

BEN JAMES SUTLIEFF

CURRICULUM VITAE - 16TH JANUARY 2024

Institute for Astronomy,
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EDUCATION

- PhD in Astronomy** - Anton Pannekoek Institute for Astronomy, University of Amsterdam, NL 2018-2023
Thesis title: *“Bringing Exoplanets Into Sharper View: Storm Chasing on Distant Worlds”*
Supervised by Prof Jayne Birkby, co-supervised by Dr Matthew Kenworthy.
- MPhys Physics with Astrophysics, First-Class Honours** - University of Exeter, UK 2014-2018
Thesis project: *“Direct Imaging and Spectroscopy of Exoplanets”*. Supervised by Prof Sasha Hinkley.

RESEARCH EXPERIENCE

- Postdoctoral Research Associate** - Institute for Astronomy, University of Edinburgh, UK 2022 - Present
Research focused on characterising exoplanets and brown dwarfs through direct imaging campaigns in the group of Prof Beth Biller, with a focus on variability studies.
- PhD Researcher** - Anton Pannekoek Institute for Astronomy, University of Amsterdam, NL 2018-2023
PhD research focused on characterising exoplanets and brown dwarfs through direct imaging campaigns, in particular the use of novel photometric and spectrophotometric monitoring techniques to measure their atmospheric variability. Reduction and analysis of direct imaging data, developing observing & data processing techniques for vector Apodizing Phase Plate coronagraphs (vAPPs). Supervised by Prof Jayne Birkby, co-supervised by Dr Matthew Kenworthy.
- Undergraduate Researcher** - University of Exeter, UK 2016-2018
An ongoing high-contrast imaging survey exploring the link between circumstellar debris disks and giant exoplanetary companions in wide-separation orbits, using observational data collected at the W.M. Keck Observatory. Supervised by Prof Sasha Hinkley.
- Undergraduate Researcher** - University of Exeter, UK 2016
Pre-processing of data using ESO’s Common Pipeline Library, for high-contrast imaging targets observed with the SPHERE instrument on the VLT. Identification of planet candidates and astrometry. Supervised by Dr Elisabeth Matthews.
- XRT-C Science & Procurement** - University of Exeter, UK 2014-2016
A student-led project to construct the eXeter Radio Telescope at Caradon (XRT-C), a new 4.5m radio telescope in Caradon, Cornwall, with the initial goal of conducting a neutral hydrogen survey of the galactic plane.
- Data Collection** - Lockyer Technology Centre, Norman Lockyer Observatory 2012-2015
Utilising a forward-scatter radar setup to monitor the daily, seasonal and annual variation in radio meteor flux.

TEACHING & SUPERVISION

- Primary Supervisor** - University of Edinburgh, UK
- Patricia Van De Walle Suarez - Edinburgh Senior Honours student 2024 - Present
- Anthony Atkinson - summer student, University of Edinburgh / Rice University Strategic Collaboration 2023
- Co-Supervisor** - University of Edinburgh, UK
- Kai Robertson - Edinburgh Masters Degree student 2023 - Present
- Guest Lecturer** - Heriot-Watt University, UK
- Guest lecture on exoplanets and the direct imaging technique for Masters level astrophysics course. 2024
- Teaching Assistant** - University of Amsterdam, NL 2019-2020
- Open Problems in Modern Astrophysics, Masters course (2019 & 2020)
- Outreach Activities Module (2019 - 2020)
- Project Natuur & Sterrenkunde (Bachelors project module), Bachelors course (2019)

Mentor - Space School & Senior Space School UK, University of Leicester 2015 & 2018
Assisting with the operation of the school, teaching physics and astronomy topics to students aged 13-18. Guest lectures on exoplanets and the effects of space on the human body.

AWARDS & PRIZES

Leids Kerkhoven-Bosscha Fonds (LKBF) grant - €400 (2019), €1000 (2020) 2019 & 2020
UKSEDS Best Project Award Winner - for XRT-C, a student-led radio telescope project 2015

OBSERVATIONAL AND TECHNICAL SKILLS

Principal Investigator Proposals - VLT (8.2m)/ERIS + APP (2 half-nights), Cerro Paranal, Chile 2023
“Exometeorology: Searching for weather on HR 8799cde using the unique ERIS APP leakage term”

Science Co-Principal Investigator Proposals - LBT (8.4m)/NALES + 360-vAPP (2 nights), Arizona, USA 2020
“A new ground-based technique for mapping exoplanets”

Co-Investigator Proposals:

VLT (8.2m)/ERIS (0.2 nights), Paranal Observatory, Chile 2023
“Clouds vs Aurora: a unique test of variability in the T dwarf WISE J0720B”

VLT (8.2m)/SPHERE (3 hours), Paranal Observatory, Chile 2023
“How common are widely separated giant exoplanets in young star-forming regions?”

NTT (3.58m)/SofI (4.9 nights), La Silla Observatory, Chile 2023
“Following up the first variability survey for T-type planetary mass objects”

NTT (3.58m)/SofI (5 nights), La Silla Observatory, Chile 2022
“Completing the first variability survey for T-type planetary mass objects”

Magellan (6.5m)/MagAO + vAPP (1 night), Las Campanas Observatory, Chile 2019
“The stormy nature of a young giant exoplanet”

On-site observing experience:

VLT UT4 (8.2m)/ERIS + APP (2 nights), Paranal Observatory, Chile Oct 2023
“Exometeorology: Searching for weather on HR 8799cde using the unique ERIS APP leakage term”

Magellan (6.5m)/MagAO + vAPP (1 night), Las Campanas Observatory, Chile Nov 2019
“The stormy nature of a young giant exoplanet”

WHT (4.2m)/ISIS + ACAM observing run (5 nights), La Palma May 2019
“The M-dwarf Radius Anomaly: model-independent masses and radii from low-mass eclipsing binaries”

Data reduction and analysis expertise related to: Direct imaging datasets (180- and 360-vAPP coronagraphs, Magellan/MagAO, LBT/NALES, VLT/SPHERE, VLT/KMOS, Keck/NIRC2, JWST/NIRCam), low-resolution spectroscopy, and time-resolved (spectro)photometry.

SERVICE TO ACADEMIA

Colloquium Organiser - Institute for Astronomy, University of Edinburgh, UK 2023-Present

Exoplanets & Solar System Journal Club Co-Chair - University of Edinburgh, UK 2023-Present

Borrel Committee & Social Committee - Anton Pannekoek Institute, University of Amsterdam, NL 2019-2021

Social Media Assistant - Anton Pannekoek Institute, University of Amsterdam, NL 2019-2020

Session chair × 2 - vAPP Data Hackathon, Leiden Observatory, NL 2019
Chair of the *“Data Pre-processing”* and *“Photometric Variability with vAPPs”* sessions during the workshop.

Co-founder and SOC/LOC - Space:Exe Conference, University of Exeter, UK 2018
Launched the first edition of a now annually occurring conference bringing together speakers and delegates from both academia and industry, with a focus on space science and astronomy research in South West England.

Student-Staff Liason Committee - Physics & Astronomy, University of Exeter, UK 2016-2018
Working with departmental staff to deliver academic representation, solving problems related to teaching and student support.

Outreach & Publicity Officer, Secretary - Space:Exe, University of Exeter, UK 2015-2018
A university society promoting science communication and supporting several multi-discipline physics & engineering projects, such as XRT-C and a high-altitude balloon.

Campaign Team Member - University of Exeter Student's Guild 2016-2017
2016 DVP International Campaign Team & 2017 Guild President Campaign Team (both successful).

UKSEDS Assistant Outreach & Publicity Officer - UKSEDS 2015-16
UK Students for the Exploration & Development of Space. Contributed to the organisation and promotion of outreach events on a national level, including regional science festivals and the National Student Space Conference.

SCHOOLS, CONFERENCES, & TALKS

Contributed Talk - SUPA Cormack Astronomy Meeting 2023, Glasgow, UK	Dec 2023
Thirty Minute Talk (Department Seminar) - ESO Santiago, Santiago, Chile	Oct 2023
Contributed Talk - UK Exoplanet Meeting 2023, London, UK	Aug 2023
Contributed Talk - National Astronomy Meeting 2023, Cardiff, UK	Jul 2023
Poster - In the Spirit of Lyot, Leiden, NL	Jun 2022
Contributed Talk - NOVA Network 2 meeting, Leiden, NL (moved to online)	Nov 2021
Poster + video - European Astronomical Society Annual Meeting, Leiden, NL (moved to online)	Jun 2021
Poster + video - STScI Spring Symposium 2021, STScI, Baltimore, USA (moved to online)	Apr 2021
Poster + video - Exoplanets III, Heidelberg, Germany (moved to online)	Jul 2020
Lorentz Center workshop: Tackling the Complexities of Substellar Objects, Leiden, NL	Feb 2020
Contributed Talk - High-Contrast Imaging post-processing (HCIpp) workshop, Berlin, Germany	Jan 2020
Poster + poster pop - In the Spirit of Lyot, Tokyo, Japan	Oct 2019
Poster - Netherlands Astronomy Conference, Groningen, NL	May 2019
Session chair × 2 - vAPP Data Hackathon, Leiden Observatory, NL	April 2019
Contributed Talk - NOVA Fall School, ASTRON, Dwingeloo, NL	Oct 2018
Co-founder and Organising Committee - Space:Exe Conference, University of Exeter, UK	May 2018
Contributed Talk - National Student Space Conference, University of Surrey, UK	Mar 2018
National Student Space Conference, University of Exeter, UK	Mar 2017
National Student Space Conference, University of Surrey, UK	Feb 2015
UKSEDS Comets and Asteroids Workshop, University of Oxford, UK	Feb 2015

PUBLIC OUTREACH

Sidewalk Astronomy - Partial Solar Eclipse, Anton Pannekoek Observatory, Amsterdam, NL	Jun 2021
Public talk on Exoplanets - Wells & Mendip Astronomers, Wells, UK (online)	Feb 2021
Observatory tour guide - Sterrenkijkavonden, Anton Pannekoek Observatory, Amsterdam, NL	Apr 2019 - Jul 2020
Outreach team member - Partial Lunar Eclipse Event, Anton Pannekoek Observatory, Amsterdam, NL	Jul 2019
Sidewalk Astronomy - Imagine Film Festival, Amsterdam, NL	Apr 2019
Outreach team member - Total Lunar Eclipse Event, Anton Pannekoek Observatory, Amsterdam, NL	Jan 2019
Outreach team member - Science Park Open Day, University of Amsterdam, Amsterdam, NL	Oct 2018
Public talk on XRT-C/Radio Astronomy - Mid-Somerset Amateur Radio Club, Shepton Mallet, UK	Jun 2018
Invited article; "Imaging Exoplanets" - <i>The Nightly Observer</i> astronomy magazine, UK	Apr 2018
Outreach team member - Sidmouth Science Festival, Sidmouth, UK	Oct 2015
Outreach team member - Wells & Mendip Astronomers Open Day, Wells, UK	Aug 2015
Outreach team member - Solar Eclipse Viewing Event (1500 attended), University of Exeter, UK	Mar 2015
Public talk on Radio Meteor Observations - Wells & Mendip Astronomers, Cheddar, UK	Aug 2014
Sidewalk Astronomy - Wells & Mendip Astronomers with Waitrose & Partners, Wells, UK	Mar 2014
BBC Points West television interview on Radio Meteor Detection - BBC Stargazing Live week, UK	Jan 2014
BBC Radio Somerset interview on Radio Meteor Detection - BBC Stargazing Live week, UK	Jan 2014
Outreach team member - BBC Stargazing Live week, Wells & Mendip Astronomers, Wells, UK	Jan 2014

LANGUAGES

Computing: Experienced in PYTHON, proficient in HTML, and working knowledge of C, IDL and VISUAL BASIC.
Spoken: English (native), Dutch (A2 level), German (Elementary Proficiency - ILR scale).

MEMBERSHIPS OF PROFESSIONAL BODIES

Elected Fellow, Royal Astronomical Society	2017 - Present
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LIST OF REFERENCES

Prof. Beth Biller - bb@roe.ac.uk

Institute for Astronomy, University of Edinburgh, Blackford Hill, Edinburgh, EH9 3HJ, UK

Prof. Jayne Birkby - jayne.birkby@physics.ox.ac.uk

Astrophysics, Department of Physics, University of Oxford, Denys Wilkinson Building, Keble Road, Oxford, OX1 3RH, UK

Dr. Matthew Kenworthy - kenworthy@strw.leidenuniv.nl

Leiden Observatory, Leiden University, P.O. Box 9513, 2300 RA Leiden, The Netherlands

Dr. Jordan Stone - jordan.stone@nrl.navy.mil

Naval Research Laboratory, Remote Sensing Division, 4555 Overlook Ave. SW, Washington, DC 20375, USA

Prof. Sasha Hinkley - s.hinkley@exeter.ac.uk

Department of Physics & Astronomy, University of Exeter, Physics Building, Stocker Road, Exeter, EX4 4QL, UK

PUBLICATIONS

10. “*The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems V: Do Self-Consistent Atmospheric Models Represent JWST Spectra? A Showcase With VHS 1256 b*”, 2023, submitted to ApJ Letters

S. Petrus; N. Whiteford; P. Patapis; et al. including **B. J. Sutcliffe**

9. “*The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems IV: NIRISS Aperture Masking Interferometry Performance and Lessons Learned*”, 2023, submitted to ApJ Letters

S. Sallum; S. Ray; J. Kammerer; et al. including **B. J. Sutcliffe**

8. “*The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems III: Aperture Masking Interferometric Observations of the star HIP 65426 at 3.8 μm* ”, 2023, submitted to ApJ Letters

S. Ray; S. Sallum; S. Hinkley; et al. including **B. J. Sutcliffe**

7. “*Applying a temporal systematics model to vector Apodizing Phase Plate coronagraphic data: TRAP4vAPP*”, 2023, Astronomy & Astrophysics

P. Liu; A. J. Bohn; D. S. Doelman; **B. J. Sutcliffe**; M. Samland; M. A. Kenworthy; F. Snik; J. L. Birkby; B. A. Biller; J. R. Males; K. M. Morzinski; L. M. Close; G. P. P. L. Otten

6. “*Measuring the variability of directly imaged exoplanets using vector Apodizing Phase Plates combined with ground-based differential spectrophotometry*”, 2023, MNRAS

B. J. Sutcliffe; J. L. Birkby; J. M. Stone; D. S. Doelman, M. A. Kenworthy, V. Panwar, A. J. Bohn, S. Ertel, F. Snik, C. E. Woodward, A. J. Skemer, J. M. Leisenring, K. G. Strassmeier, and D. Charbonneau

5. “*High-contrast observations of brown dwarf companion HR 2562 B with the vector Apodizing Phase Plate coronagraph*”, 2021, MNRAS

B. J. Sutcliffe; A. J. Bohn; J. L. Birkby; M. A. Kenworthy; K. M. Morzinski; D. S. Doelman; J. R. Males; F. Snik; L. M. Close; P. M. Hinz; D. Charbonneau

4. “*The vector-apodizing phase plate coronagraph: design, current performance, and future development*”, 2021, Applied Optics

D. S. Doelman; F. Snik; E. H. Por; S. P. Bos; G. P. P. L. Otten; M. Kenworthy; S. Y. Haffert; M. Wilby; A. J. Bohn; **B. J. Sutcliffe**; K. Miller; M. Ouellet; J. de Boer; C. U. Keller; M. J. Escuti; S. Shi; N. Z. Warriner; K. Hornburg; J. L. Birkby; J. Males; K. M. Morzinski; L. M. Close; J. Codona; J. Long; L. Schatz; J. Lumbres; A. Rodack; K. Van Gorkom; A. Hedglen; O. Guyon; J. Lozi; T. Groff; J. Chilcote; N. Jovanovic; S. Thibault; C. de Jonge; G. Allain; C. Vallée; D. Patel; O. Côté; C. Marois; P. Hinz; J. Stone; A. Skemer; Z. Briesemeister; A. Boehle; A. M. Glauser; W. Taylor; P. Baudoz; E. Huby; O. Absil; B. Carlomagno; and C. Delacroix

3. “*Discovery of an Edge-on Circumstellar Debris Disk around BD+45° 598: A Newly Identified Member of the β Pictoris Moving Group*”, 2021, The Astrophysical Journal

S. Hinkley; E. C. Matthews; C. Lefevre; J-F. Lestrade; G. Kennedy; D. Mawet; K. R. Stapelfeldt; S. Ray; E. Mamajek; B. P. Bowler; D. Wilner; J. Williams; M. Ansdell; M. Wyatt; A. Lau; M. W. Phillips; J. Fernandez; J. Gagné; E. Bubb; **B. J. Sutcliffe**; T. J. G. Wilson; B. Matthews; H. Ngo; D. Piskorz; J. R. Crepp; E. Gonzalez; A. W. Mann; G. Mace

2. “*Assessing the Impact of Space School UK*”, 2019, Proceedings of the 3rd Symposium on Space Educational Activities

D. Robson; H. Lau; Á. O’Brien; L. Williams; **B. Sutlieff**; H. Thiemann; L. McCaul; G. Weaver; T. Dickens

1. “*Constraining the presence of giant planets in two-belt debris disc systems with VLT/SPHERE direct imaging and dynamical arguments*”, 2018, MNRAS

E. Matthews; S. Hinkley; A. Vigan; G. Kennedy; **B. Sutlieff**; D. Wickenden; S. Treves; T. David; T. Meshkat; D. Mawet; F. Morales; A. Shannon; K. Stapelfeldt