

Steven CUNNINGTON

PERSONAL INFORMATION

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NATIONALITY: British

EDUCATION

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| OCT 2016 - PRESENT | Post-Graduate Research Student
Institute of Cosmology & Gravitation, UNIVERSITY OF PORTSMOUTH, UK
PhD Cosmology - <i>expected submission Sep 2019</i>
Thesis: Synergies Between 21cm and Optical Redshift Surveys for Probing Large Scale Cosmic Structure <ul style="list-style-type: none">particular focus on the benefits of 21cm intensity mapping as a probe of LSSinvestigating simulations which test the cross-correlation potential of different probesinvolved 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 - <i>First Class Honours</i>
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.
<i>Placement Supervisor: Dr Thomas Collett</i> |

RESEARCH

- PUBLICATIONS [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. (2018). Submitted to: Publ. Astron. Soc. Austral. arXiv:1811.02743[astro-ph.CO]
- [HI Intensity Mapping for Clustering-Based Redshift Estimation](#)
Cunnington, S., Harrison, I., Pourtsidou, A., Bacon, D., (2018)
MNRAS 482 (2019) no.3, 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 (2016) no.3, 3255-3264, arXiv:1605.08341

PUBLICATIONS Impacts of Foregrounds on HI Intensity Mapping Cross-Correlations
(*in-prep.*) Investigating through simulations how foreground cleaning HI intensity maps can affect their cross-correlations with photometric galaxy surveys.

Baryon Acoustic Oscillations from 21cm Intensity Mapping in Cross-Correlation
Forecasting the potential for detecting the BAO scale with 21cm × Optical synergies

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

TALKS DELIVERED

- 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*
- 24/04/18: Observational Cosmology: The Rise of the Radio Survey
ICG Internal Colloquia - *University of Portsmouth, 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*
- 29/11/17: HI Intensity Mapping for Clustering Based Redshift Information
South Coast Cosmology - *University of Portsmouth, UK*
- 27/09/17: Using HI Intensity Mapping to Calibrate LSST Photometric Redshifts
LSST Multi-Wavelength Data Fusion Workshop - *University of Cambridge, 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 [Stargazing 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 postgrad-

uates involved in any teaching activity.

- Arranged [Physics Staff v UG Students Football Fundraiser Match](#). Our last game raised £290 for charity.

REFERENCES

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

PhD Supervisor

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

PhD Supervisor

Dr Laura Wolz [laura.wolz@unimelb.edu.au]

Collaborator and SKA Cosmology Science Working Group Chair