University of Birmingham

Professor Martin Freer BSc, PhD, FInstP

Professor of Nuclear Physics
Head of Nuclear Physics
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About

Professor Freer is head of the Nuclear Physics Group and Director of the Birmingham Centre for Nuclear Education and Research.

His main research area is the study of the structure of light nuclei using nuclear reactions. This research is performed at international facilities worldwide.

In addition, he is actively engaged in promoting research and educational programmes to support the UK's investment in nuclear power generation.

Qualifications

- Fellow of the Institute of Physics
- PhD in Nuclear Physics, University of Birmingham, 1991
- BSc. (Hons) Maths and Physics, Aston University, 1987

Biography

Martin Freer obtained his PhD in Nuclear Physics in 1991 from the University of Birmingham.

Thereafter he worked at the Argonne National Laboratory on the heavy-ion accelerator programme (ATLAS).

In 1993 he returned to the UK as an SERC/EPSRC Advanced Fellow and then went on to become a member of the academic staff of the School of Physics and Astronomy in 1998. He is now head of Nuclear Physics and in 2010 helped establish the Birmingham Centre for Nuclear Education and Research.

In recognition for his contribution to the field of nuclear clustering (the study of clusterisation in nuclear matter) he received the Friedrich Wilhelm Bessel Prize, Humboldt Foundation, Germany in 2004 and the Rutherford Medal (IoP) 2010.

He has served on a number of international advisory panels for both scientific facilities (GANIL, France – chair; iThemba, South Africa) and for the Finland Academy. He has also severed on the UK Nuclear Physics Grants Panel (STFC) and is chair of the Nuclear Physics Advisory Panel (STFC).

Teaching

Teaching Programmes

- Year 1: Optics and Waves
- Year 2: Physics and Communication Skills
- Year 3: Nuclear Physics
- Year 3: General Physics
- Year 4: Nuclear Physics
- Year 4: Projects
- Postgraduate: Electronics
- Postgraduate: Laboratories

Postgraduate supervision

PhD's in Nuclear Structure.

Research

Research Themes

- Nuclear Structure and Nuclear Reactions

- Neutrinoless Double Beta Decay

Research activity

- Member of the R3B collaboration at FAIR, GSI, Germany

Other activities

- Chair of the Nuclear Physics Advisory Panel
- Member of UK Nuclear Physics Advisory Panel
- Advisor to Finish Academy
- Chair of GANIL Programme Advisory Panel (France)
- Previous member of the iThemba Scientific Advisory Committee

Publications

Freer M. (2010), Clusters in Nuclei, Scholarpedia, 5(6):9652. doi:10.4249/scholarpedia.9652 (http://www.scholarpedia.org/)

Freer, M., et al. (2009), 2+ excitation of the C-12 Hoyle state, Phys. Rev. C 80: 041303

Catford, W.N., Freer M., et al. (2010), Migration of Nuclear Shell Gaps Studied in the d(Ne-24, p gamma)Ne-25 Reaction, Phys. Rev. Letts. 104: 192501

Freer, M., et al., (2006) :2n: structure in 10Be, Phys. Rev. Letts. 96; 042501

Freer, M. (2007) The clustered nucleus—cluster structures in stable and unstable nuclei, Rep. Prog. Phys. 70 No 12; 2149

von Oertzen, W., Freer, M. and Kanada-En'yo Y. (2006), Nuclear clusters and nuclear molecules, Physics Reports 432; 43

Ashwood, N.I, Freer, M., et al. (2004) Helium clustering in neutron-rich Be isotopes, Lett. B 580; 129

Freer, M., et al., (1999) Exotic Molecular States in 12Be, Phys. Rev. Lett. 82; 1383

Expertise

Nuclear physics; nuclear education; nuclear power research; pure nuclear science; waste management; decommissioning

Languages and other information

Martin is leading the University of Birmingham's Policy Commission on **Nuclear Energy**

- Chair of the Nuclear Physics Advisory Panel
- Member of UK Nuclear Physics Advisory Panel

Media experience

Professor Martin Freer talks about the Nuclear Energy Policy Commission

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