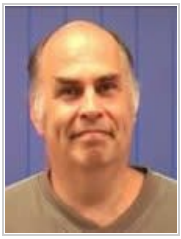
University of Birmingham

Dr Martin Long BA, MA, PhD, MInstP

Senior Lecturer

School of Physics and Astronomy (/schools/physics/index.aspx)

Contact details



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About

Martin Long is a Lecturer in the Theoretical Physics group at Birmingham University.

Martin has published over 50 research papers in scientific journals, including reviews on frustrated antiferromagnetism and the Hubbard model. He is heavily involved in postgraduate education, having graduated about 15 PhD students at Birmingham and is currently jointly responsible for the Midland Physics Alliance Graduate School.

Qualifications

- PhD in Physics, 1984
- MA in Mathematics, 1981
- BA in Mathematics, 1980

Biography

Martin Long qualified with a BA in Mathematics from the University of Cambridge in 1980. He went on to study for a PhD in Theoretical Condensed Matter Physics at London in 1984. After postdoctoral study at Harwell Laboratory, the Rutherford Appleton Laboratory and Oxford University, he took a Physics Lectureship at Bath University for four years before transferring to Birmingham University in 1993 where he has stayed ever since. He researches into magnetism and superconductivity using a broad spectrum of analytical and numerical techniques, usually being closely involved with experiments. One major theme of his postgraduate teaching has been trying to make experiments more accessible to young theorists, through both courses and PhD supervision.

Teaching

Administration

- MPAGS Birmingham EPSRC Coordinator
- TPAM Programme Coordinator
- Theoretical Physics Programme Coordinator
- Year 4: Theoretical Project Coordinator

Courses

- Year 1: Special Relativity
- Year 1: Probability Theory
- Year 3: Complex Variable Theory
- Year 3: Statistical Physics
- Postgraduate: Probes of condensed matter
- Postgraduate: Quantum Magnetism

Postgraduate supervision

RECENT PhD STUDENTS

- Richard Mason, Current, “Pyrochlore Magnetism”
- Matthew Brammall, 2010, “Orbital Ordering in strongly correlated metals”
- Melanie Hopper, 2010, “Surface magnetism of frustrated magnets”
- Mike Hawkins, 2009, “Conservation laws in integrable systems”
- Paul Guest, 2006, “Anisotropic motion in correlated metals”
- Morgan Harvey, 2005,“Combined spin and orbital ordering”
- James Champion, 2004, “Heavy fermions”
- Iain Styles, 2003, “High temperature superconductors"

Research

RESEARCH THEMES

- Frustrated magnetism
- Quantum magnetism
- Strongly correlated systems
- Orbital ordering
- Superconductivity
- Heavy fermions
- High temperature superconductors
- Colossal magnetoresistance

Other activities

- Member of IOP Theoretical Physics Committee
- Past member of IOP Magnetism Committee
- Consultant to RAL Theory group

Publications

A K R Briffa and M W Long, “Magnetic Structure of Gd2Ti2O7”, (2011), Phys Rev B 83 054422

P Prelovsek, S El Shawlish, X Zotos, M W Long et al, “Anomalous scaling of conductivity in integrable fermion systems”, (2004), Phys Rev B, 70, 205129

M W Long and I B Styles, “One hole in a CuO2 plane: Resonating-valence-bond-like behaviour”, (2004), Phys Rev B 205119

M W Long, R D Lowde and M Sakata, “On the martensitic transition in f.c.c manganese alloys IV: associated magnetic transitions”, (2004), Phase Transtions 77 p295

M W Long, P Prelovsek et al, “Finite temperature dynamical correlations using the microcanonical ensemble and the Lanczos algorithm”, Phys Rev B 68 235106

P M Guest and M W Long, “Stripe-like orbital order resulting from pure orientational orbital motion”, (2003) J Phys A, 36 9187

J D Champion and M W Long, “A pure Hubbard model with demonstrable pairing adjacent to the Mott insulating phase”, (2003), J Phys A, 36, 9351

X Zotos, F Naef, M W Long et al, “Reactive Hall response”, (2000) Phys Rev Lett 85, 377

M W Long and X Zotos, “Hole-hole correlations in the $U=\infty $ limit of the Hubbard model and the stability of the Nagaoka state”, (1993), 48, 317

M W Long and X Zotos, “Ground-state Energy and Spin of a Generalised-statistics t-J Model”, (1992), Phys Rev B, 45 9932

M W Long and W Yeung, “Spin Waves in Itinerant Multiple Spin Density Wave Systems”, (1987), J Phys F 17 p1175-1194, p1195-1220

M W Long and W Yeung, “Multiple Spin Density Waves of an Itinerant Antiferromagnet”, (1986), J Phys F 16 p769-790

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