

## Dr Graham P Smith MA, PhD, FRAS, CA

Reader in Cosmology  
Royal Society University Research Fellow  
Director of the University of Birmingham Observatory

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### About

Dr Smith leads the Local Cluster Substructure Survey (LoCuSS), an international collaboration whose aims include to calibrate galaxy clusters as a probe of the mysterious “dark energy” responsible for the accelerating expansion of the universe. He is lead/co-author on 72 research articles in peer reviewed journals (h-index = 32) in the fields of gravitational lensing, galaxy clusters, galaxy evolution, and the high redshift universe. In 2007 Dr Smith was received the Fowler Award from the Royal Astronomical Society in recognition of his early career achievements.

### Qualifications

- PhD in Astrophysics, University of Durham, 2002
- Chartered Accountant, 1994
- MA (Hons), Physics, University of Oxford, 1991

### Biography

Graham Smith obtained his PhD from the University of Durham in 2002, on gravitational lensing studies of X-ray luminous galaxy clusters. In 2005, as a Postdoctoral Scholar at the California Institute of Technology, he published the first statistically well-defined gravitational lensing-based study of the relationship between galaxy cluster mass and temperature. This relationship is a key ingredient of plans to use galaxy clusters to constrain dark energy. Since arriving in Birmingham as a Royal Society University Research Fellow in late 2005 he has created the Local Cluster Substructure Survey (LoCuSS). This international collaboration (30 scientists spanning North America, Europe, and Japan) builds on the pilot study from 2005 to deliver precise calibration of galaxy cluster mass measurements for cluster cosmology experiments. In 2008 Graham was appointed Reader in Cosmology.

### Teaching

- Y2 Observing the Universe
- Y3 Group Studies – Cosmic Re-ionization
- Y4 Project Supervision
- Midlands Physics Alliance Graduate School (MPAGS)
  - Co-ordinator of Astronomy Programme

### Postgraduate supervision

Supervision of research PhDs in gravitational lensing, cosmology, and galaxy evolution.

### Research

#### RESEARCH THEMES

- Gravitational lensing
- Galaxy clusters
- Galaxy evolution
- Cosmology

### Other activities

- Chair, Gemini Observatory, UK National Time Allocation Committee [2010 – ]
- Member, Gemini Observatory, UK National Time Allocation Committee [2008 – 2009]

## Publications

- Smith G. P., et al., 2010, A&A, 518, 18; LoCuSS: Probing galaxy transformation physics with Herschel
- Smith G. P., et al., 2010, MNRAS, 409, 169; LoCuSS: connecting the dominance and shape of brightest cluster galaxies with the assembly history of massive clusters
- Smith G. P., et al., 2009, ApJ, 707, 163; Hubble Space Telescope Observations of a Spectacular New Strong-Lensing Galaxy Cluster: MACS J1149.5+2223 at  $z = 0.544$
- Smith G. P., et al., 2005, MNRAS, 359, 417; A Hubble Space Telescope lensing survey of X-ray luminous galaxy clusters - IV. Mass, structure and thermodynamics of cluster cores at  $z = 0.2$
- Smith G. P., et al., 2005, ApJ, 620, 78; Evolution since  $z = 1$  of the Morphology-Density Relation for Galaxies

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