

# Shaun C Read

Ph.D. Student



shaun.science



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philastrophist

## Technical Skills

### Overview



### Programming

Python

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

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.

## Experience

- |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                      |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Oct 2015 - Present  | <b>Ph.D. student</b>                                                                                                                                                                                                                                                                                                                                                                                                                   | University of Hertfordshire          |
|                     | 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 using 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> |                                      |
| 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                          |
|                     | 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>                                                                                                                                                                                                                         |                                      |
| Jun 2013 - Aug 2013 | <b>Summer Student</b>                                                                                                                                                                                                                                                                                                                                                                                                                  | National Physical Laboratory, UK     |
|                     | Supervisor: Dr Alastair Sinclair                                                                                                                                                                                                                                                                                                                                                                                                       |                                      |
|                     | <ul style="list-style-type: none"><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>                                                                                                                                                                            |                                      |

## 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.

## 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.; 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

- *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> University of Liverpool, UK poster	European Astronomical Society, <i>EAS</i>
July 2017	<b>National Astronomy Meeting</b> University of Hull, UK contributed talk	Royal Astronomical Society, <i>RAS</i>
June 2016	<b>National Astronomy Meeting</b> University of Nottingham, UK contributed talk, poster	Royal Astronomical Society, <i>RAS</i>
May 2016	<b>The Cosmic FIR Landscape with H-ATLAS</b> University of Lisbon, Portugal contributed talk	H-ATLAS consortium