Lucy Whalley

10 Ivy Avenue, Runcorn Road
Birmingham, B13 8RL

07907776356
lucywhalley@gmail.com
lucydot.github.io

Objective

To design and optimise materials for energy generation and storage using computational modelling and solid-state physics

Education

Imperial College London — London, UK
PhD in Materials Science — Exp. Sep. 2019

Birmingham City University — Birmingham, UK
PGCE in Post-Compulsory Education — Jul. 2012

University of Birmingham — Birmingham, UK
MSci in Theoretical Physics, 1st class Hons. — Jul. 2011

Research Experience

Imperial College London — London, UK
PhD student — Sep. 2015–present

- Investigating the impact of point defects and anharmonicity in thin-film photovoltaic materials
- Using Density Functional Theory and High Performance Computing to calculate electronic structure
- Writing post-processing programmes using Python and the SciPy eco-system
- Reviewer for Journal of Chemical Physics, The Journal of Open Source Software and Nature Communications
- Member of the Imperial College Research Software Engineering Committee

University of Birmingham — Birmingham, UK
MSci student — Sep. 2010–Jul. 2011

- Solved the Boltzmann transport equation to calculate the transverse magneto-resistance of a quasi 2-dimensional metal
- Used analytical methods, the Abrikosov-Chambers method, and numerical integration routines

University of Birmingham — Birmingham, UK
Summer intern — Jul. 2010–Sep. 2010

- Used Bayesian inference to analyse graviational wave data from the Laser Interferometer Gravitational-Wave Observatory

Teaching Experience

Software Carpentry Foundation — London, UK
Volunteer Instructor — Jan. 2018–present

- Teaching basic computing skills (Git, Bash and Python) to academic researchers
- Designing workshops based upon the Software Carpentry scheme of work

Imperial College London — London, UK
Tutor — Sep. 2017–Jul. 2018

- Tutored mathematics to first year students on the Materials Science degree programme
- Curriculum included calculus, complex numbers, matrices and ordinary differential equations

Arden Primary School Birmingham, UK
Mathematics teacher Jan. 2013–Jul. 2015

- Taught national curriculum mathematics to Year 5 and Year 6 students in a state funded inner-city school
- Designed and delivered training to teaching assistants and trainee teachers

Her Majesty's Prison Birmingham Birmingham, UK
Trainee teacher Sep. 2011–Jul. 2012

- Taught mathematics at GCSE level to adult male prisoners

Computer Skills

- **Operating systems:** Mac OS, Linux and Windows
- **Languages and protocols**: Python (incl. SciPy, NumPy, Pandas, Matplotlib), Julia, Git, LaTeX, Bash, HTML

Achievements

- Teaching judged as Outstanding by Ofsted, 2013
- Qualified Teaching and Learning Status awarded from the Institute for Learning, 2013
- SWJ Smith prize for graduating with the highest average, 2011
- Department of physics prize for highest average in 3rd year, 2010

Selected Talks and Outreach

- "*Breaking periodicity: vibrations of defects in photovoltaic materials*", CECAM anharmonicity and thermal properties of solids, Paris, January 2018
- "*Anharmonic lattice vibrations in halide perovskites: heat transport, vacancy formation, and non-radiative recombination*", International conference on perovskite solar cells and optoelectronics, Oxford, September 2017
- [Public talk] "*Saving the world with quantum mechanics*", The Gunmaker's Arms, Birmingham, July 2017

Selected Publications

1) L. D. Whalley, "effmass: An effective mass package," *The Journal of Open Source Software*, 2018.
2) L. D. Whalley, R. Crespo-Otero, and A. Walsh, "H-centre and V-centre defects in hybrid halide perovskites," *ACS Energy Letters*, vol. 2, 2017.
3) L. D. Whalley, J. M. Frost, Y.-K. Jung, and A. Walsh, "Perspective: Theory and simulation of hybrid halide perovskites," *The Journal of Chemical Physics*, vol. 146, 2017.
4) L. D. Whalley, J. M. Skelton, J. M. Frost, and A. Walsh, "Phonon anharmonicity, lifetimes, and thermal transport in $CH_3NH_3PbI_3$ from many-body perturbation theory," *Physical Review B*, vol. 94, 2016.

References

Available on request