

Résumé of
PAOLO G. RADAELLI
December 2020

Home Address:



Date of Birth:



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Education

- *Laurea degree (MSc) General Physics* Università degli Studi di Milano (Italy), March 1986. Final grade: 110/110 "Summa cum Laude". Dissertation Topic: "Renormalization Group for Lattice Gauge Theories with Z_n symmetry."
- *Ph.D. Experimental Solid State Physics* Illinois Institute of Technology, Chicago IL, Fall 1992. Dissertation Topic: "Oxygen ordering and superconductivity in pure and Ca-substituted $REBa_2Cu_3O_{6+x}$ systems."

Honours

- *Knight of the Star of Italy (July 2017)*, awarded by the President of the Italian Republic for services to the UK-Italy scientific cooperation.

Membership of professional societies

- Fellow of the Institute of Physics (2012), Member of the British Crystallographic Association, Member of the American Physical Society.

Recent Professional Positions

- *Dr Lee's Professor of Experimental Philosophy*, The Clarendon Laboratory, Department of Physics, Oxford University. Professorial Fellow at Wadham College, Sept 2008 –. Also, *Associate Head of Physics*, Sept 2010 – Sept 2017, and *Head of Condensed Matter Physics*, Sept 2011 – Sept 2017.
- *STFC Fellow* (formerly CCLRC Fellow and Band 2 Individual Merit) July 2003-Aug 2008.
- *Crystallography and Engineering Group Leader*, ISIS Facility Aug 2004 – 2008.

Advisory Roles

- *Co-Chair of the Science Council of the Institut Laue-Langevin* (Grenoble, France) 2020-
- *Member of the Scientific Advisory Board for the Max-Planck Institut für Chemische Physik Fester Stoffe* Dresden, 2015 –
- *Member of the HCÉRES Review Committee for CNRS institutes, France, 2018 –*
- *Member of the UK-ESS Project Board*, which manages the UK in-kind contribution to the European Spallation Source (ESS), 2014 –, and of the *Scientific Advisory Committee* for the Italian contribution to ESS, CNR (Italy), 2016 –. Author a of major review of the Italian neutron programme (2019).
- *Member of the Science Advisory Committee of the Italian Embassy in the UK, 2014 –*
- *Member of the STFC Physical Sciences and Engineering Advisory Committee, 2012 – 2016*
- *Member of the Research Evaluation Committee at Institute for Basic Science (IBS), Korea, 2012 –*

Other esteem indicators

- *Main organiser and Programme Chair* of the international Quantum Materials Symposium (2019). *Chair of the Programme Committee* of the International Conference on Neutron Scattering (2013). *Member of the Programme Committee* of the International Union of Crystallography Conference – IUCr 2015 and of the European Conference on Neutron Scattering – ECNS 2011.
- Since 2012, *15 invited talks at international and national conferences, workshops and symposia*, including CPS-IOP symposium on Topological Materials (2020), APS March Meeting (2019), Gordon Research Conference on Multiferroics (2018), QMS2018 (Shanghai, China), TO-BE Meeting on oxide

electronics, (Warwick, March 2016), Strongly Correlated Electron Systems, (Grenoble, France, July 2014); British Crystallographic Association Spring Meeting (Nottingham, Apr 2016, Keynote Speaker), British Crystallographic Association Spring Meeting (Loughborough, 2014), Royal Society Symposium "10th Anniversary Diamond Science" (Nov 2012).

- *Distinguished Visiting Scientists* at the Max Plank Institute for the Structure and Dynamics of Matter (Hamburg), 2017 –
- *STFC Visiting Senior Fellow*, Sept. 2008 –
- *Chair of the BCA/IOP Physical Crystallography/ Structural Condensed Matter Group* 2005 – 2008.
- *Visiting Professor* at the Department of Physics and Astronomy, UCL, June 2002 – 2008.

Research Experience

- I have a track record in studying and directing research on **magnetic, electronic and structural effects of transition metal oxides and related compounds** (see publication list). In most cases, my group and I have employed a combination of scattering techniques on powders and single crystals, most notably neutron scattering (including neutron spherical polarimetry) and synchrotron X-ray scattering and spectroscopy (including resonant X-ray scattering anomalous scattering and EXAFS). These were complemented by electron diffraction, magnetic, transport, electrical and optical measurements, thermal analysis and electron microscopy (SEM, TEM). I have also experience in high-pressure and high-temperature synthesis and materials discovery techniques. Recently, I have initiated a material modelling activity, in collaboration with the Materials Modelling Lab in Oxford and I perform theoretical and experimental work on light-matter interaction and photo-induced phenomena, in collaboration with the Max Planck institute MPSD (Hamburg).
- As a scientist and Group Leader at large-scale neutron facilities, I have given a significant contribution to the **development of neutron diffraction instrumentation and techniques**. In particular, I have upgraded the D2B diffractometer at the ILL and contributed to the development of the SuperD2B concept. At ISIS, I have contributed to the design, construction and commissioning of **GEM**. I have coordinated the successful bid for a **new magnetic diffractometer (WISH)** for the ISIS second target station, which is now acknowledged to be the best instrument in the world for many of these experiments. I have made successful bids to upgrade the **POLARIS, HRPD and PEARL** instruments at the ISIS neutron source. I have been part of the working group that developed the successful proposal for a **high-resolution powder diffraction beamline I11** at Diamond. I have initiated and sponsored the **MANTID** project to develop an industrial strength, high-performance computing platform for neutron data analysis, which is now a major international software project with the ISIS, SNS, ESS, ILL and PSI neutron sources as partners/contributors.

Recent teaching experience

- *Symmetry in Condensed Matter Physics*, graduate course at the University of Oxford (since 2010).
- *Condensed-Matter Physics: Structure and Dynamics*, 4th year undergraduate option course at the University of Oxford (since 2009).
- *Fundamentals of Crystallographic Symmetry*, graduate course, Department of Physics and Astronomy – University College London (2007 and 2008).
- I organised and directed (with D. Gatteschi) the *VIII International School of Neutron Scattering "Francesco Paolo Ricci" – Neutron scattering from magnetic systems*, Santa Margherita di Pula, Italy, Sept 2006.
- I direct the *Magnetic Rietveld Workshops series*, a training event for international students that takes place in Cosener's House every 3 years (2002 and 2005 editions).

Management and organisational experience

- 2010-2018: *Head of Condensed Matter Physics (CMP)*, a sub-department of the Department of Physics at the University of Oxford with 25 academics and Advanced Fellows, 37 PDRAs and 93 DPhil students.
- I am also *heading the Quantum Materials Theme*, one of the 3 research themes within CMP, developing the research strategy, the facilities and the funding portfolio of Quantum Materials.
- *Associate Head of Physics*, I have a specific mandate to develop research facilities and infrastructures for the whole Department. I am also responsible for *designing the experimental facilities for the new "Beecroft" Clarendon 2 Building*, with world-class levels of stability and temperature control, which will be completed in February 2018.
- As ISIS Crystallography Group Leader, I have *supervised 15 scientists* in the CRY-ENG group.
- I have served as *project scientist and project sponsor* in a variety of instrument development, technical and software projects at ISIS, managing a project portfolio of over £10M.

Training and supervision

- Since I move to Oxford, I have supervised 10 DPhil (PhD) students, 4 of which have already graduated. Two of them (Dr A. Hearmon and Dr N. Waterfield-Price), won the national PANalytical Thesis Prize.
- I have supervised many post-doc and junior members of staff, for example:
 - *Dr Roger D. Johnson* (PDRA 2011-2015) won the BCA Physical Crystallography Prize in 2014, a Royal Society URF in 2015 and the IoP/RSC BTM Willis Prize in 2018. He is now a lecturer at UCL.
 - *Prof. Laurent Chapon* was a junior collaborator at ISIS (2002–2008). He won the BCA Physical Crystallography Prize in 2008 and is now Physical Sciences Director at the Diamond Light Source.
 - *Dr Graeme Blake* was a PDRA at ISIS. He is now Assistant professor (tenure track) in the Solid State Materials for Electronics group at the University of Groningen, The Netherlands.

Grant and Project portfolio

As PI

- Oxford Quantum Materials Platform Grant (EPSRC, 2015–2020, £2.2M).
- New concepts in multiferroics and magnetoelectrics, (EPSRC 2011–2015, £646,400).
- WISH: a powder and single crystal magnetic diffractometer on TS2 (CCLRC, £4.5M)
- HRPD high-resolution diffractometer guide upgrade (CCLRC facility development, £1.5M)
- POLARIS medium-resolution diffractometer upgrade (CCLRC facility development, £3.5M)
- A sample preparation and characterisation laboratory for ISIS (STFC WFL, £280K)

As Co-I

- Halide segregation in hybrid perovskites for Si tandem photovoltaics (EPSRC 2017-2021, £1.2M)
- Centre for Applied Superconductivity (Oxfordshire Local Enterprise Partnership, 2015–2020, £6.5M)
- A National Thin-Film Cluster Facility for Advanced Functional Materials (EPSRC, 2015–2018, >£3M).
- A 10 Tesla Cryo-magnet For Neutron Diffraction At ISIS, (EPSRC, 2001–2004, £116,586).
- A new instrument for neutron time-of-flight single crystal diffraction, (EPSRC, 1999–2002, £956,371).

Peer Review

- I am a member of the *European Research Council ERC PE3 CoG evaluation panel* (2011-present).
- I have served as *Divisional Associate Editor for Physical Review Letters* (2002-2008). I also serve as referee for a number of other scientific journals, such as PRB, Science and Nature Materials.
- I am a member of the *EPSRC Peer Review College* 2006-present.
- I have been a *member of the LLB proposal review panel* (Magnetism and Superconductivity), the *ISIS Facility Access Panel*, the *Elettra Proposal Review Panel* and the *Diamond Proposal Review Panel*.

Brief Career History

- *Dr Lee's Professor*, Sept 2008 – present. *Associate Head of Physics*, Sept 2010 –Sept 2017; *Head of Condensed Matter Physics*, Sept 2011 – Sept 2017
- *STFC Fellow and Crystallography and Engineering Group Leader, ISIS Facility*, July 2003 – Aug 2008.
- *Instrument Scientist* of the GEM high-intensity powder diffractometer, ISIS facility (UK): 1998 – 2006.
- *Scientist and 1st Responsible of the D2B high-resolution powder diffractometer*, Institut Max Von Laue - Paul Langevin, BP 156, 38042, Grenoble FRANCE. Oct. 1994 – Jan. 1998.
- *Post-Doctoral Appointee, Laboratoire de Cristallographie-CNRS*, Grenoble, France under EU-grant "Human Capital and Mobility". Dec. 1993 - Oct. 1994.
- *Post-Doctoral Appointee* Materials Science Division, Argonne National Laboratory, Argonne IL, under grant from the National Science Foundation, Science and Technology Center for Superconductivity., Sept. 1992 - Nov. 1993.
- *Graduate Research Assistant* Materials Science Division, Argonne National Laboratory, Argonne IL, under grant from the National Science Foundation, Science and Technology Center for Superconductivity. Sep. 1990 - Sep. 1992.
- *Research Associate and Lecturer* IIT, Dept. of Physics, Chicago IL. Jun. 1989 - Jul. 1990.
- *Research Associate* Institute for the Technology of Non-conventional Metals (ITM), Italian Research Council (CNR), Milan, Italy, under grant from the Pirelli Cavi S.p.A, Milan. May 1988 - Jun. 1989.