

# Matthew Evans

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ml-evs

## EDUCATION

- 2016–2019 **PhD in Physics**, *Theory of Condensed Matter Group, University of Cambridge*, Supervisor: Dr A. Morris
- 2015–2016 **MPhil Scientific Computing (Distinction)**, *Laboratory for Scientific Computing, University of Cambridge*  
Undertaken as a member of the CDT for Computational Methods in Materials Science. Courses on electronic structure, atomistic simulation, numerical analysis and training in C++, Fortran, MPI, CUDA and OpenMP.
- 2011–2015 **MPhys Physics with Theoretical Physics (Hons 1st class)**, *University of Manchester*  
Graduate-level include condensed matter physics, semiconductor device physics, quantum (gauge) field theories, superconductivity, statistical physics, and nuclear physics, as well as programming courses in C++.

## RESEARCH EXPERIENCE

- 2016 **MPhil project**, *Laboratory for Scientific Computing, University of Cambridge*, Supervisor: Dr A. Morris  
"Towards a high-throughput framework for *ab initio* materials discovery." A combined approach of *ab initio* random structure searching and materials databases to study lithium-ion battery anodes. Awarded a distinction.
- 2014–2015 **MPhys project**, *Condensed Matter Theory, University of Manchester*, Supervisor: Prof F. Guinea.  
"Electronic structure of defects in graphene superlattices." Awarded the Tessella Prize for the development of high-performance Python code to perform the computation and analysis.
- 2014, 2015 **Research placement**, *Computational Physics, University of Manchester*, Supervisor: Dr P. Walmsley  
Two summers working on the simulation of microscopic vortex dynamics in superfluid helium. A parallel code, `vfmcpp`, was developed in C++ to study reconnection events under the vortex filament model ([GitHub](#)). Funding from EPSRC.
- 2013–2014 **Research placement**, *Computational Nanoscience, University of Nottingham*, Supervisor: Prof E. Besley  
Research consisted of applying a novel hard sphere packing regime to study the energetics of nanotube-encapsulated C<sub>60</sub> molecules, funded by the EPSRC.

## TEACHING

- 2016– Small group teaching: Part IB Electromagnetism, Dynamics and Thermodynamics (Cambridge).
- 2016– Demonstration: Part IB & II Computational Physics (C++) and graduate-level Electronic Structure (Cambridge).
- 2016– Volunteering: KS1 Code Club, Ridgefield Primary School (Cambridge).
- 2016 Demonstration: CASTEP Workshop 2016 (Oxford), High Performance Computing Autumn Academy (Cambridge)
- 2012–2015 Tutoring: GCSE Maths and KS1 Programming, for the charity [The Tutor Trust](#) (Manchester).

## SKILLS

- \* Languages: Python (advanced), C++, FORTRAN (intermediate), Rust (basic).
- \* Software: CASTEP (advanced), MongoDB (intermediate) and Quantum Espresso (intermediate).
- \* Tools and packages: Linux (advanced),  $\LaTeX$ , NumPy, matplotlib, Bokeh.

## CONFERENCES AND PRESENTATIONS

- 2016 High Performance Computing Autumn Academy, Demonstrator and Presenter, University of Cambridge
- 2016 SMARTER5, Poster Presentation, University of Bayreuth, Germany
- 2016 CASTEP Workshop, Demonstrator and Poster Presentation, University of Oxford
- 2016 CCP9 Young Researchers Event, Poster Presentation, University of York
- 2015 High Performance Computing Autumn Academy, Attendee, University of Cambridge
- 2015 CASTEP Workshop, Attendee, University of Oxford

## REFEREES

Dr Andrew Morris; [ajm255@cam.ac.uk](mailto:ajm255@cam.ac.uk)

Prof Francisco Guinea; [paco.guinea@icmm.csic.es](mailto:paco.guinea@icmm.csic.es)

Dr Paul Walmsley; [paul.walmsley@manchester.ac.uk](mailto:paul.walmsley@manchester.ac.uk)

## PUBLICATIONS

- [1] T. Zhu, M. L. Evans, R. A. Brown, P. M. Walmsley, and A. I. Golov. Interactions between unidirectional quantized vortex rings. *Phys. Rev. Fluids*, 1:044502, Aug 2016. doi: [10.1103/PhysRevFluids.1.044502](https://doi.org/10.1103/PhysRevFluids.1.044502).