Professor Trevor Ponman

Professor of Astrophysics

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About

Trevor Ponman leads the Astrophysics & Space Research Group at Birmingham. His research focuses on the study of hot gas within galaxies, groups and clusters. He has played a world-leading role in establishing the importance of galaxy groups as an important reservoir of hot baryonic material, and in demonstrating how the properties of this gas can be used to probe the thermal history of cosmic structures. He has published over 200 scientific papers, 18 of which have 100 or more citations.

He is also an enthusiastic advocate of novel teaching approaches involving student-centred and independent learning, and has engaged over many years in a wide variety of activities relating to the promotion and public understanding of science.

Qualifications

- PhD, University of Birmingham, 1981
  - *A survey of the bright galactic bulge X-ray sources*
- PGCert, Bishop Otter College, Chichester, 1975
- BSc Hons, Physics, University of Warwick, 1973

Biography

Trevor Ponman arrived at Birmingham University in 1978, at the time when X-ray astronomy was developing from an experimental activity into a full branch of astronomy. His PhD, completed in 1981, involved the study of neutron star and black hole binaries in the central regions of our galaxy, with the British-built Ariel V satellite. He was subsequently closely involved in the ROSAT and XMM missions, to which the Birmingham group made substantial contributions, and was a member of the team which flew a coded mask telescope on the Spacelab 2 shuttle mission in 1985. En route, his main area of interest a galaxy groups and clusters. The study of hot gas in these systems was largely pioneered during this period, and a number of papers in Nature confirmed the widespread interest in the results.

The launch of the new generation of X-ray observatories, Chandra and XMM, in 1999, provided data of much higher quality, and Trevor spent a sabbatical at Harvard involved in the exciting early phases of work on galaxy clusters with Chandra. He is now engaged in a number of multiwavelength studies of galaxy groups and clusters, with a common theme of trying to understand the impact of "cosmic feedback" from supernovae and accreting supermassive black holes. He enjoys collaborating with theorists and cosmological simulators, and has a developing interest in applying advanced analysis techniques to l multidimensional data of the sort which is increasingly available from large astronomical surveys.

Teaching

RESEARCH THEMES

- Galaxy groups
- Galaxy clusters
- Cosmic feedback
- Environmental effects on galaxies

For details of the extragalactic research programme at Birmingham, see **www.sr.bham.ac.uk/extragal.php (http://www.sr.bham.ac.uk/extragal.php)**

Postgraduate supervision

Trevor has supervised over 20 research PhDs at Birmingham, mostly in extragalactic astrophysics.

For details of some available PhD projects see **www.sr.bham.ac.uk/phd/extgal-projects.php (http://www.sr.bham.ac.uk/phd/extgal-projects.php).**

Research

RESEARCH THEMES

- Galaxy groups
- Galaxy clusters
- Cosmic feedback
- Environmental effects on galaxies

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Other activities

- Newton International Fellowship Panel, Royal Society (2010-)
- Academy of Finland, Space Research and Astronomy Panel (2010)
- Chandra Time Allocation Committee (2004, 2006, 2008, 2009)
- Chair, XMM Time Allocation Committee (2004, 2005)
- AstroGrid Oversight Committee, PPARC (2004-2008)

Publications

Recent selected publications:

Johnson, R, Finoguenov, A, Ponman, TJ., Rasmussen, J & Sanderson, AJR (2011). *Abundance profiles and cool cores in galaxy groups*, MNRAS 413, 2467

Akhino, A, Ponman, TJ, Pacaud, F & Pierre, M. (2010), *Evolution of the X-ray profiles of poor clusters from the XMM-LSS survey*, MNRAS, 407, 2543

McCarthy, IG, Schaye, J, Ponman, TJ et al. (2010), *The case for AGN feedback in galaxy groups*, MNRAS, 406, 822

Pratt, GW, Arnaud, M, Piffaretti, R, Böhringer, H, Ponman, TJ et al. (2010), *Gas entropy in a representative sample of nearby X-ray galaxy clusters (REXCESS): relationship to gas mass fraction*, A&A, 511, 85

Sanderson, AJR & Ponman, TJ (2010), *X-ray modelling of galaxy cluster gas and mass profiles*, MNRAS, 402, 65

Rasmussen, J & Ponman, TJ (2009), *Temperature and abundance profiles of hot gas in galaxy groups - II. Implications for feedback and ICM enrichment*, MNRAS, 399, 239

Johnson, R, Ponman, TJ & Finoguenov, A (2009), *A statistical analysis of the Two-Dimensional XMM-Newton Group Survey: the impact of feedback on group properties*, MNRAS, 395, 1287

Sanderson, AJR, O'Sullivan, E & Ponman, TJ (2009), *A statistically selected Chandra sample of 20 galaxy clusters - II. Gas properties and cool core/non-cool core bimodality*, MNRAS, 395, 764

Rasmussen, J, Ponman, TJ, Verdes-Montenegro, L, Yun, MS & Borthakur, S (2008), *Galaxy evolution in Hickson compact groups: the role of ram-pressure stripping and strangulation*, MNRAS, 388, 1245

For a complete up-to-date publication list, see **nasa.http://adsabs.harvard.edu/cgi-bin/nph-abs_connect?db_key=AST&db_query=YES&ref_logic=OR&obj_logic=OR&author=Ponman%2C+Trevor&object=&start_mon=&start_year=&end_mon=&end_year=&ttl_logic=OR&title=&txt_logic=OR&text=&nr_to_return=100&start_nr=1&jou_pick=ALL&ref_stems=&data_and=ALL&group_and=ALL&start_entry_day=&start_entry_mon=&start_entry_year=&end_entry_day=&end_entry_mon=&end_entry_year=&min_score=&sort=SCORE&data_type=SHORT&aut_syn=YES&ttl_syn=YES&txt_syn=YES&aut_wt=1.0&obj_wt=1.0&ttl_wt=0.3&txt_wt=3.0&aut_wgt=YES&obj_wgt=YES&ttl_wgt=YES&txt_wgt=YES&ttl_sco=YES&txt_sco=YES&v**

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