

PhD scholarship in Condensed Matter Theory

Wed, 2017-01-18 10:46 - [Gunnar Möller](#) [1] **At:** University of Kent, UK

Deadline: 30 January, 2017

Location

School of Physical Sciences Ingram Building
Canterbury CT2 7NZ United Kingdom
51° 17' 54.5532" N, 1° 4' 15.1968" E
See map: [Google Maps](#) [2]

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This PhD position is available for research in topologically ordered phases and their use in quantum devices and topological quantum computation.

We are looking for enthusiastic candidates to pursue computational research in strongly correlated topological phases: The goal of this PhD project is to create accurate microscopic models of topologically protected edge channels in fractional quantum Hall devices. The candidate will develop numerical simulations based on density matrix renormalisation and tensor network methods to investigate the equilibrium and non-equilibrium properties of fractional quantum Hall edge states. The project aims to achieve an understanding of the quantum devices that underlie topological quantum computation, including both quantum Hall point contacts and interferometers.

This research will offer exposure to both numerical and analytical methods for studying quantum many-body systems. Training opportunities include:

- Understanding of the theoretical framework underlying topological phases of matter and topological quantum computation and many-body quantum system more generally.
- Experience in developing numerical simulations of quantum many-body systems, including density matrix renormalisation group, tensor network methods and exact diagonalisation.
- Experience programming in compiled and scripting languages (C++ / Python).
- Opportunity to develop writing and speaking presentation skills, and to present work at scientific meetings and conferences.
- Opportunity to work with high-performance computing facilities, including the new Tier2 Materials Hub facility.

The successful candidate will be based in the School of Physical Sciences at the University of Kent's main campus in Canterbury. They will work within the Quantum Materials research theme of the school's interdisciplinary Functional Materials Group, under the direct supervision of Dr Gunnar Möller.

Full funding is available for UK / EU candidates. Applicants from other countries are also eligible for the scholarship award, but would need to cover international student fees from other sources.

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Published on QUROPE (<http://qurope.eu>)

Application deadline: 30 January 2017.

Anticipated start date: from September 2017.

For further details on this post, please go to:

<https://www.kent.ac.uk/physical-sciences/prospective/pg-research/funding.html#moller> [3]

For a direct link to the graduate student application form, see:

<https://www.kent.ac.uk/courses/postgraduate/212/physics> [4]

(for applications: click “Apply”, then select Mode of study: “Full Time” and Award: “PhD”).

Contact for project queries: Dr Gunnar Möller, G [dot] Moller [at] kent [dot] ac [dot] uk

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Source URL: <http://qurope.eu/db/jobs/phd-scholarship-condensed-matter-theory>

Links:

[1] <http://qurope.eu/users/gmoller>

[2] <http://maps.google.co.uk?q=Ingram+Building%2C+Canterbury%2C+CT2+7NZ%2C+uk>

[3] <https://www.kent.ac.uk/physical-sciences/prospective/pg-research/funding.html#moller>

[4] <https://www.kent.ac.uk/courses/postgraduate/212/physics>

[5] <http://qurope.eu/db/jobs/type/phd>