

Selection Criteria for Postdoctoral Researchers in Quantum Nanoscience Theory: Fundamental physics and high-level structures

The two postdoctoral researchers in the theory of quantum information and technologies are to be appointed to work jointly in Singapore and Oxford. The researchers will be employed by the Centre for Quantum Technologies (CQT) in Singapore, but will spend up to 10 months each year working in the University of Oxford. The appointments are for 3 years, and form part of a larger initiative on quantum nanoscience. The following are the selection criteria:

1. A good first degree and a completed doctorate (by the start date) in the physical sciences, computer science, mathematics, philosophy, or a discipline related to one or more of these.
2. Previously established expertise in one of the following two subject areas, and preferably in at least one of the subtopics under that area:

Theoretical methods for quantum control

- a. Structures for practical quantum control
- b. Methods for generation and characterization of entanglement

Fundamentals of information flow

- a. Computer science logic including category theory
- b. Fundamentals of quantum physics including non-locality

The intension is to appoint one postdoctoral researcher for each of these two topics. A further two researchers will be appointed using support from the Templeton Foundation so that the complete set of expertise for the Quantum Nanoscience project will be as follows:

- Experimental quantum nanoscience (especially molecular ESR/NMR)
- Theoretical methods for quantum control
- Fundamentals of information flow
- The nature of information (principally from a philosophical standpoint)

3. Evidence of innovative and effective research with a good publication record in refereed journals, books, or other appropriate media.
4. Evidence of interest in big questions beyond the immediate discipline. Candidates should be willing to interact with individuals interested in diverse topics such as the fundamental nature of reality and our interaction with it, or the relation of mind and God to the material world.
5. Ability to work independently and as an active member of a research team, well organized and self-motivated. Willing to interact closely with other disciplines, particularly those listed in 2 above. Evidence of a previous track record of this will be a strong advantage.
6. Good communication skills both orally and in written English, suitable for the preparation of scientific publications in world-class journals and presentation of research at international conferences.
7. Each postdoctoral appointment can commence shortly after the successful candidate is identified; the intension is to have all appointees in post by a start date of 4 January 2011.

Application Procedure:

A complete CV including a publication list and a cover letter that outlines your interest in this project should be emailed to Irene Tan <irene.tan@nus.edu.sg>. She will forward these to the lead researchers, namely Simon Benjamin, Bob Coecke, Dieter Jaksch and Vlatko Vedral. These researchers will then contact suitable candidates to arrange an interview, which may be via electronic means such as Skype. Informal pre-application inquiries can also be made to any of those named above.