

Steven CUNNINGTON

PERSONAL INFORMATION

ADDRESS: 62 Chasewater Avenue, Portsmouth, PO3 6JD, UK
PHONE: (+44) 07952 914612
EMAIL: s.cunnington@qmul.ac.uk
WEBSITE: stevencunnington.com
NATIONALITY: British

EMPLOYMENT

OCT 2019 - PRESENT | Post-Doctoral Research Assistant
School of Physics & Astronomy, QUEEN MARY UNIVERSITY OF LONDON
Research Programme: Neutral Hydrogen intensity mapping with MeerKAT - funded by STFC Grant ST/S000437/1.
Line Manager: Dr. Alkistis Pourtsidou (Grant PI)

EDUCATION

OCT 2016 - SEP 2019 | Post-Graduate Research Student
Institute of Cosmology & Gravitation, UNIVERSITY OF PORTSMOUTH, UK
PhD Cosmology - *expected submission Sep 2019*
Thesis: Synergies Between 21cm and Optical Redshift Surveys for Probing Large Scale Cosmic Structure

- particular focus on the benefits of 21cm intensity mapping as a probe of LSS
- investigating simulations which test the cross-correlation potential of different probes
- involved in numerous global collaborations including SKA, LSST, DES and Euclid

Supervisors: Prof. David Bacon & Dr. Alkistis Pourtsidou

OCT 2012 - JUN 2016 | Undergraduate Student
UNIVERSITY OF SOUTHAMPTON, UK
BSc (Hons) Physics - *First Class Honours*
BSc Final Year Project: Investigating the Shape of the Stellar-to-Halo Mass Relationship for Galaxies at a Range of Redshifts - Supervisor: Dr Francesco Shankar

SUMMER 2015 | Summer Research Placement
Institute of Cosmology & Gravitation, UNIVERSITY OF PORTSMOUTH, UK
Secured South East Physics Network (SEPnet) funding for an 8-week placement studying strong gravitational lensing and how it can be used for measuring cosmological parameters. Work completed during placement resulted in a publication in MNRAS.
Placement Supervisor: Dr Thomas Collett

RESEARCH

- PUBLICATIONS** [The degeneracy between primordial non-Gaussianity and foregrounds in 21cm intensity mapping experiments](#)
Cunnington, S., Camera, S., Pourtsidou, A., (2020)
Submitted to: MNRAS arXiv:2007.12126
- [Multipole expansion for HI intensity mapping experiments: simulations and modelling](#)
Cunnington, S., Pourtsidou, A., Soares, P., Blake, C., Bacon, D., (2020)
MNRAS 496, Issue 1, July 2020, 415–433, arXiv:2002.05626
- [Impacts of Foregrounds on HI Intensity Mapping Cross-Correlations](#)
Cunnington, S., Wolz, L., Pourtsidou, A., Bacon, D., (2019)
MNRAS 488, Issue 4, October 2019, 5452–5472, arXiv:1904.01479
- [Cosmology with Phase 1 of the Square Kilometre Array: Red Book 2018: Technical specifications and performance forecasts](#) Square Kilometre Array Cosmology Science Working Group: Bacon, D. J., Battye, R. A., Bull, P., Camera, S., Ferreira, P. G., ..., **Cunnington, S. D.** et al. (2020)
Publ. Astron. Soc. Austral. 37, e007, March 2020, arXiv:1811.02743
- [HI Intensity Mapping for Clustering-Based Redshift Estimation](#)
Cunnington, S., Harrison, I., Pourtsidou, A., Bacon, D., (2019)
MNRAS 482, Issue 3, January 2019, 3341–3355, arXiv:1805.04498
- [Observational Selection Biases in Time-Delay Strong Lensing and their Impact on Cosmography](#)
Collett, T., **Cunnington, S.**, (2016)
MNRAS 462, Issue 3, November 2016, 3255–3264, arXiv:1605.08341

COMPUTING SKILLS

- Familiar with Mac OS X and Unix/Linux operating systems
- Regular experience with High Performance Computing (HPC) Clusters

CODING LANGUAGES Python (excellent)
C++, C, Fortran, MATLAB

COSMOLOGICAL CODES Familiar with CAMB and CLASS

SELECTED TALKS DELIVERED

- 22/01/20: **Anisotropic Clustering with HI Intensity Mapping**
SKA Science Working Group Meeting - *École Normale Supérieure, Paris, France*
- 17/12/19: **21cm Intensity Mapping: Prospects and Challenges**
Texas Symposium - *University of Portsmouth, Guildhall, Portsmouth, UK*
- 11/12/19: **Using Radio 21cm Intensity Maps to Calibrate Photometric Redshifts**
CoSyne: Cosmological Synergies. - *Institut d'astrophysique de Paris, Paris, France*
- 29/11/19: **Multipole Expansion with 21cm Intensity Maps**
UWC Cosmology Seminar - *University of the Western Cape, Cape Town, South Africa*
- 04/07/19: **Observational Cosmology: The next generation of telescopes**
East Sussex Astronomical Society - *Egerton Park, Bexhill-on-Sea, East Sussex, UK*
- 24/06/19: **Observing the Universe's Dark Secrets**
Chichester U3A Science Group - *Fishbourne Centre - Chichester, West Sussex, UK*
- 04/04/19: **Don't mention the foregrounds: The challenge for 21cm cosmology**
SEPnet Student-Led Conference - *University of Southampton, UK*
- 18/12/18: **Using HI Intensity Mapping to Calibrate Photometric Redshifts**
Euclid UK Meeting - *University of Oxford, Clarendon Laboratory, Oxford, UK*
- 07/11/18: **Cross Correlations Between 21cm & Optical for Probing Cosmology**
Queen Mary University Cosmology Seminar - *QMU, Mile End Road, UK*
- 06/10/18: **Observational Cosmology: The Next Generation of Telescopes**
Eastbourne Astronomical Society - *Willingdon Memorial Hall, East Sussex, UK*
- 03/09/18: **Observing the Universe's Dark Secret**
Winchester Cafe Sci - *Winchester Discovery Centre, UK*
- 08/05/18: **Observational Cosmology: The Next Generation of Telescopes**
Astronomical Association for East Sussex Monthly Meeting - *Cooden Beach Hotel, UK*
- 03/04/18: **Using HI Intensity Mapping to Calibrate Photometric Redshifts**
EWASS/NAM 2018 - *Arena & Convention Centre (ACC), Liverpool, UK*
- 22/03/18: **Intensity Mapping: A new way of seeing the Universe**
SEPnet Student-Led Conference - *University of Southampton, UK*

OUTREACH & ROLES OUTSIDE OF SCIENCE

- Arranged [Astronomy on Tap](#) events for local public. Involves astronomers delivering talks at pubs and bars with the aim of making astronomy accessible to a wider demographic.
- Volunteer for the annual [Stagazing Live](#) event where astronomy related activities and talks are made available to the public at the Portsmouth Historic Dockyard.
- Student representative for the department's [Athena Swan](#) team which aims to encourage and recognise commitment to advancing the careers of women in STEM.
- Completed [Graduate Students' Professional Development \(GPROF\)](#) programme which is internally run by the University of Portsmouth and provides formal training for postgraduates involved in any teaching activity.
- Arranged [Physics Staff v UG Students Football Fundraiser Match](#). Our last game raised £290 for charity.

REFERENCES

Dr Alkistis Pourtsidou [a.pourtsidou@qmul.ac.uk]

Line Manager

Prof David Bacon [david.bacon@port.ac.uk]

PhD Supervisor

Dr Laura Wolz [laura.wolz@manchester.ac.uk]

Collaborator and SKA Cosmology Science Working Group Chair