

Shaun C Read

Postdoc



shaun.science/



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philastrophist

Technical Skills — Overview



Programming

Expert:

Python

Experienced:

Shell • SQL • Matlab • \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

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|---------------------|---|---|
| Jul 2020 – Present | Postdoc WEAVE-LOFAR QAG & galaxy evolution | University of Nottingham |
| | <ul style="list-style-type: none">• Plan and conduct independent research using the WEAVE data• Develop WEAVE MOS spectroscopic analysis software• Leading the Quality Assurance Group (QAG) of WEAVE-LOFAR data | |
| Oct 2019 – Jun 2020 | Postdoc Galaxy shape measures in Euclid | Osservatorio Astronomico di Roma - INAF |
| | <ul style="list-style-type: none">• Quantifying the colour-gradient bias in Euclid weak-lensing measurements• Generation of realistic galaxy catalogues• Hubble image reduction | |
| Oct 2015 – Oct 2019 | Ph.D. Supervisor: Dr Daniel J.B. Smith 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">• Studying the relation between the star-formation rate and radio luminosity of galaxies.• Using new photometric time-series techniques to estimate quasar black-hole masses with reverberation mapping.• Innovating new Bayesian methods to infer complete distributions from incomplete, noisy data in order to mitigate observational bias and explore large datasets. | |
| Jun 2016 | Observing | William Herschel Telescope, La Palma |
| Jan 2016 – Present | Programming teaching assistant & tutor | University of Hertfordshire, UK |
| | <ul style="list-style-type: none">• Taught students Python and Matlab for scientific programming courses.• Ran code review sessions for post-graduates and Ph.D. students.• Lead programming lectures and demonstrations. | |
| Nov 2016 – Mar 2017 | 'Physics of stars' demonstrator | University of Hertfordshire, UK |
| | <ul style="list-style-type: none">• Assisted students at the Bayfordbury teaching observatory.• Instructed in the use of 16-inch telescopes and the reduction of data.• Projects included PNe imaging and constructing open cluster HR-diagrams. | |

Other Experience

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| Jun 2013 – Aug 2013 | Summer Student Supervisor: Dr Alastair Sinclair <ul style="list-style-type: none">• 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 |
| Jul 2014 – Jul 2015 | Insight Analyst Processing big data from raw consumer search patterns to an explanative format suitable for client business strategies. <ul style="list-style-type: none">• Big data processing with Python & sci-kit learn• Communication with the backend team• API design, visualisation, and automation development. | Linkdex, UK |

Presentations

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| April 2018 | European Week of Astronomy and Space Science University of Liverpool, UK | European Astronomical Society, <i>EAS</i> poster |
| July 2017 | National Astronomy Meeting University of Hull, UK | Royal Astronomical Society, <i>RAS</i> contributed talk |
| June 2016 | National Astronomy Meeting University of Nottingham, UK | Royal Astronomical Society, <i>RAS</i> contributed talk, poster |
| May 2016 | The Cosmic FIR Landscape with H-ATLAS University of Lisbon, Portugal | H-ATLAS consortium 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
- *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. – accepted to MNRAS 2019
- *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.