

Dr. Thomás Fogarty

Theoretical Quantum Physics Group
Universität des Saarlandes
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DOB: September 14th, 1986

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Professional Experience

- **Universität des Saarlandes** Saarbrücken, Germany
September 2013 - present
– **Group Leader:** Prof. Giovanna Morigi
Post-Doctoral Researcher
- **Okinawa Institute of Science and Technology** Okinawa, Japan
October 2012 - August 2013
– **Group Leader:** Prof. Thomas Busch
Special Research Student

Education

- **University College Cork** Cork, Republic of Ireland
October 2009 - July 2013
– **Thesis:** Correlations in Low Dimensional Quantum Systems
– **Supervisor:** Prof. Thomas Busch
– **External Examiner:** Dr. Anna Minguzzi
– Funding for my PhD was provided through a personal grant from the Irish Research Council.
PhD Theoretical Physics
- **University College Cork** Cork, Republic of Ireland
Oct. 2005 - July 2009
– Grade: First Class Honours
BSc Physics
- **Glanmire Community College** Cork, Republic of Ireland
Sept. 1999 - June 2005
– Grade: 575/600
Leaving Certificate

Awards

- Awarded title of College Scholar from University College Cork based on undergraduate exam results.
- Awarded title of Government of Ireland Scholar from the Irish Research Council on award of postgraduate scholarship.
- Finalist in the University College Cork ‘Science for all’ public lecturing competition in 2011

Conferences and Presentations

• Invited Talks

- May 2012, Okinawa Institute of Science and Technology, Japan
Strongly correlated quantum gases
- December 2011, University of Heidelberg, Germany
Orthogonality catastrophe in trapped Fermi gases
- July 2011, Universität des Saarlandes, Germany
Non-locality and entanglement of two trapped atoms

• Contributed Talks

- February 2012, APS Spring Meeting, Boston, USA
The rise of long-distance entanglement within a linear chain of ions
- September 2011, Photonics Ireland, Dublin, Ireland
Quantum bit decoherence in the presence of degenerate matter waves
- March 2011, DPG Spring Meeting, Dresden, Germany
Qubit embedded in an ultracold Fermi gas
- June 2010, Optical Society of America Student Chapter Conference, Moscow, Russia
Entanglement of two ultracold atoms

• Poster Presentations

- June 2013, ECAMP11, Aarhus, Denmark
Creating NOON states in a free oscillation atom interferometer
- May 2013, Coherent Control of Complex Quantum Systems, OIST, Japan
Creating NOON states in a free oscillation atom interferometer
- April 2013, Few-body Physics in Cold Atomic Gases, Beijing, China
Creating NOON states in a free oscillation atom interferometer
- December 2012, Topical Research Meetings on Physics: Quantum technologies, IOP, London, UK
Creating NOON states in a free oscillation atom interferometer
- March 2012, IOPI Rosse Medal, Royal College of Surgeons, Ireland
Qubit embedding in an ultracold Fermi gas
- August 2010, Photon 10, University of Southampton, UK
Entanglement of two ultracold atoms
- March 2010, IOPI Rosse Medal, Athlone, Ireland
Entanglement and non-locality of two trapped bosons

• Research Visits

- March 2012, Universität des Saarlandes, Germany
- October - December 2011, Universität des Saarlandes, Germany
- February 2011, University of Oxford, UK
- March 2010, Queens University Belfast, UK

• Schools

- September 2010, *Ultracold Atoms, Metrology and Quantum Optics*, Les Houches, France
- February 2010, *Karpacz Winter School of Theoretical Physics*, Poland
- January 2010, *North-South Winter School*, NUI Maynooth, Ireland

Teaching, Supervision, & Other Academic Experience

- 2011 - present. Supervised undergraduate students on various projects of which one was submitted to Physical Review A.
- Tutor for undergraduate courses in Computational Physics, Thermodynamics, Quantum Mechanics and Lab demonstrator.

Technical Skills

Extensive programming experience in Matlab and basic knowledge of C and Mathematica. Familiar with Latex and all associated software on Windows, Mac OS and Linux based operating systems.

Publications

1. T. Fogarty, E. Kajari, B.G. Taketani, A. Wolf, Th. Busch and G. Morigi
Entangling two defects via a surrounding crystal
Phys. Rev. A **87**, 050304(R) (2013)
2. T. Fogarty, A. Kiely, S. Campbell and Th. Busch
Effect of inter-particle interaction in a free oscillation atomic interferometer
Phys. Rev. A **87**, 043630 (2013)
3. J. Goold, T. Fogarty, N. Lo Gullo, M. Paternostro and Th. Busch
Orthogonality catastrophe as a consequence of qubit embedding in an ultracold Fermi gas
Phys. Rev. A **84**, 063632 (2011)
4. J. Li, T. Fogarty, C. Cormick, J. Goold, Th. Busch and M. Paternostro
Tripartite nonlocality and continuous-variable entanglement in thermal states of trapped ions
Phys. Rev. A **84**, 022321 (2011)
5. T. Fogarty, Th. Busch, J. Goold and M. Paternostro
Non-locality of two ultracold trapped atoms
New J. Phys. **13**, 023016 (2011)
6. J. Goold, M. Krych, Z. Idiaszek, T. Fogarty and Th. Busch
An eccentrically perturbed Tonks-Girardeau gas
New J. Phys. **12**, 093041 (2010)