

LILI ALDERSON

lili.alderson@bristol.ac.uk

School of Physics, University of Bristol,

HH Wills Physics Laboratory, Tyndall Avenue, Bristol BS8 1TL, UK

EDUCATION

PhD in Astrophysics

Sep 2020 - present

University of Bristol

- Supervisor: Dr. Hannah Wakeford
- Research Focus: Exoplanet Atmospheres with HST and JWST

MPhys Astrophysics with a Year Abroad

Sep 2016 - Jul 2020

University of Southampton & Center for Astrophysics | Harvard-Smithsonian

First Class

- Thesis Title : LRG-BEASTS: Ground-based Transmission Spectroscopy of the Atmosphere of the Highly Inflated Hot-Saturn WASP-21b
- One of the 5 top academically performing students and selected to spend year in research at the Center for Astrophysics | Harvard-Smithsonian, in Cambridge, MA, USA
- Selected as one of the 12 best academically performing students for the Design and Observation in Astronomy module, involving a week observing at Teide Observatory, Tenerife, Spain

CONFERENCES AND PROFESSIONAL TALKS

Invited Conference Talks

- **Jan 2023** - 241st AAS Meeting, Seattle Washington, Seattle, WA, USA - *JWST Transiting Exoplanet Early Release Science: A Transmission Spectrum of WASP-39b with NIRSpec G395H* (Invited but unable to attend, talk given by co-author)
- **Nov 2022** - Celebrating JWST's first six months of exoplanet data, Ringberg Castle, Germany - *"WASP-39b Through the Eyes of JWST NIRSpec G395H"*

Contributed Conference Talks

- **Mar 2023** - JWST Exoplanet Atmospheres Meeting, University of Oxford, UK - *"Bridging the Gap Between Small and Large Exoplanet Atmospheres with JWST NIRSpec"*
- **Jul 2022** - UK National Astronomy Meeting (NAM), University of Warwick, UK - *"Revisiting a Classic: Comprehensive Reanalysis of the Transmission Spectrum of the Hot Jupiter WASP-17b"*
- **Apr 2021** - UK Exoplanet Community Meeting (UKEXOM), University of Birmingham, UK (Online) - *"LRG-BEASTS: Sodium in the Atmosphere of the Hot-Saturn WASP-21b"*
- **Jan 2021** - UKRI STFC Introductory Course in Astronomy for New Research Students, Armagh Observatory and Planetarium, UK (Online) - *"Measuring the Atmosphere of WASP-21b"*

Contributed Conference Posters

- **Jun 2023** - Exoclimates VI, University of Exeter, UK - *"Examining exo-climates across planetary transitions with JWST NIRSpec"*, **Alderson, L.**, et al.
- **September 2022** - UK Exoplanet Community Meeting (UKEXOM), University of Edinburgh, UK (Online) - *"Revisiting a Classic: Comprehensive Reanalysis of the Transmission Spectrum of the Hot Jupiter WASP-17b"*, **Alderson, L.**, et al.
- **May 2022** - Exoplanets IV, Las Vegas, NV, USA - *"Revisiting a Classic: Comprehensive Reanalysis of the Transmission Spectrum of the Hot Jupiter WASP-17b"*, **Alderson, L.**, et al.
- **Jul 2021** - UK National Astronomy Meeting 2021, Bath, UK (Online) - *"Astrobites: Blogging about astrophysics"*, Haggar, R., Ramasawmy, J., **Alderson, L.**, et al.
- **May 2021** - Emerging Researchers in Exoplanet Science Symposium (ERES), Princeton, NJ, USA (Online) - *"LRG-BEASTS: Ground-based Detection of Sodium and a Steep Optical Slope in the Atmosphere of the Highly Inflated Hot-Saturn WASP-21b"*, **Alderson, L.**, et al.

- **Jul 2020** - Exoplanets III, Heidelberg, Germany (Online) - “*LRG-BEASTS: Ground-based Detection of Sodium and a Steep Optical Slope in the Atmosphere of the Highly Inflated Hot-Saturn WASP-21b*”, **Alderson, L.**, et al.
- **Jan 2020** - 235th American Astronomy Society (AAS) Meeting, Honolulu, HI, USA - “*Transmission Spectroscopy of the Highly Inflated Hot Saturn WASP-21b*”, **Alderson, L.**, et al.

Seminars and Colloquia

- **Jun 2023** - Astronomy Seminar, Carnegie Earth & Planets Laboratory, D.C., USA (Online) - “*Into the IR: Exploring Exoplanet Atmospheres with Hubble and JWST*”
- **Apr 2023** - Department of Earth and Space Sciences Seminar, Columbus State University, GA, USA - “*Alien Sunsets: Exploring the Atmospheres of Exoplanets with Space Telescopes*”
- **Mar 2023** - Exoplanet Seminar, NASA Goddard, MD, USA - “*Into the IR: Exploring Exoplanet Atmospheres with Hubble and JWST*”
- **Mar 2023** - PALS Seminar, University of Maryland, MD, USA - “*Into the IR: Exploring Exoplanet Atmospheres with Hubble and JWST*”
- **Jun 2022** - Astronomical Data Group Community Meeting, CCA Flatiron Institute, NY, USA (Online) - “*Retrievals of WASP-17b*”
- **May 2022** - Astrophysics Seminar, American Museum of Natural History, NY, USA (Online) - “*Exploring Exoplanet Atmospheres with Multi-wavelength Observations*”
- **May 2022** - Planetary Lunch, University of California: Santa Cruz, CA, USA (Online) - “*Exploring Exoplanet Atmospheres with Multi-wavelength Observations*”
- **Apr 2022** - CIERA Science Happy Hour, Northwestern University, IL, USA (Online) - “*Revisiting a Classic: Comprehensive Reanalysis of the Transmission Spectrum of the Hot Jupiter WASP-17b*”
- **May 2020** - Exoplanet Presentation Seminar Series, Center for Astrophysics | Harvard-Smithsonian, MA, USA (Online) - “*LRG-BEASTS: Ground-based detection of Na and aerosols in the atmosphere of WASP-21b*”
- **May 2020** - STARGATE Collaboration Seminar (Online) - “*LRG-BEASTS: Ground-Based Transmission Spectroscopy of the Highly Inflated Hot Saturn WASP-21b*”

TEACHING AND OUTREACH

Member of the Astrobites Collaboration

Jan 2021 - present

Astrobites.org

- Regular writer and editor of astrophysics research paper summaries aimed at undergraduate students.
- Author of 17 articles, editor of 23. 8 of articles selected by AAS Nova for feature. ([View Full Summary.](#))

Teaching Support Assistant

Oct 2020 - present

University of Bristol

- PHYS10600 Stars & Planets, 1st Year undergraduate course - 30hrs/semester, ~ 90 students
- PHYS24010 Cosmology, 2nd Year undergraduate course - mark 66% of assessed grade, ~ 120 students

Student Ambassador

Jul 2019

University of Southampton

- Subject talks to audiences of up to 400 prospective students and parents
- Building tours to groups of up to 20 visitors

Student President of the School of Physics and Astronomy

Jun 2018 - Jul 2019

University of Southampton

- Elected by peers to oversee student-staff relations, managing a team of 12 course representatives
- Ran quarterly Staff-Student Liaison Committee meetings to address and resolve raised issues
- Weekly meetings with the Director of Programs of the school

Science Communication Highlights

- **Jun 2023** Chaos Physfest - Invited Speaker
- **May 2023** Pint of Science Bristol - Invited Speaker
- **Nov 2022** [Light From Distant Worlds Film](#)
- **Sep 2022** Filton Avenue Primary School Space Week Talk
- **Jul 2021** [Aerospace Bristol Museum Talk](#)

PROFESSIONAL ACTIVITIES & SERVICES

- **2022-Present** Co-Organiser of University of Bristol (Exo)Planetary Journal Club
- **2022-Present** Chair of Astrobites Scheduling Committee
- **2022-Present** Ombudsperson for Astrobites
- **2022-Present** Member of Astrobites Admin Committee
- **2021-Present** Member of Astrobites Diversity, Equity and Inclusion Committee
- **2021-Present** Member of Astrobites Scheduling Committee
- **2022** Session Organiser at National Astronomy Meeting, Warwick
- **2020-2022** Astrophysics Postgraduation Student Representative, University of Bristol
- **Journals Refereed:** AAS Journals
- **Professional Memberships:** RAS (2020-Present)

ATTENDED WORKSHOPS

- **OWL Exoplanet Summer Program**, University California: Santa Cruz, USA, Jul 2023
- **Physics Postgraduate Researchers Who Teach Course**, University of Bristol, Feb-Jun 2023
- **Celebrating JWST's first six months of exoplanet data**, Ringberg Castle, Germany, Nov 2022
- **Transiting Exoplanet Community ERS Post-Launch Data Challenge**, Hybrid, Mar 2022
- **Transiting Exoplanet Community ERS Pre-Launch Theory Webinar**, Online, Jul-Aug 2021
- **Transiting Exoplanet Community ERS Pre-Launch Data Hackathon**, Online, Jun 2021
- **UKRI STFC Introductory Course in Astronomy for New Research Students**, Armagh Observatory and Planetarium, UK (Online), Jan 2021
- **Introductory Astrobiology**, The Open University, UK, (Online), Nov 2020

GRANTS & AWARDS

- **PI** on 1 Competitively Awarded JWST GO Program (14.22 Total Hours),
- **Co-I** on 5 Competitively Awarded JWST GO Programs (271.9 Total Hours),
- **Co-I** on 2 Competitively Awarded HST GO Programs (145 Total Orbits)
- **2023 OWL Exoplanet Summer Program** - fully funded attendance
- **2022 RAS Travel Grant** - £1000 to attend Exoplanets IV in Las Vegas, NV, USA
- **2021 2nd Place, Best Student Contribution Presentation**, UKRI STFC Introductory Course in Astronomy for New Research Students, Armagh Observatory and Planetarium
- **2020 Most Outstanding Performance on an MPhys Degree**, School of Physics and Astronomy, University of Southampton
- **2020 Best Project by a Year Abroad / Final Year Research Finalist** School of Physics and Astronomy, University of Southampton
- **2019 Faculty Academic Rep Award**, University of Southampton Student Union Academic Awards

COLLABORATIONS

- **Transiting Exoplanet Community ERS Program:** Transmission Working Group Member
- **JWST GTO Telescope Scientist Team:** Project Level Exoplanet Transit Spectroscopy Member
- **COMPASS Collaboration (JWST GO-2512):** Co-Investigator
- **HUSTLE Program (HST GO-17183):** Co-Investigator
- **STARGATE Collaboration:** Member

PUBLICATIONS

- *Early Release Science of the Exoplanet WASP-39b with JWST NIRSpec G395H*, Alderson, L. et al., 2023, Nature 614, 664–669
- *A Comprehensive Analysis of WASP-17b’s Transmission Spectrum from Space-Based Observations*, Alderson, L., et al. 2022, MNRAS, 512, 4185
- *LRG-BEASTS: ground-based detection of sodium and a steep optical slope in the atmosphere of the highly inflated hot-saturn WASP-21b*, Alderson, L., et al. 2020, MNRAS, 497, 5182
- *Detection of CO’s fundamental band structure in WASP-39b’s atmosphere with JWST NIRSpec G395H*, Grant, D., et al., 2023, arXiv:2304.11994
- *JWST-TST Proper Motions: I. High-Precision NIRISS Calibration and LMC Kinematics*, Libralato, M., et al., 2023, arXiv:2303.00009
- *Photochemically produced SO₂ in the atmosphere of WASP-39b*, Tsai, S-M., et al., 2023, Nature
- *Early Release Science of the Exoplanet WASP-39b with JWST NIRSpec PRISM*, Rustamkulov, Z., et al., 2023, Nature 614, 659–663
- *Early Release Science of the Exoplanet WASP-39b with JWST NIRCам*, Ahrer, E-M., et al., 2023, Nature 614, 653–658
- *Early Release Science of the Exoplanet WASP-39b with JWST NIRISS*, Feinstein, A.D., et al., 2023, Nature 614, 670–675
- *Identification of carbon dioxide in an exoplanet atmosphere*, The JWST Transiting Exoplanet Community Early Release Science Team 2023, Nature, 614, 649–652
- *Importance of Sample Selection in Exoplanet Atmosphere Population Studies*, Batalha, N. E., et al., 2022, AJ, 165, 14