

## Employment

- **Erwin Schrödinger Quantum Fellow** Vienna, Austria  
*TU Wien* May 2018 – Present
- **EPSRC Research Fellow** St Andrews, UK  
*The University of St Andrews* Jan 2015 – April 2018
- **Postdoctoral Research Fellow** St Andrews, UK  
*The University of St Andrews* July 2012 – Dec 2014  
Supervisor: Jonathan Keeling

## Prizes, Awards & Fellowships

- *ESQ Fellowship*: Personal €150K fellowship (2018-2020)
- *New Journal of Physics*: Outstanding Reviewer of 2017 Award
- *EPSRC Postdoctoral Fellowship*: Personal £255K fellowship entitled “Understanding Bose-Einstein Condensation of Light” (2015-2018)
- *John Salmon MSci Prize*: University of Nottingham prize for highest overall degree mark in undergraduate physics
- *Ethel & Kevin B. Malone Scholarship*: University of Nottingham scholarship for academic excellence

## Responsibilities

- Local organising committee for *ICSCE8*, April '16 (Edinburgh, UK)
- Conference chair of *Condensates of Light*, Jan '16 (Chicheley Hall, UK)
- Co-ordinator of *Theoretical physics discussion group*, (St Andrews) Jan. '14 – April '18
- Journal Referee for: *Nat. Phys.*, *Nat. Commun.*, *Phys. Rev. X*, *Phys. Rev. Lett.*, *Phys. Rev. A*, *Phys. Rev. B*, *Phys. Rev. E*, *Eur. Phys. Lett.*, *New J. Phys.*, *J. Phys. B*.
- Grant Reviewer for: *EPSRC*, *Israel Science Foundation*

## Education

- **The University of Nottingham** Nottingham, UK  
*PhD Physics* Sept. 2008 – June 2012
  - **Thesis Title**: Fluctuations and Noise in Nanoelectrical and Nanomechanical Systems
  - **Supervisor**: Andrew Armour
- **The University of Nottingham** Nottingham, UK  
*MSci (Hons) Physics with Theoretical Physics (1st class)* Sept. 2004 – July 2008

## Teaching and Supervision Experience

- PhD Student Supervision:
  - Yuri Minoguchi (joint with P. Rabl) (May. 2018 – present)
  - Dominic Gribben (joint with B. Lovett) (Sept. 2017 – present)
  - Aidan Strathearn (joint with B. Lovett) (Sept. 2015 – present)
  - Elliott Levi (joint with B. Lovett) (Mar. 2015 – Aug. 2016)
  - Justyna Cwik (joint with J. Keeling) (Mar. 2013 – Aug. 2015)

- MPhys project and Undergraduate Student Supervision:
  - Thomas Ackernley (joint with B. Lovett) (Spring 2018)
  - Angus Dunnett (joint with B. Lovett) (Spring 2018)
  - Caroline de Groot (joint with B. Lovett) (Summer 2017)
  - Michael Osborne (joint with B. Lovett) (Spring 2017)
  - Cameron Pringle (joint with B. Lovett) (Spring 2017)
  - Ryan Moodie (joint with J. Keeling) (Summer 2016)
  - Peter Leith (joint with B. Lovett and J. Keeling) (Spring 2016)
  - David Weston (Spring 2016)
  - Zoe Ashwood (joint with J. Keeling) (Spring 2014)
- Undergraduate Tutoring:
  - Quantum dynamics (Autumn '11), Advanced quantum mechanics (Autumn '09, '10 and '11), Core second year modules (Autumn '10 – Spring '11, Autumn '12), The quantum world (Spring '10), Fourier analysis and mathematical techniques for physics (Spring '09)

## Publications & Presentations

### • Publications:

- “Organic polariton lasing and the weak to strong coupling crossover” A. Strashko, [P. Kirton](#) and J. Keeling *Phys. Rev. Lett. (in press) (2018)*
- “Introduction to the Dicke model: from equilibrium to nonequilibrium, and vice versa” [P. Kirton](#), M. M. Roses, J. Keeling and E. G. Dalla Torre *Adv. Quantum Tech. 1800043 (2018)*
- “Efficient non-Markovian quantum dynamics using time-evolving matrix product operators” A. Strathearn, [P. Kirton](#), D. Kilda, J. Keeling and B. W. Lovett *Nat. Commun. 9, 3322, (2018)*
- “Orientational alignment in cavity quantum electrodynamics” J. Keeling and [P. G. Kirton](#), *Phys. Rev. A, 97, 053836, (2018)*
- “Coherence protection in coupled quantum systems” H. M. Cammack, [P. Kirton](#), T. M. Stace, P. R. Eastham, J. Keeling and B. W. Lovett *Phys. Rev. A 97, 022103 (2018)*
- “Superradiant and lasing states in driven-dissipative Dicke models” [P. Kirton](#), and J. Keeling *New J. Phys. 20, 015009 (2018)*
- “Exact states and spectra of vibrationally dressed polaritons” M. A. Zeb, [P. Kirton](#) and J. Keeling *ACS Photonics 5, 249 (2018)*
- “Polarization dynamics in a photon Bose-Einstein Condensate” R. I. Moodie, [P. Kirton](#) and J. Keeling *Phys. Rev. A 96, 043844 (2017)*
- “Efficient real-time path integrals for non-Markovian spin-boson models”, A. Strathearn, B. W. Lovett and [P. Kirton](#) *New J. Phys. 19 093009 (2017)*
- “Suppressing and restoring the Dicke superradiance transition by dephasing and decay” [P. Kirton](#), and J. Keeling *Phys. Rev. Lett. 118, 123602 (2017)*
- “Designing spin channel geometries for entanglement distribution” E. K. Levi, [P. Kirton](#), and B. W. Lovett *Phys. Rev. A 94, 032302 (2016)*
- “Bath induced coherence and the secular approximation” P. R. Eastham, [P. Kirton](#), H. M. Cammack, B. W. Lovett and J. Keeling *Phys. Rev. A 94, 012110 (2016)*
- “Excitonic spectral features in strongly-coupled organic polaritons ” J. A. Cwik, [P. Kirton](#), S. de Liberato and J. Keeling *Phys. Rev. A 93, 033840 (2016)*
- “Spatial dynamics, thermalization, and gain clamping in a photon condensate.” J. Keeling and [P. Kirton](#). *Phys. Rev. A 93, 013829 (2016)*
- “Thermalization and breakdown of thermalization in photon condensates.” [P. Kirton](#) and J. Keeling. *Phys. Rev. A 91, 033826 (2015)*
- “Nonequilibrium model of photon condensation.” [P. Kirton](#) and J. Keeling. *Phys. Rev. Lett. 111, 100404 (2013)*
- “Nonlinear dynamics of a driven nanomechanical single-electron transistor.” [P. G. Kirton](#) and A. D. Armour. *Phys. Rev. B 87, 155407 (2013)*
- “Quantum current noise from a Born-Markov master equation.” [P. G. Kirton](#), A. D. Armour, M. Houzet and F. Pistolesi. *Phys. Rev. B 86, 081305(R) (2012)*
- “Charge noise at Cooper-pair resonances.” [P. G. Kirton](#), M. Houzet, F. Pistolesi and A. D. Armour. *Phys. Rev. B 82, 064519 (2010)*

## • Invited Presentations:

- SFB FoQuS Meeting, Oct '18 (Innsbruck, Austria) *“Efficient non-Markovian quantum dynamics using Time-Evolving Matrix Product Operators”*
- Quantum Science: Implementations, July '18 (Benasque, Spain) *“Efficient non-Markovian quantum dynamics using Time-Evolving Matrix Product Operators”*
- Polaron Day, May '18 (Nottingham, UK) *“Efficient non-Markovian quantum dynamics using Time-Evolving Matrix Product Operators”*
- Condensates of Light, Jan. '18 (Bad Honnef, Germany) *“Superradiance and lasing in driven-dissipative Dicke Models”*
- Heriot-Watt Photonics Seminar, Dec. '17 (Edinburgh, UK) *“Superradiance and lasing in driven-dissipative Dicke Models”*
- Hybrid photonics and Materials, Sept. '17 (Mykonos, Greece) *“Superradiance and lasing in driven-dissipative Dicke Models”*
- Polaron Day, July '17 (Dublin, Ireland) *“The effect of losses on the Dicke superradiance transition”*
- Higgs/SUPA meeting on non-equilibrium collective dynamics, Feb. '17 (Perth, UK) *“The effect of losses on the Dicke superradiance transition”*
- University of Bonn, Quantum Optics seminar, Oct. '16 (Bonn, Germany) *“From Weak to Strong Coupling in Organic Microcavities”*
- Polaron Day, June '16 (Copenhagen, Denmark) *“What is the lower polariton in organic microcavities?”*
- ICSCES, April '16 (Edinburgh, UK) *“Modelling Photon Condensation”*
- Rank Prize Symposium on Frontiers in Polaritonics, Mar. '16 (Grasmere, UK) *“Modelling Photon Condensation”*
- Present and future trends in ultrastrong light-matter coupling, Feb. '16 (Chicheley Hall, UK) *“From Weak to Strong Coupling in Organic Microcavities”*
- Nonequilibrium physics of driven-dissipative many-body systems, Sep. '15 (Durban, South Africa) *“Modelling Photon Condensation: Thermalisation, non-equilibrium and spatial pattern formation”*
- Spontaneous Coherence and Collective Dynamics, Jul. '15 (Telluride, USA) *“Modelling Photon Condensation: Thermalisation, non-equilibrium and spatial pattern formation”*
- Researcher Links workshop on Advanced Polaritonics and Photonics, Mar. '15 (Suzdal, Russia) *“Molecular Reconfiguration Induced by Ultrastrong Coupling”*
- Emergent Phenomena in the Dynamics of Quantum Matter, Apr. '14 (New York, USA) *“A non-equilibrium model of photon condensation”*
- International Workshop of Polariton Devices, Mar. '14 (St Petersburg, Russia) *“A non-equilibrium model of photon condensation”*