Heidi B. Thiemann

Research Experience

The Open University   **Milton Keynes, UK**
PhD Student, Astronomy Research Group, School of Physical Sciences   **2017 - 2021**
- PhD title: "Variable Stars in the SuperWASP All Sky Survey" supervised by Professor Andrew Norton and Dr Ulrich Kolb, funded by the DISCnet CDT.
- Highly skilled in observational astronomy, both photometric and spectroscopic, spectral fitting routines, and modelling using software such as PHOEBE, MESA, and binary_c.
- Achieved eight successful PI and Co-I bids for telescope time, and E.A. Milne Travelling Fellowship.

My current research focuses on stellar variability in the SuperWASP all-sky survey. I have used a recent reanalysis of this survey to discover a new type of binary star, near-contact red-giant eclipsing binaries, which we believe may be the progenitors of red novae. We identified these objects during the creation of the *SuperWASP Variable Stars Zooniverse* citizen science project, and have since conducted an 18 month long photometric and spectroscopic follow-up campaign to characterise and model these binaries.
I have previously used the SuperWASP survey to investigate unique stars displaying a rotational modulation in their light curve with corresponding X-ray observations. By cross-correlating existing large data sets, I have characterised the rotation-activity relation for SuperWASP and ASAS-SN field stars.

Education

University of Leicester   **Leicester, UK**
2:1 (Hons) MPhys Physics with Space Science and Technology   **2013 - 2017**
- Master's projects: Searching for Variable Sources, The Formation of Hot Jupiters.
- Third year projects: Detecting Transiting Exoplanets, Catching and Disposing of Space Junk.

Nara Women's University   **Nara, Japan**
Summer Research Programme   **August 2016**
- A scientific and cultural research programme to explore the ecology and diet of Sika deer in Nara.

Industry and Management Experience

Co-Founder and Director, Space Skills Alliance   **2019 - Present**
- Founder and director of the think tank addressing the UK space sector skills shortage. Expert in the space skills domain, and have published analysis on diversity and skills shortages in the sector.

Visiting Scientist, STFC/Rutherford Appleton Laboratory   **Summer 2019**
- Worked with the Earth Observation Department to update the Python-based Sentinel-2 cloud detection algorithm and image processor 's2cloudless' to run with Sentinel-3 inputs, including visible and SWIR.

Advisor (previously Director), SpaceCareers.uk   **2015 - Present**
- Managed a team of 10 people to build and grow SpaceCareers.uk, making it the go-to resource for the space sector, reaching over 1.5 million page views. Organised national careers events for young people.

Advisor (previously Treasurer on Executive Committee), UKSEDS   **2015 - 2019**
- Managed a team of 40 volunteer staff and organised multiple national conferences. Provided young people with opportunities to further their careers, and managed a charity budget of $\sim$£30,000.

Journal Publications

- **Thiemann, Heidi B.**, Norton, A.J., Kolb, U.C. (2021), *SuperWASP Variable Stars: Classifying Light Curves Using Citizen Science*, (in prep)
- Rawls, M. L., **Thiemann, Heidi B.**, Walkowicz, L. M., Peel, M. W., Grange, Y. G., (2020) *Satellite Constellation Internet Affordability and Need*, RNAAS (submitted)
- **Thiemann, Heidi B.**, Norton, A.J., Kolb, U.C., (2020) *The stellar rotation-activity relation for a sample of SuperWASP field stars*, PASA

Other Publications (Non-Refereed)

- Dudley, J., **Thiemann, Heidi B.** (2020), *Assessing the Quality of Space Job Adverts*, Space Skills Alliance
- **Thiemann, Heidi B.**, Dudley, J. (2020), *Skills demand for early career space jobs*, Space Skills Alliance
- Dudley, J., **Thiemann, Heidi B.** (2020), *Towards a space competencies taxonomy*, Space Skills Alliance
- Robson, D., et al. (2019), *Assessing the Impact of Space School UK*, Proceedings of the 3rd Symposium on Space Educational Activities, pp. 138-144

Conference Posters

- *SuperWASP Variable Stars: Classifying Light Curves Using Citizen Science*, ADASS XXX   **2020**
- *Red novae candidates: An investigation of long-period near-contact giant binaries*, RAS Early Career Online Poster Exhibition   **2020**
- *The rotation-activity relation*, National Astronomy Meeting   **2019**
- *Diversity in student space activities in the UK*, 50th Lunar and Planetary Science Conference   **2019**
- *Initial results of the rotation-activity relation*, Time-Domain Astronomy: A High Energy View   **2018**

Selected Talks

- *Red novae candidates? An investigation of long-period near-contact giant binaries*, EAS   **2020**
- *Megaconstellations and Astronomy*, 2nd Summit for Space Sustainability (invited)   **2020**
- *Data science in the space sector*, DISCnet Annual Showcase (invited)   **2019**
- *Stellar variability in SuperWASP*, SAAO colloquia series (invited)   **2019**
- *Diversity in student space activities in the UK*, National Astronomy Meeting   **2019**

Teaching Experience

Maths Assessor, The Open University   **2019 - Present**
- Marking maths coursework from 50 Students in Secure Environments (SiSE).

Zooniverse Project Collaborator, The Open University   **2018 - Present**
- Researcher and collaborator on the *SuperWASP Variable Stars* citizen science project.

Night Duty Astronomer, The Open University   **2018 - Present**
- Teaching 60 undergraduates per year to independently use the *PIRATE* telescope.

Course Facilitator, FutureLearn   **Winter 2018**
- Answering questions and encouraging discussion on forums for the *In the Night Sky: Orion* MOOC.

Senior Mentor, Space School UK   **2014 - Present**
- Responsible for giving lectures and leading workshops to educate 180 young people on a variety of space topics, alongside pastoral care and safeguarding. Responsible for training 2-5 Junior Mentors per year.

Supervision Experience

Summer Internship Student, SpaceCareers.uk/The Open University   **Summer 2018**
- Supervised an undergraduate student for an 8 week Space Placement in INdustry (SPIN) internship, guiding them towards creating outreach and careers materials.

Awards and Achievements

- *Rising Star Award Finalist*, FDM everywoman in Technology   **2020**
- *Outreach and Public Engagement Award*, The Open University   **2020**
- *Sir Arthur Clarke Award for contributions to the space sector*, Arthur C. Clarke Foundation   **2019**
- *RAS Poster Competition Second Prize*, Oxford University Press   **2019**
- *Invitation to the Royal Garden Party*, Department for Business, Energy & Industrial Strategy   **2019**
- *Voice of the Future 2019*, The Open University   **2019**
- *Future Leaders Award Finalist*, University of Leicester   **2019**
- *The Dean's Award*, Nara Women's University   **2016**
- *Advancing Gender Equality Award*, University of Leicester   **2016**
- *Voice of the Future 2015*, Royal Astronomical Society   **2015**

Funding

- *E.A. Milne Travelling Fellowship*, Royal Astronomical Society   **2019**
- *Small Grants Fund*, Institute of Physics   **2018**
- *Outreach Grant Fund*, University of Leicester   **2015**
- *Undergraduate Conference Travel Fund*, University of Leicester   **2015**

Successful Proposals

- *SALT (RSS)*, Co-I, 2.6 hours   **2020**
- *SALT (RSS)*, Co-I, 8.5 hours   **2020**
- *Liverpool Telescope (FRODOSpec)*, PI, 6.1 hours   **2020**
- *Liverpool Telescope (FRODOSpec)*, PI, 6.6 hours   **2020**
- *1.9m Telescope (SpUpNIC)*, PI, 14 nights   **2019**
- *Liverpool Telescope (FRODOSpec)*, PI, 21.2 hours   **2019**
- *SALT (RSS)*, Co-I, 9.7 hours   **2019**
- *Las Cumbres Observatory (multiple instruments)*, PI, 28 hours   **2019**

Observing Experience

- *1.9m Telescope (SpUpNIC)*, 14 nights, SAAO, South Africa   **2019**
- *PIRATE Telescope*, over 650 hours, The Open University, Tenerife   **2018-Present**
- *piCETL Telescope*, 2 nights, University of Leicester, UK   **2016**

Skills

Computer programming

- 4 years' experience with Python in a research context, including writing astronomy-specific programmes.
- Excellent and continually developing familiarity with astronomical programmes including: IRAF, PyRAF, PHOEBE, binary_c, FDBinary, PyHammer, MESA, VaST, AstroImageJ, TOPCAT.

General Information Technology

- Highly competent in UNIX operating system Linux, and Microsoft Office.
- Confident in use of general software such as Google Drive, Slack, LATEX, Overleaf, as well as photo and video editing software, and social media management tools.

Scientific

- Strong problem-solving skills and an analytical mindset, both for computational and practical astronomy.
- Skilled at creating and working with large data sets and the subsequent statistical analysis.
- Working on improving data visualisation skills so all data is communicated in a clear, accessible format.
- Passionate about Citizen Science and how to accomplish impactful science through collaborative methods.

Communication

- Confident public speaker, very capable of delivering scientific presentations and public talks.
- Highly skilled at writing, with experience writing scientific publications, and popular science pieces.

Service and Impact Activities

- Commissioned by the UK Space Agency to carry out the 2020 Space Census, the first national census of the UK's space workforce.
- Currently serving as a member of the Space Skills Advisory Panel (SSAP), advising the UK Space Agency on skills provision, which will be fed into the National Space Skills Institute (NSSI).
- Currently serving as a member of the Royal Astronomical Society's Optical Working Group, working on understanding and mitigating the effects of mega-constellations on astronomy.
- Currently serving as a member of the Space Universities Network (SUN), working to enhance the quality of space teaching in UK universities.
- Social Media Manager for Women In Aerospace-Europe (WIA-E).
- Represented the Royal Astronomical Society and The Open University in the Voice of the Future events in the House of Commons.

Public Engagement

- Lead the development and organisation of national competitions, events, and conferences for more than 1,500 young people interested in the space industry and space careers.
- Regular speaker for Irish primary schools as part of the *Space Speaker in your Classroom* initiative.
- Engaged with students from across the country through the *I'm a Scientist* programme.
- Founded *PubhD-OU*, an informal monthly event for academics to share their research.
- Actively engaged with STEM Ambassador events, and regular speaker for *Careers Launch* events.

Professional Affiliations

- Fellow of the Royal Astronomical Society
- Member of the Institute of Physics
- Member of Women In Aerospace - Europe
- Member of the Space Universities Network
- Member of Astronomers for Planet Earth

Language Skills

- English - Native
- French - Intermediate
- Japanese - Beginner

Driving License

- Full, clean UK driver's license; manual transmission