University of Birmingham

Dr Elizabeth Blackburn

Reader in Experimental Physics

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About

Elizabeth Blackburn is a Reader in Experimental Physics within the Condensed Matter Group in the School of Physics and Astronomy.

Qualifications

- PhD in Physics, UJF Grenoble, 2005
- MSci in Natural Sciences (Physical), University of Cambridge, 2002

Biography

Elizabeth Blackburn graduated with an MSci in Natural Sciences (Physical) from the University of Cambridge in 2002, and then went on to obtain a PhD in Condensed Matter Physics at the Université Joseph-Fourier, Grenoble. This involved working at the Institut Laue-Langevin, Grenoble, and the Institute for Transuranium Elements, Karlsruhe. After that, she spent some time at the University of California, San Diego, before coming to Birmingham in 2008.

Her work on the antiferromagnetic superconductor UPd2Al3 lead to her being named the Joint Research Centre of the European Commission's Best Young Scientist of the Year 2006. She was also awarded the inaugural Best Thesis Award from the Institut Laue-Langevin, Grenoble, as part of their 40th anniversary celebrations.

She is co-investigator with Prof. E. M. Forgan on a £750,000 grant from EPSRC to study magnetic flux line structures and phase transitions in both conventional and unconventional superconductors, and has received a small equipment grant from the Royal Society. She was named a NESTA Crucible Fellow for 2008.

Teaching

- Physics BSc/MSci
- Physics and Astronomy MPhil/PhD

Postgraduate supervision

- Magnetic flux line structures and phase transitions in unconventional and conventional superconductors
- Microscopic magnetization dynamics on timescales greater than microseconds
- The austenite-martensite transition in magnetic materials

Research

Research Themes

Magnetic order; unconventional superconductivity.

Research Activity

Elizabeth Blackburn's research interests focus on magnetism, both dynamic and static, particularly in conjunction with unconventional superconductivity and strongly correlated electron systems.

She has a very wide experience of research using large international experimental facilities, specifically neutron sources and synchrotrons, and has made use of a large range of techniques, tailored to answer questions about unconventional superconductivity, magnetisation dynamics in 5f electron (U-based) systems and resonant x-ray magnetic scattering studies.

She has recently been working on materials with coupled magnetic and structural transitions, in particular the Ni-Mn-X family, which displays a wide variety of technologically useful properties.

Other activities

- NESTA Crucible Fellow 2008

Publications

Blackburn, E., Das, P., Eskildsen, M. R., Forgan, E. M., Laver, M., Niedermayer, C., Petrovic, C., and White, J. S. (2010), Exploring the fragile antiferromagnetic superconducting phase in CeCoIn5, Phys. Rev. Lett. 105: 187001.

Koohpayeh, S. M., Williams, A. J., Abell, J. S., Lim, J., and Blackburn E. (2010), Cr-doped TiO2 (rutile): Ferromagnetism in bulk form? J. Appl. Phys. 108: 073919.

Roy, S., Blackburn, E., Valvidares, S. M., Fitzsimmons, M. R., Vogel, S. C., Khan, M., Dubenko, I., Stadler, S., Ali, N., Sinha, S. K., and Kortright, J. B. (2009), Delocalization and hybridization enhance the magnetocaloric effect in Cu-doped Ni2MnGa, Phys. Rev. B 79: 235127.

Blackburn E., Sanchez-Hanke, C., Roy, S., Smith, D. J., Hong, J.-I., Chan, K. T., Berkowitz, A. E., and Sinha, S. K. (2008), Pinned Co moments in a polycrystalline permalloy/CoO exchange-biased bilayer, Phys. Rev. B 78: 180408(R).

Expertise

Properties of solids rooted in quantum mechanics, in particular magnets and superconductors; using microscopic probes such as neutrons and X-rays

Alternative contact number available for this expert: **contact the press office (http://www.birmingham.ac.uk/news/contacts/index.aspx)**

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