

# 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*

Member of the European Astronomical Society, *EAS*

Member of the Euclid Consortium, *EC*

## Summary

I am a postdoctoral researcher specialising in Bayesian statistical analysis on big data, working in WEAVE-LOFAR. 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, HST, WISE, and H-ATLAS surveys as well as 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

|                     |   |   |
|---------------------|---|---|
| Jul 2020 – Present  | <b>Postdoc</b><br>WEAVE-LOFAR QAG & galaxy evolution  | University of Nottingham                |
|                     | <ul style="list-style-type: none"><li>• Plan and conduct independent research using the WEAVE data</li><li>• Develop WEAVE MOS spectroscopic analysis software</li><li>• Leading the Quality Assurance Group (QAG) of WEAVE-LOFAR data</li></ul>  |   |
| Oct 2019 – Jun 2020 | <b>Postdoc</b><br>Galaxy shape measures in Euclid   | Osservatorio Astronomico di Roma - INAF |
|                     | <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>   |   |
| Oct 2015 – Oct 2019 | <b>Ph.D.</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   | University of Hertfordshire             |
|                     | <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> |   |
| 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>• Ran code review sessions for post-graduates and Ph.D. students.</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>  |   |

## Other Experience

|                        |  |                                  |
|------------------------|--|----------------------------------|
| Jun 2013 –<br>Aug 2013 | <b>Summer Student</b><br>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>  | National Physical Laboratory, UK |
| Jul 2014 –<br>Jul 2015 | <b>Insight Analyst</b><br>Processing big data from raw consumer search patterns to an explanative 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                      |

## 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                             |

## Publications

### Published

- *A Markov chain Monte Carlo approach for measurement of jet precession in radio-loud active galactic nuclei*  
Horton, M.A.; Hardcastle, M.J.; **Read, S.C.**; Krause, M.G.H. – 2020MNRAS.493.3911H
- *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. – 2020MNRAS.492.3940R
- *Galaxy morphological classification in deep-wide surveys via unsupervised machine learning*  
Martin, G.; Kaviraj, S.; Hocking, A.; **Read, S.C.**; Geach, J.E. – 2020MNRAS.491.1408M
- *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
- *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.; Brügger, 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
- *The Astropy Problem*  
Muna, D.; Alexander, M.; Allen, A.; Ashley, R.; Asmus, D.; Azzollini, R.; Bannister, M.; Beaton, R.; Benson, A.; Berriman, G.B.; Bilicki, M.; Boyce, P.; Bridge, J.; Cami, J.; Cangi, E.; Chen, X.; Christiny, N.; Clark, C.; Collins, M.; Comparat, J.; Cook, N.; Croton, D.; Delberth Davids, I.; Depagne, É.; Donor, J.; dos Santos, L.A.; Douglas, S.; Du, A.; ...; **Read, S.**; ... – 2016arXiv161003159M

### Submitted and in preparation

- *On the causes of the mass dependency of the star-formation rate – radio luminosity relation with LOFAR, Horizon-AGN, and CANDID*  
**Read, S.**; Smith, D.; Gürkan, G.; Hardcastle, M.; et al. – in prep.
- *Bias and accretion rate dependency in the reverberation-mapped lag-luminosity relation*  
**Read, S.**; Smith, D.; et al. – in prep.

- *Low mass stars and multiple systems in Gaia*  
González-Egea, E.; Pinfield, D.; **Read, S.**; et al. – in prep.