William Alston

Curriculum Vitae

Current Position

Nov 2013 **Post-Doctoral Research Assistant**
Institute of Astronomy
University of Cambridge

Education

2010 – 2013 **Doctor of Philosophy (Ph.D.)**
University of Leicester
Awarded: Feb 2014

2010 **Master of Physics (MPhys)**
PHYSICS WITH ASTROPHYSICS
University of Sheffield

Affiliations

- Member of the STRONGGRAVITY consortium, an EU FP7-SPACE research project
- *ATHENA* (satellite) working groups 2.3 and 2.4
- Fellow of the Royal Statistical Society
- Member of the Astrostatistics & Astroinformatics Portal
- Member of Darwin College, Cambridge

Research Interests

- Timing and spectral-timing properties of accreting black holes, including X-ray reverberation and QPOs
- X-ray signatures of strong gravity
- Physics of accretion and origin of the variability
- Black hole reverberation mass mapping
- Advanced signal processing methods and their application to astronomy

Experience / Skills

- Time and frequency-domain signal processing, including Monte Carlo time series simulations
- Statistical analysis and interpretation, including Bayesian and MCMC
- Computer software:
  IDL, R, Python, LaTeX, C shell, XSPEC, STARLINK, IRAF, Maple
- Multi-wavelength data reduction and analysis: *XMM-Newton* (EPIC, OM, RGS), *Swift* (XRT, UVOT), *Hubble* (WFPC-2), *LT* (SPRAT, IO:O), *JCMT* (SCUBA-2, HARP), *NTT* (EMMI)

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Select Publications

- *False periodicities in quasar time-domain surveys* Vaughan, S. et al. (2016), MNRAS, 461, 3145
- *A global look at X-ray time lags in Seyfert Galaxies*, Kara, E., **Alston, W. N.** et al. (2016), MNRAS, 462, 511
- *Discovery of a 2 hr high frequency X-ray QPO and iron K alpha reverberation in the active galaxy MS 2254.9-3712*, **Alston, W. N.** et al. (2015), MNRAS, 449, 467
- *Revealing the X-ray variability of AGN with principal component analysis*, Parker et al. (2015), MNRAS, 449, 467
- *Detection of a QPO in five XMM-Newton observations of RE J1034+396*, **Alston, W. N.** et al. (2014), MNRAS, 445L, 16
- *X-ray time delays in the narrow line Seyfert 1 galaxy PG 1244+026*, **Alston, W. N.**, Vaughan, S. and Done, C. (2014), MNRAS, 439, 1548
- *The flux-dependent X-ray time lags in NGC 4051*, **Alston, W. N.**, Vaughan, S. and Uttley, P. (2013), MNRAS, 435, 1511
- *Ultraviolet and X-ray variability of NGC 4051 over 45 days*, **Alston, W. N.**; Vaughan, S.; Uttley, P., (2013), MNRAS, 429, 75

Telescope Time Awarded

- *XMM-Newton*, DDT (AO14), **100 ks, PI Alston**; Understanding the X-ray QPO in the active galaxy MS 22549-3712
- *XMM-Newton*, AO14, **120 ks**, PI Kara; Reverberation in the bright NLS1, IGR J19378-0617
- *Liverpool Telescope*, Sem15A, **31 hrs, PI Alston**; Reverberation mass mapping the central black hole in RE J1034+396
- *XMM-Newton*, AO13, **600 ks (large), PI Alston**; Understanding the X-ray Time delays in the simple spectrum NLS1: PG 1244+026
- *XMM-Newton*, AO12, **200 ks**, PI Lobban; IRAS 18325-5926: A Seyfert 2 displaying unusual spectral characteristics

Services to the community

- MNRAS journal manuscript referee
- ApJ journal manuscript referee
- PASPJ journal manuscript referee
- Astro. Nach. journal manuscript referee
- Liverpool Telescope proposal referee

Teaching Experience

- Part-III project supervisor (IoA, 2013–present): Astrophysics research project
- Course Leader (Leicester, 2011–2013): Maths lecturer for year 2 I-Science
- Seminar Leader (Leicester, 2010–2013): Physics & Mathematics
- Laboratory demonstrator (Leicester, 2010–2013): Physics & Astronomy
- A-level physics tutor (2012–2013)

Outreach

- Radio interview: *From beer to black holes* Cambridge 105 FM (Sep 2015)
- Astronomy open day for Cambridge Science Festival 2014, 2015
- Public talk on black holes at the Wunderkammer improv show, London, Aug 2014.
- Chairing the expert speaker session for BBC Stargazing Live 2013 at University of Leicester
- Talk on studying physics and astronomy at university to A-level students
- Talk on observations of black holes to year 9 students

Other relevant experience

- Organiser for internal astronomy seminars at Leicester (2011–2013)
- 50hr observation experience (5 nights) at JCMT, Mauna Kea, Hawaii (May 2012)
- Experience with 13" and 20" teaching telescopes (Cambridge, Leicester and Sheffield)
- Postgraduate training courses, including 'Scientific Inference' and 'Numerical Methods'
- UCAS open day tours of the Physics and Astronomy department and Space Research Centre at the University of Leicester (2011–2013)

Select Talks

- **Invited seminar:** QPOs and X-ray reverberation in AGN, *Strasbourg Observatory, May 2016*
- The QPO-reverberation connection in AGN. *The Extremes of Black Hole Accretion, Madrid, June 2015*
- QPOs in AGN. *RAS meeting on Accretion States and Feedback, London, Apr 2015*
- Understanding X-ray reverberation in accreting black holes. *FERO meeting, Krakow, Aug 2014*
- Probing the inner regions of the highly-variable Seyfert 1, NGC 4051. *The restless nature of AGNs, Naples, May 2013*
- Probing the X-ray emission region in AGN. *Spectral/timing properties of accreting objects, Madrid, Mar 2013*

Conferences Attended

- *New Results in X-ray Astronomy*, Cambridge, Sep 2014 **(Talk)**
- *The X-ray Universe*, Dublin, Jun 2014 **(Talk)**
- *New Results in X-Ray Astronomy 2013*, University of Southampton, Sep 2013 **(Talk)**
- *European Large X-ray Observatory Discussion Meeting*, University of Leicester, Feb 2013
- *New Results in X-Ray Astronomy 2012*, University of Leicester, Sep 2012
- *UK National Astronomy Meeting*, University of Manchester, Mar 2012
- *Signal processing and inference for the physical sciences*, The Royal Society, London, Mar 2012
- *New Results in X-Ray Astronomy 2011*, University of Leicester, Sep 2011
- *Black Hole Astrophysics: Tales of Power and Destruction*, University of Winchester, July 2011

References

1. Prof. Andrew Fabian (PI), Institute of Astronomy, Madingley Rd, Cambridge, CB3 0HA, UK
   acf@ast.cam.ac.uk
2. Dr S. Vaughan (Ph.D supervisor), University of Leicester, Leicester, LE2 7RH, UK
   sav2@leicester.ac.uk