

# Professor Andrew Boothroyd

*Professor of Physics, University of Oxford, and Tutorial Fellow of Oriel College, Oxford*

## Education

1984 MA in Natural Sciences, Cambridge University (*1st class honours, Physics & Theoretical Physics*)

1988 PhD in Physics, Cambridge University (*Advisor: Dr Gordon Squires*)

## Academic Career

1988–1989      Research Associate, University of Warwick  
1989–1991      Lecturer in Physics, University of Warwick  
1991–Present    Lecturer in Physics, University of Oxford, and Tutorial Fellow of Oriel College, Oxford  
2000            Awarded title of Reader in Physics  
2006            Awarded title of Professor of Physics  
2004–2008      Head of Condensed Matter Physics at Oxford University  
2011–2015      Vice Provost of Oriel College, Oxford  
2019–present    Associate Head of Department

## Research interests

Novel phenomena in materials that exhibit complex forms of electronic order, such as unconventional superconductivity and magnetic materials whose properties depend on a delicate interplay between the spin, charge and orbital degrees of freedom of the electron; structure and dynamics of quantum materials; emergent phenomena; topology; neutron and X-ray scattering techniques, and magnetic, thermodynamic and transport measurements; crystal growth

## Awards

2011      Institute of Physics Brian Pippard Prize (formerly Superconductivity Group Prize)  
2017      Outstanding Referee for the journals of the American Physical Society

## Professional Activities

1999–Present    Member of EPSRC Peer Review College; member of Programme Evaluation and Prioritisation panels  
2001–2007      Member of Institute of Physics Magnetism Group Committee  
2002–2011      Member of ISIS User Committee  
2004–2013      Chair of SINQ Scientific Advisory Committee, Paul Scherrer Institut, Switzerland  
2007–2011      Member of Editorial Advisory Board of *J. Phys.: Condens. Matter*  
2007–Present    Member of PMC for XMaS, the UK's magnetic scattering beamline at the ESRF  
2009–2011      Deputy Chair of STFC's Neutron Advisory Panel (NAP)  
2009–2011      Deputy Chair of STFC's Facilities Research and Development Panel (FRDP)  
2011–2014      Chair of ISIS proposal review committee FAP4  
2010–Present    Member of Diamond beamlines I05 (ARPES) and I21 (RIXS) User Working Groups  
2011–2017      UK Representative of IUPAP Commission C9 (Magnetism)  
2015–2018      Member of ORNL Neutron Sciences Science Review Committee  
2016–Present    Member of ESS Science & Technology Advisory Panels (Sample Environment & Spectroscopy)  
2012–2015      External Examiner in Physics, University of Warwick  
2015–2018      External Examiner for Condensed Matter Physics CDT, University of Bristol  
2017–Present    Chair of ILL College 4 proposal review panel, and member of ILL Scientific Council

## Invited talks at national and international conferences (last 5 years)

16. *Magnetically-induced Weyl semimetals*, Theoretical and Experimental Magnetism meeting, Abingdon, July 2019
15. *The EPN Campus and its extraordinary contribution to materials physics*, Grenoble, May 2019
14. *Ferroelectric-like transitions in metallic osmates*, Gordon Research Conference, Hong Kong, May 2019
13. *Spin dynamics and magnetic interactions in CuO*, ILL-ESS European User Meeting, Grenoble, Oct 2018
12. *Electronic correlations probed by modern neutron and X-ray spectroscopies*, CASTEP Many-Body Workshop, Oxford, Aug 2018
11. *Unravelling complex order in strongly correlated oxides*, ICAM 2017, Kyoto, Sept 2017
10. *Understanding magnetic phenomena in quantum materials*, Electronic Phenomena Studied in the Nordic Countries, Lund, July 2017
9. *Spin fluctuations in iron selenide superconductors*, NMSUM, Warwick, June 2017

8. *Evidence for charge stripes in the layered cobaltate  $La_{5/3}Sr_{1/3}CoO_4$* , Joint JCNS Workshop and Flipper, Tutzing, Germany, Sept 2016
7. *Commensurate lattice distortion and CDW proximate to superconductivity in titanium oxypnictides*, TEMM, Harwell Campus, June 2016
6. *Spin fluctuations in iron selenide superconductors*, International Conference on Superconductivity and Magnetism, Fethiye, Turkey, April 2016
5. *Spin fluctuations in FeSe & derivative superconductors*, workshop on chalcogenide superconductors, Dresden, Sep 2015
4. *Unconventional metallic osmates*, Concepts and Discovery in Quantum Matter, Cambridge, July 2015
3. *Spin fluctuations in iron selenide superconductors*, Frontiers in Unconventional Superconductivity and Magnetism, Bristol, Jan 2015
2. *Magnetic order coupled to Dirac fermions in  $AMnBi_2$  ( $A = Sr, Ca$ )*, Theoretical & Experimental Magnetism, STFC, July 2014
1. *Magnetic phenomena in strongly-correlated 5d oxides*, IoP Magnetism Conference, Manchester, Apr 2014

### Seminars and Colloquia (last 5 years)

8. *Unravelling emergent order in quantum materials*, Peter Grünberg Institut Colloquium, Forschungszentrum Jülich, Germany Oct 2016
7. *Unravelling emergent order in quantum materials*, Brahmagupta Colloquium, IIT Madras, India Sept 2016
6. *Unconventional electronic phases in 5d oxides*, Condensed Matter Physics, QMUL Mar 2016
5. *Superconductors: Ultimate quantum metals*, Balliol College Physics Society, May 2015
4. *Magnetic phenomena in correlated 5d and Dirac systems*, ISIS-Diamond joint seminar, Aug 2014
3. *Emergent Electronic Order in Strongly-Correlated Oxides*. Technical University of Munich, May 2013.
2. *Spin fluctuations in iron-based superconductors*, National Institute for Materials Science, Tsukuba, Apr. 2013
1. *Emergent electronic order in strongly correlated oxides*, Institute for Solid State Physics, University of Tokyo, Apr. 2013

### Public outreach

I have given public lectures on superconductivity and quantum materials, and I have given talks on similar topics to student science societies. During 1990–1993 I wrote the annual entry entitled “Physics” in the Encyclopaedia Britannica Book of the Year. In 2014 & 2015 I lectured at a UNIQ summer school at Oxford University for Year 12 students from state schools. I jointly led a STFC-funded project to develop and deliver two workshops entitled *Levitate!* and *Fantastic Fields*, on Superconductivity and Magnetism for Years 8–10 in secondary schools. In 2014, I demonstrated superconducting levitation on the BBC2 celebrity quiz show QI.

### Conference organisation (recent)

- |           |   |
|-----------|---|
| 2013      | Member of Programme Committee, 8 <sup>th</sup> International Conference on Inelastic X-ray Scattering, SLAC |
| 1991–2019 | Co-organiser, Oxford Neutron Scattering Summer School (odd years)   |
| 2012      | Organiser of <i>ESS Symposium on spin dynamics in correlated electron systems</i> , Abingdon, UK            |
| 2014      | Organiser of conference <i>Mott Physics beyond the Heisenberg model</i> , Oxford, UK                        |
| 2019      | Co-organiser of workshop <i>Floating-zone Techniques</i> , Oxford, UK                                       |

### Workshops and Summer Schools

- |           |   |
|-----------|---|
| 1991–2019 | Invited Lecturer, Oxford Neutron Scattering Summer School (odd years)   |
| 2000–2008 | Invited Lecturer, IoP workshop <i>Measurement Techniques in Magnetism: Neutrons &amp; Muons</i> (2000, '03, '06, '08) |
| 2005–2013 | Invited Lecturer, PSI Summer School on Condensed Matter Science, Zuoz, Switzerland (2005, '07, '13)                   |