

# Shaun C Read

Ph.D. Student



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 - Present

Expected completion: 2019

**MPhys, Physics**

Durham University, UK

2010 - 2014

2:1 with Honours

## Affiliations

Fellow of the Royal Astronomical Society, *FRAS*

## Summary

I am a PhD student of 3.5 years at the University of Hertfordshire specialising in Bayesian statistical analysis on big data. 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 2015 – Present  | <b>Ph.D. student</b><br>Supervisor: Dr Daniel J.B. Smith<br>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>   | University of Hertfordshire, UK <ul style="list-style-type: none"><li>• Taught students Python and Matlab for scientific programming courses.</li><li>• Assisted students with programming exercises.</li><li>• Lead programming lectures and demonstrations.</li></ul>  |
| Nov 2016 – Mar 2017 | <b>'Physics of stars' demonstrator</b>  | University of Hertfordshire, UK <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>   |
| Jul 2014 – Jul 2015 | <b>Insight Analyst</b>  | Linkdex, UK <ul style="list-style-type: none"><li>• Processing big data from raw consumer search patterns to an explanatory format suitable for client business strategies.</li><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> |
| Jun 2013 – Aug 2013 | <b>Summer Student</b>   | National Physical Laboratory, UK <ul style="list-style-type: none"><li>• Supervisor: Dr Alastair Sinclair</li><li>• Worked with the Time &amp; Frequency Team.</li><li>• Analysed Gaussian beam quality for the strontium ion optical clock group.</li><li>• Developed analytical Matlab code and the optical bench setup required.</li></ul>                      |

# Publications

## Published

- *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.; Brügggen, 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

- *Highly Efficient Photometric Reverberation Mapping at High Redshift*  
**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 LOFAR-IRAS Cross-match Study: The Far-infrared Radio Correlation and the 150 MHz Luminosity as a Star-formation Rate Tracer*  
Wang, L.; Rowan-Robinson, M.; Gao, F.; Bonato, M.; Calistro-Rivera, G.; Chyży, K.T.; Duncan, K.J.; Farrah, D.; Gurkan, G.; Hardcastle, M.J.; McCheyne, I.; Prandoni, I.; **Read, S.C.;** Röttgering, H.J.A.; Sabater, J.; Shimwell, T. W.; Smith, D.J.B.; Williams, W.L. – in prep.
- *Galaxy Morphological Classification in Deep-Wide Surveys via Unsupervised Machine Learning*  
Martin, G.; Kaviraj, S.; Hocking, A.; **Read, S.C.;** Geach, J. – in prep.
- *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 | <b>European Week of Astronomy and Space Science</b><br>University of Liverpool, UK | European Astronomical Society, <i>EAS</i><br>poster                |
| July 2017  | <b>National Astronomy Meeting</b><br>University of Hull, UK                        | Royal Astronomical Society, <i>RAS</i><br>contributed talk         |
| June 2016  | <b>National Astronomy Meeting</b><br>University of Nottingham, UK                  | Royal Astronomical Society, <i>RAS</i><br>contributed talk, poster |
| May 2016   | <b>The Cosmic FIR Landscape with H-ATLAS</b><br>University of Lisbon, Portugal     | H-ATLAS consortium<br>contributed talk                             |