

# 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	<b>Summer Student</b> 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
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## Presentations

April 2018	<b>European Week of Astronomy and Space Science</b> University of Liverpool, UK	European Astronomical Society, EAS poster
July 2017	<b>National Astronomy Meeting</b> University of Hull, UK	Royal Astronomical Society, RAS contributed talk
June 2016	<b>National Astronomy Meeting</b> University of Nottingham, UK	Royal Astronomical Society, RAS contributed talk, poster
May 2016	<b>The Cosmic FIR Landscape with H-ATLAS</b> University of Lisbon, Portugal	H-ATLAS consortium contributed talk

## Publications

### Published

- *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
- *The performance of photometric reverberation mapping at high redshift and the reliability of damped random walk models*  
**Read, S.**; Smith, D.; Jarvis, M.; Gürkan, G. – accepted by Monthly Notices of the Royal Astronomical Society 2019
- *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
- *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
- *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

- *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.
- *A Markov Chain Monte Carlo approach for measurement of jet precession in radio-loud active galactic nuclei*  
Horton, M.; Hardcastle, M.; **Read, S.**; Krause, M. – submitted to MNRAS
- *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.