

# Shaun C Read

## Postdoc



shaun.science/



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philastrophist

## Technical Skills

### Overview



## Programming

### Expert:

Python

### Experienced:

Shell • SQL • Matlab •  $\text{\LaTeX}$

### Competent:

C • C++ • R • Ruby • IDL • html

## Education

### Ph.D., Astronomy

University of Hertfordshire, UK

2015 - 2019

Passed viva w/ minor corrections

### MPhys, Physics

Durham University, UK

2010 - 2014

2:1 with Honours

## Affiliations

Fellow of the Royal Astronomical Society, FRAS

## Summary

I am a postdoctoral researcher specialising in Bayesian statistical analysis on big data, working on the weak-lensing colour-gradient bias with Euclid. My main interests are reverberation mapping and the interface between star-forming galaxies and AGN. I have worked with a diverse range of data including the latest releases from the LOFAR, SDSS, and H-ATLAS surveys and the Horizon-AGN simulations. My latest work combines the use of novel statistical Bayesian analysis with these large datasets in order to facilitate effective exploitation of the next generation of surveys.

## Research Interests

- **Star-formation:** LOFAR, FIR, empirical relations, FIRC, MagPhys, SFG-AGN interface.
- **Reverberation mapping:** High redshift, photometric techniques,  $t_{lag} - L_{5100}$ , selection biases.
- **Big data & Bayesian analysis:** Large surveys, advanced Bayesian statistical inference, bias mitigation.

## Experience

Oct 2019 – Present	<b>Postdoc</b> Galaxy shape measures in Euclid <ul style="list-style-type: none"><li>• Quantifying the colour-gradient bias in Euclid weak-lensing measurements</li><li>• Generation of realistic galaxy catalogues</li><li>• Hubble image reduction</li></ul>	Osservatorio Astronomico di Roma - INAF
Oct 2015 – Oct 2019	<b>Ph.D.</b> Supervisor: Dr Daniel J.B. Smith Thesis: Measuring the Physical Properties of Distant Galaxies and Black Holes in the Era of Surveys <ul style="list-style-type: none"><li>• Studying the relation between the star-formation rate and radio luminosity of galaxies.</li><li>• Using new photometric time-series techniques to estimate quasar black-hole masses with reverberation mapping.</li><li>• Innovating new Bayesian methods to infer complete distributions from incomplete, noisy data in order to mitigate observational bias and explore large datasets.</li></ul>	University of Hertfordshire
Jun 2016	<b>Observing</b>	William Herschel Telescope, La Palma
Jan 2016 – Present	<b>Programming teaching assistant &amp; tutor</b> <ul style="list-style-type: none"><li>• Taught students Python and Matlab for scientific programming courses.</li><li>• Ran code review sessions for post-graduates and Ph.D. students.</li><li>• Lead programming lectures and demonstrations.</li></ul>	University of Hertfordshire, UK
Nov 2016 – Mar 2017	<b>'Physics of stars' demonstrator</b> <ul style="list-style-type: none"><li>• Assisted students at the Bayfordbury teaching observatory.</li><li>• Instructed in the use of 16-inch telescopes and the reduction of data.</li><li>• Projects included PNe imaging and constructing open cluster HR-diagrams.</li></ul>	University of Hertfordshire, UK
Jul 2014 – Jul 2015	<b>Insight Analyst</b> Processing big data from raw consumer search patterns to an explanatory format suitable for client business strategies. <ul style="list-style-type: none"><li>• Big data processing with Python &amp; sci-kit learn</li><li>• Communication with the backend team</li><li>• API design, visualisation, and automation development.</li></ul>	Linkdex, UK

## Other Experience

Jun 2013 –  
Aug 2013

### Summer Student

Supervisor: Dr Alastair Sinclair

- Worked with the Time & Frequency Team.
- Analysed Gaussian beam quality for the strontium ion optical clock group.
- Developed analytical Matlab code and the optical bench setup required.

National Physical Laboratory, UK

## Publications

### Published

- *A LOFAR-IRAS cross-match study: the far-infrared radio correlation and the 150 MHz luminosity as a star-formation rate tracer*  
Wang, L.; Gao, F.; Duncan, K. J.; Williams, W. L.; Rowan-Robinson, M.; Sabater, J.; Shimwell, T. W.; Bonato, M.; Calistro-Rivera, G.; Chyży, K. T.; Farrah, D.; Gürkan, G.; Hardcastle, M. J.; McCheyne, I.; Prandoni, I.; **Read, S. C.**; Röttgering, H. J. A.; Smith, D. J. B. – 2019A&A...631A.109W
- *Galaxy morphological classification in deep-wide surveys via unsupervised machine learning*  
Martin, G.; Kaviraj, S.; Hocking, A.; **Read, S. C.**; Geach, J. E. – 2019MNRAS.tmp.2609M
- *The Far-Infrared Radio Correlation at low radio frequency with LOFAR/H-ATLAS*  
**Read, S. C.**; Smith, D. J. B.; Gürkan, G.; Hardcastle, M. J.; Williams, W. L.; Best, P. N.; Brinks, E.; Calistro-Rivera, G.; Chyży, K. T.; Duncan, K.; Dunne, L.; Jarvis, M. J.; Morabito, L. K.; Prandoni, I.; Röttgering, H. J. A.; Sabater, J.; Viaene, S. – 2018MNRAS.480.5625R
- *LOFAR/H-ATLAS: a deep low-frequency survey of the Herschel-ATLAS North Galactic Pole field*  
Hardcastle, M. J.; Gürkan, G.; van Weeren, R. J.; Williams, W. L.; Best, P. N.; de Gasperin, F.; Rafferty, D. A.; **Read, S. C.**; Sabater, J.; Shimwell, T. W.; Smith, D. J. B.; Tasse, C.; Bourne, N.; Brienza, M.; Brüggen, M.; Brunetti, G.; Chyży, K. T.; Conway, J.; Dunne, L.; Eales, S. A.; Maddox, S. J.; Jarvis, M. J.; Mahony, E. K.; Morganti, R.; Prandoni, I.; Röttgering, H. J. A.; Valiante, E.; White, G. J. – 2016MNRAS.462.1910H

### Submitted and in preparation

- *The Performance of Photometric Reverberation Mapping at High Redshift and the Reliability of Damped Random Walk Models*  
**Read, S.C.**; Smith, D.J.B.; Jarvis, M.J.; Gürkan, G. – submitted to MNRAS
- *On the Causes of the Mass Dependency of the Star-formation Rate – Radio Luminosity Relation with LOFAR, Horizon-AGN, and CANDID*  
**Read, S.C.**; Smith, D.J.B.; Gürkan, G.; Hardcastle, M.J.; et al. – in prep.
- *A Markov Chain Monte Carlo approach for measurement of jet precession in radio-loud active galactic nuclei*  
Horton, M.; Hardcastle, M.J.; **Read, S.C.**; Krause, M. – submitted to MNRAS
- *Bias and Accretion Rate Dependency in the Reverberation-Mapped Lag-luminosity Relation*  
**Read, S.C.**; Smith, D.J.B.; et al. – in prep.
- *Low Mass Stars and Multiple Systems in Gaia*  
González-Egea, E.; Pinfield, D.; **Read, S.C.**; et al. – in prep.

## Presentations

April 2018

**European Week of Astronomy and Space Science**  
University of Liverpool, UK

European Astronomical Society, EAS  
poster

July 2017

**National Astronomy Meeting**  
University of Hull, UK

Royal Astronomical Society, RAS  
contributed talk

June 2016

**National Astronomy Meeting**  
University of Nottingham, UK

Royal Astronomical Society, RAS  
contributed talk, poster

May 2016

**The Cosmic FIR Landscape with H-ATLAS**  
University of Lisbon, Portugal

H-ATLAS consortium  
contributed talk