MATTHEW ALDOUS

PERSONAL INFORMATION

Born in Chelmsford, UK, 1 August 1990

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PERSONAL PROFILE

My last four years have been spent at the University of Southampton where I have been working towards high quality research outcomes and developing my personal working abilities as a researcher and educator in quantum technologies. It has been very exciting to be involved in the Integrated Atom Chip project, which I feel has given me a strong sense of how to engineer practical solutions for fundamental problems in experimental physics, and I feel that many of the skills I have gained will be very valuable to me and to my future employers. Outside of the research environment, I have been a demonstrator in undergraduate labs, which requires a great deal of patience, troubleshooting and interpersonal skills. Taking opportunities to bring science education into the public domain, I am also involved in several outreach and public engagement schemes, both through the university and independently. In what spare time I have, I enjoy playing folk music in a local band. Overall I feel that my track record so far shows a well-rounded set of skills suitable for a research or development team environment.

PUBLICATIONS

2017 — Arxiv

arXiv:1701.02181 [physics.atom-ph]

Carrier frequency modulation of an acousto-optical modulator for laser stabilization. Authors: M Aldous, J Woods, A Dragomir,R Roy and M Himsworth

2014 — Review of Scientific Instruments

Rev. Sci. Instrum. 85, 121501 (2014)

Contributed Review: The feasibility of a fully miniaturized magneto-optical trap for portable ultracold quantum technology.
Authors: J Rushton, M Aldous, M Himsworth

RESEARCH EXPERIENCE

2016–present — Research Fellow, University of Southampton

University of Southampton

After the completion of my PhD I carried on my work with the Integrated Atom Chip group, working on the assembly of innovative atom trapping schemes that take advantage of the many benefits and minimise the few disadvantages of our miniature devices. I have continued working closely with more junior members of the team, including supervising a pair of masters students carrying out experiments in our facilities, and have enhanced my skills in experimental atomic physics during this post.

2012–2016 — Postgraduate Researcher, University of Southampton

As the second PhD student hired by a fledgling group, I was heavily involved in design and building of essential equipment and process optimisation for the fabrication of first-generation "Integrated Atom Chips", making use of a wide range of technologies and skills (including optical atomic spectroscopy, CAD, semiconductor processes and ultra-high vacuum engineering), as well as helping to mentor a more junior student.

Summer 2012 Research Student, University of Exeter

University of Exeter

The project involved designing and building a semi-automated Magneto-Optical Kerr Effect (MOKE) microscope for use in analysis of nano-antennas and assessment of their enhancement of magnetisation measurements. This was a summer project which built upon my masters thesis, and required a great deal of independent working.

Oct 2011–Jun 2012 Masters Student, University of Exeter

In this post I explored technologies for improving magnetic imaging techniques by plasmonic enhancement of the magneto-optical Kerr effect. The work introduced me to clean-room discipline and the use of nano-fabrication techniques such as focused ion-beam and chemical vapour deposition.

Summer 2011 Research Student, University of Exeter

Developing a new image acquisition program using LabVIEW to take automated hyper-spectral stacks of organic samples using a variety of techniques. This was a summer project which required familiarity with Raman spectroscopy and systems engineering.

education experience

2013–2016 1st Year Labs Demonstrator, University of Southampton

University of Southampton

During my postgraduate work I spent several hours every week of term time on marking undergraduate work and hands-on troubleshooting and tutorial sessions in first-year laboratories. This position has helped me improve my sensitivity to the needs associated with different learning styles and has helped with communicating complex concepts in a simple but relevant way.

recent education

2008–2012 Physics with European Study (in France), University of Exeter, Université de Rennes 1

MPhys, Class I

My degree course included a thorough grounding in solid state, quantum, nuclear and high energy physics, applied optics and acoustics, statistical mechanics and electromagnetism. As part of the programme I spent the third year of my degree studying in Brittany, a formidable opportunity to see alternative educational and research environments, enhance my personal language skills and knowledge of international academic culture.

Final Year Transcript

- Quantum Physics II 53% (5 credits)
- Solid State Physics I 78% (5 credits)
- Nuclear and High Energy Particle Physics 75% (5 credits)
- Advanced Electromagnetism 75% (5 credits)
- Applied Optics and Acoustics 85% (5 credits)
- Dissertation and Project 72% (25 credits)
- Statistical Mechanics 80% (5 credits)
- General Problems 57% (5 credits)

Final Year Overall: 72%

computer and electronics skills

Basic GNU Image Manipulation Program, Inkscape, Audacity

Intermediate LaTeX, Linux, Microsoft Windows, Microsoft Office/OpenOffice, arduino (and similar architectures), redpitaya, GNU Octave, COMSOL, digital and analog electronics, clean-room discipline

Advanced python, Certified Labview Associate Developer (CLAD)

OTHER INFORMATION

Recent Memberships

2012–Present · Associate Member of the Institute of Physics

2015–Present · STEMNET Ambassador

2015–2016 · University of Southampton Folk Society (Committee Member)

2015–2016 · Quantum, Light & Matter Postgraduate Researchers Committee

Communication

2016 · Exhibitor at 2016 National Quantum Technologies Showcase

2016 · Pint of Science: "Atoms to Galaxies" team leader

2016 · Southampton Science & Engineering Day "Science Buskers" team leader

2015 · Bringing Research to Life Science Tent at Bestival activity leader

2015–2016 · Co-founder of The Science Room @ The Art House

2015 · Poster presentation at Young Atom Opticians 2015, Zurich

2014 · Poster presentation at ICAP 2014, Washington D.C.

Awards

2016 · Southampton Science & Engineering Day Award for Collaboration (Science Buskers)

2015 · Bringing Research to Life Award for Innovation & Development (#sciroom)

2012 · The Exeter Award

2012 · Xpression FM Best Presenter 2012

2009 · University of Exeter Dean's Commendation

Languages

English · Mother-tongue

French · Intermediate (conversationally fluent)

Spanish · Basic

Italian · Basic

Interests

Violin · Bodhrán · Cooking · Cycling · Folk traditions · Board games