

ANDREW PONTZEN

PhD, M.A., M. Sci
Curriculum Vitae

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Major research interests

- Dark matter, especially its dynamics and gravitational interaction with baryons;
- Observational probes of the physics of galaxy formation;
- Observational probes of cosmology; general relativity and cosmological models.

Education

Oct 2001 – June 2005	St John's College, Cambridge; Natural Sciences M. Sci
Final year result	1st class B.A. & M. Sci
Research supervisor	Dr Justin Read
Thesis	The structure of low mass dark matter halos
Oct 2005 – Sept 2009	STFC PhD Studentship, Institute of Astronomy, Cambridge
Research supervisors	Dr Anthony Challinor and Professor Max Pettini
Thesis	Cosmology: small and large (awarded December 2009)
Thesis examiners	Professor George Efstathiou and Professor Joe Silk

Employment

Oct 2013 –	Royal Society University Research Fellow Proleptic lecturer, University College London
Oct 2011 – Sep 2013	James Martin Research Fellowship, Oxford Astrophysics Henry Skynner Research Fellowship, Balliol College, Oxford
Oct 2009 – Sept 2011	Research Fellowship, Emmanuel College, Cambridge
June 2005 – Oct 2005	Paid summer placement, Institute of Astronomy, Cambridge

Selected key articles *(from 22 refereed publications)*

1. Pontzen, A.; Governato, F.: "How supernova feedback turns dark matter cusps into cores", 2012, MNRAS, 421, 3464
2. Peñarrubia, J; Pontzen, A.; Walker, M.; Koposov, S.: "The coupling between the core/cusp and missing satellite problems", 2012, ApJL, 759L, 42
3. Pontzen, A.; Challinor, A.: "Linearization of homogeneous, nearly-isotropic cosmological models", 2011, CQG 28, 185007
4. Pontzen, A. et al.: "Damped Lyman Alpha Systems in Galaxy Formation Simulations", 2008, MNRAS, 390, 1349

Selected talks

31 invited academic talks since January 2010. Recent highlights include colloquia at Perimeter Institute, CITA, Yale University, ETH Zürich, Niels Bohr Institute, and the MPA/MPE/ESA joint colloquium in Garching. Conference talks at recent international meetings including *The halo-galaxy connection* (Garching), *The CGM-Galaxy interface* (Leiden), *Disk Galaxy Formation* (Heidelberg) and *First Light and Faintest Dwarfs* (KITP, Santa Barbara).

Awards and fellowships

- October 2013: Royal Society University Research Fellowship (5+3 years)
- January 2013: NASA ADS Article of the Year 2012 (for key article 1 above)
- November 2012: *Classical and Quantum Gravity* cosmology highlight article of 2011/12 (for key article 3 above)
- October 2011: James Martin (Oxford University) Research Fellowship (3 years)
- October 2011: Balliol College Oxford Henry Skynner Research Fellowship (3 years)
- September 2011: British Science Association Kelvin Award (£500)
- October 2009: Emmanuel College Cambridge Junior Research Fellowship (3 years)
- June 2009: FameLab masterclass award for science communication (£750)
- July 2005: Cambridge University Astrophysics Prize (£500)

Grants

- Royal Society University Research Fellowship (£450,000)
- *Improving the Numerical Modelling of Galaxies* DiRAC high performance computing large project (18 million core hours) Co-I (PI Adrienne Slyz, U Oxford)
- *Interpreting the Escape of Ionizing Radiation from Galaxies: Results from Simulations* HST Cycle 19 theory research. (\$139,000) Co-I (PI Alyson Brooks, U Madison).
- *Cosmological Simulations of the Formation of Dark Matter Cores and Bulgeless Galaxies* NSF 05-608. (\$380,000). Co-I (PI Fabio Governato, U Washington).
- *Adventures in Space- and Story-time* IoP Public Engagement Grant Scheme 2012. (£1000) Co-PI with Tom Whyntie (Imperial College).

Selected media and outreach

- Contributor to BBC Science programming including *Stargazing Live* (BBC2), *The Infinite Monkey Cage* (Radio 4), *The Naked Scientists* (BBC Eastern regions) and *Science Night Live* (Radio 5 Live)
- Regular expert contributor for BBC news
- Writer for *New Scientist* (most recently for a cover feature on dark matter, March 2013)
- Regular lecturer for physics shows to AS/A2 students at The Institute of Education (6,200 students over seven days spread through 2009–12)

Research students

Oct 2013 – Sept 2016	Daniela Saadeh (PhD) Using galaxy formation simulations to inform next-generation surveys
Oct 2010 – July 2011	Fan Ye (M.Sci) Elastic dark energy in anisotropic universes
Oct 2008 – July 2009	Alis Deason (1 publication & M.Sci; University Astrophysics Prize) Gamma ray burst progenitors in hydrodynamical simulations

Teaching and other professional service

- Referee for Physical Review Letters, Physical Review D, ApJ, MNRAS
- PI of pynbody open source simulation analysis code (2010 – present; github.com/pynbody)
- Lecturer for STFC graduate summer school, 2012 (*Simulating the Universe*)
- Lecturer for Oxford graduate student course (*The Intergalactic Medium*, 2012 – 13)
- Lecturer for Cambridge graduate student course (*An Introduction to Python*, 2010 – 11)
- Supervisions, NST1B mathematics for Emmanuel College (2006 – 11); examples classes, Part III mathematics Physical Cosmology (2007 – 9)
- Undergraduate admissions interviews, Balliol College (2012); Emmanuel College (2009 – 10)