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Dr Somak Raychaudhury BSc MA PhD FRAS

Reader in Astrophysics

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About

Dr Raychaudhury is Reader in Astrophysics, and is a member of the Astrophysics and Space Research group. His research interests lie in the study of the evolution of galaxies in groups and clusters, and on the supercluster filaments of the cosmic web. He has used optical, X-ray, radio, infrared and ultraviolet observations to understand how the transformations of galaxies are related to their local and global environment. He also leads an international collaboration ton developing machine learning algorithms for Astronomical data mining. He has published over 80 research papers in peer-reviewed scientific journals on these themes. He leads a substantial outreach programme on astronomical themes involving school students and their teachers, and the general public, and plays an active role in presenting Astronomy to the public in the national and international media.

School webpage: **www.sr.bham.ac.uk/~somak (http://www.sr.bham.ac.uk/~somak)**

Qualifications

- PhD in Astrophysics, University of Cambridge, 1990
- MA in Physics, University of Oxford, 1986
- BSc (Hons) in Physics, University of Calcutta, India, 1983

Biography

Somak Raychaudhury obtained his PhD in Astrophysics from the University of Cambridge in 1990, where he continued his research on superclusters of galaxies as a research fellow at the Institute of Astronomy and a fellow of St Edmund's College. In 1991, he moved to the Harvard-Smithsonian Center for Astrophysics (CfA) as a Smithsonian fellow, working on near-infrared Astronomy. In 1993, he became a staff member of the Chandra Science Center at the CfA, working on X-ray Astronomy. During this period, he taught in the Core programme at Harvard University, and was a tutor at Lowell House. In 1995, he spent a year at the University of Cambridge as a Senior visiting Fellow, after which he joined the Inter-University Centre for Astronomy and Astrophysics as an Assistant Professor. He moved to his current position at the School of Physics and Astronomy at the University of Birmingham in 2000. He has been the director of the University Observatory since 2003, and is in charge of postgraduate admissions for Astrophysics and of the extensive outreach programme of the Astrophysics group.

Dr Raychaudhury's research involves the study of the evolution of galaxies in groups and clusters, and on the supercluster filaments of the cosmic web. He has used optical, X-ray, radio, infrared and ultraviolet observations, from the ground and from Space ,to understand how the transformations of galaxies are related to their local and global environment. He also leads an international collaboration ton developing machine learning algorithms for Astronomical data mining.

Teaching

- Y2 Structure in the Universe
- Y2 Tutor
- Y3 Formation and evolution of galaxies
- Y3 Observatory Laboratory [in charge]
- Y4 Project Supervision

Postgraduate supervision

Supervision of research PhDs in

- Extragalactic astrophysics (**www.findaphd.com/search/ProjectDetails.aspx?PJID=25475&LID=147 (http://www.findaphd.com/search/ProjectDetails.aspx?PJID=25475&LID=147)**)
- Astrostatistics (**www.findaphd.com/search/projectDetails.aspx?PJID=25480&LID=147 (http://www.findaphd.com/search/projectDetails.aspx?PJID=25480&LID=147)**)

Research

RESEARCH THEMES

- Superclusters of galaxies and the cosmic web: the outskirts of galaxy clusters

- Galaxy evolution in groups and clusters of galaxies
- Supermassive black holes, their host galaxies and clusters- X-ray and radio observations, feedback
- Stellar mass black holes: low-mass X-ray binaries and ultraluminous X-ray sources in nearby galaxies
- Learning Algorithms for advanced data mining and analysis of large Astronomical datasets

Other activities

- Scientific Organisation Committee, European Week for Astrophysics and Space Science, Rome 2012
- Fellow, European Astronomical Society (2011-)
- Member of EU FP7 Expert Panel for Physics (2010-)
- Smithsonian/NASA Chandra Peer Review panel (member several times since 2002, once Chair)
- Editorial board, Advances in Astronomy (2009-)
- Member of Management Committee, LOFAR-UK observatory (2008-)
- Elected member of Executive Council, Astronomical Society of India, 1997-2000
- Fellow, Royal Astronomical Society
- Life Fellow, Astronomical Society of India
- Member, International Astronomical Union

Publications

- Mahajan, S.; Haines, C. P.; Raychaudhury, S. (2011) , The evolution of dwarf galaxies in the Coma supercluster, Monthly Notices of the Royal Astronomical Society, 412: 1098-1104
- O'Sullivan, E.; Giacintucci, S.; David, L. P.; Gitti, M.; Vrtilek, J. M.; Raychaudhury, S.; Ponman, T. J. (2011), Heating the Hot Atmospheres of Galaxy Groups and Clusters with Cavities: The Relationship between Jet Power and Low-frequency Radio Emission, Astrophysical Journal, 735: 11
- Kraft, R. P.; Forman, W. R.; Jones, C.; Nulsen, P. E. J.; Hardcastle, M. J.; Raychaudhury, S.; Evans, D. A.; Sivakoff, G. R.; Sarazin, C. L. (2011), The Gas Dynamics of NGC 4472 Revealed by XMM-Newton, Astrophysical Journal, 727: 41
- Dariush, A. A.; Raychaudhury, S.; Ponman, T. J.; Khosroshahi, H. G.; Benson, A. J.; Bower, R. G.; Pearce, F. (2010), The mass assembly of galaxy groups and the evolution of the magnitude gap, Monthly Notices of the Royal Astronomical Society, 405: 1873-1887

Full list available at:
www.sr.bham.ac.uk/~somak/publications.html (http://www.sr.bham.ac.uk/~somak/publications.html)

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