. Our work is strongly motivated by current experiments on various platforms, spanning quantum optics, ultracold atoms, and mesoscopic electronic devices. Check out our group website at www.tocqs.com for further details.

The advertised PhD project is part of an international collaboration involving partners in the UK, Spain, Sweden, and Austria, including leading experimentalists investigating quantum semi- and super-conducting electronic devices. The student will collaborate closely with these partners in order to uncover the fundamental thermodynamic principles constraining the precision of measurements with these devices. This project will involve a close dialogue between theory and experiment, facilitated by numerous visits to the experimental labs as well as the other theoretical partners.
Location

The students and postdoctoral scholars will join a new interdisciplinary Quantum Centre at Trinity College Dublin. Trinity is Ireland’s premier university located in the centre of the Irish capital. Dublin is the heart of Ireland’s unique culture, sport, and music, and boasts beautiful beaches and highlands just beyond the city limits. The students will also benefit from additional training and professional development via the MSc in Quantum Science and Technology in the School of Physics. The School of Physics itself is home to 28 academic staff, 50 postdoctoral fellows and over 100 postgraduate students. There will be numerous opportunities to interact and collaborate with other researchers in the School working on quantum science. Students will also be encouraged to apply for independent funding from the Irish Research Council.

Prerequisites

Prospective applicants for all positions should have a strong background in quantum physics and mathematics and ideally some experience in at least one of the relevant areas: (quantum) information theory, open quantum systems, computational mechanics, or quantum thermodynamics. Enthusiasm and a pro-active approach to research are essential. Applicants for the postdoctoral positions should have a doctoral degree in Physics or a neighbouring field.

How to apply

To apply, please get in touch directly with Felix Binder (binderf@tcd.ie) and/or Mark Mitchison (mark.mitchison@tcd.ie). Applicants should provide a personal statement, a CV, including the contact details of two references, and up-to-date academic transcripts (for PhD positions only). Diversity begets creativity, and our goal is to build a diverse team of researchers in order to find creative solutions to some of the most challenging problems in quantum physics. Women and other members of underrepresented groups are therefore strongly encouraged to apply.

The application deadline for all positions is 1 July, 2022 at 1pm Irish Time, with online interviews likely to be held in the week of 4-8 July 2022.