

LILI ALDERSON

lili-alderson.com — lili.alderson@cornell.edu — ORCID: [0000-0001-8703-7751](https://orcid.org/0000-0001-8703-7751)

PROFESSIONAL APPOINTMENTS

Klarman Fellow

Cornell University

Oct 2024 - Present

Department of Astronomy

Research Associate

University of Bristol

Apr 2024 - Jun 2024

School of Physics

EDUCATION

PhD in Astrophysics

University of Bristol

Sep 2020 - May 2024

- Supervisor: Dr. Hannah Wakeford
- Thesis Title: From Hot Jupiters to Super-Earths: An Exploration of Exoplanet Atmospheres with Space-Based Telescopes – *23/24 Prize for Outstanding Excellence in a Doctoral Dissertation in Faculty of Science*

MPhys Astrophysics with a Year Abroad

University of Southampton & Center for Astrophysics | Harvard-Smithsonian

Sep 2016 - Jul 2020

First Class

- Dissertation 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

TEACHING, LEADERSHIP & OUTREACH

Member of the Astrobites Collaboration

Astrobites.org

Jan 2021 - Sep 2024

- Regular writer and editor of astrophysics research paper summaries aimed at undergraduate students.
- Author of 17 articles, editor of 26. 10 articles selected by AAS Nova for feature. ([View Full Summary.](#))

Mentoring - University of Bristol

2023 - 2024

- Jude Young - High School Summer Research Project Student

Teaching Support Assistant

University of Bristol

Oct 2020 - Jun 2024

- PHYS10600 Stars & Planets, 1st Year undergraduate course - 30hrs/semester, ~ 90 students
- PHYS24010 Cosmology, 2nd Year undergraduate course - mark 66% of assessed grade, ~ 120 students
- PHYS34013 Stellar Structure & Evolution, 3rd Year undergraduate course - 6hrs/semester, ~ 40 students

Student Ambassador

University of Southampton

Jul 2019

- 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

University of Southampton

Jun 2018 - Jul 2019

- 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

- **Dec 2023** FIRST Tech Challenge UK Southwest Scrimmage - Invited Speaker
- **Dec 2023** Bournemouth School for Girls Inaugural Community Lecture - Invited Speaker
- **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](#)

GRANTS & AWARDS

- **PI** on 1 Competitively Awarded JWST GO Program
14.22 Total Hours: GO-4105
- **Co-I** on 8 Competitively Awarded JWST GO Programs
481.9 Total Hours: GO-5959, GO-5844, GO-5311, GO-3969, GO-3838, GO-3154, GO-2667, GO-2512
- **Co-I** on 3 Competitively Awarded HST GO Programs
165 Total Orbits: GO-17418, GO-17183, GO-16695
- **2023/2024 Outstanding Excellence in a Doctoral Dissertation**, Faculty of Science, Uni. of Bristol
- **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, Uni. of Southampton
- **2020 Best Project by a Year Abroad / Final Year Research Finalist** School of Physics and Astronomy, Uni. of Southampton
- **2019 Faculty Academic Rep Award**, Uni. of Southampton Student Union Academic Awards

PROFESSIONAL ACTIVITIES & SERVICES

- **2023-Present** Associate Fellows of Advance HE
- **2024** Cohort Member NASA ExoExplorers Program
- **2023-2024** Co-Chair of Astrobites Administrative Committee
- **2022-2024** Co-Organiser of University of Bristol (Exo)Planetary Journal Club
- **2022-2024** Member of Astrobites Admin Committee
- **2022-2023** Chair of Astrobites Scheduling Committee
- **2022-2023** Ombudsperson for Astrobites
- **2021-2024** Member of Astrobites Scheduling Committee
- **2021-2023** Member of Astrobites Diversity, Equity and Inclusion Committee
- **2022** Session Organiser at National Astronomy Meeting, Warwick
- **2020-2022** Astrophysics Postgraduation Student Representative, University of Bristol
- **Journals Refereed:** AAS Journals

CONFERENCES & PROFESSIONAL TALKS

Summary

- **Conference Presentations:** 2 invited talks [1 (2023), 1 (2022)]; 7 contributed talks [1 (2024), 3 (2023), 1 (2022), 2 (2021)]; 7 posters [1(2024), 3 (2022), 1 (2021), 2 (2020)]
- **Invited Talks & Seminars:** 14 [2 (2024), 6 (2023), 4 (2022), 2 (2020)]
- **Public Talks:** 6 [4 (2023), 1 (2022), 1 (2021)]

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

- **Apr 2024** - UK Exoplanet Community Meeting, University of Birmingham, UK - “*Atmospheres Across the Radius Valley - First Results from the JWST COMPASS Program*”
- **Jul 2023** - 44th Bay Area Exoplanet Meeting, University of California: Santa Cruz, CA, USA - “*Compositions of Mini-Planets for Atmospheric Statistical Study (COMPASS): Program Overview & First Lessons Learned*” (talk given with program PI)
- **Jul 2023** - OWL Exoplanet Summer Program, University of California: Santa Cruz, CA, USA - “*Transiting Exoplanets with NIRSpec: Life After ERS*”
- **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.
- **Sep 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 2024** - ExoCoffee, MPIA Max Planck Institute for Astronomy (Online), Germany - “*JWST COMPASS: NIRSpec/G395H Transmission Observations of the Super-Earth TOI-836b*”
- **Mar 2024** - ExoExplorer Science Series (Online) - “*Observing Atmospheres Across the Radius Valley*”
- **Dec 2023** - Astrophysics Seminar, University of Bristol, UK (Online) - “*Transiting Exoplanets: The Eras Tour - The Past, Present and Future of Atmospheric Observations*”
- **Oct 2023** - Stars, Planets, and ISM Seminar, The University of Texas at Austin (Online), TX, USA (Online) - “*Triumphs and Challenges in Exoplanet Atmospheres: The First Year of JWST Observations*”

- **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”*

ATTENDED WORKSHOPS

- **NASA ExoExplorers Program**, Online, Jan-Jun 2024
- **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

COLLABORATIONS

- **Transiting Exoplanet Community ERS Program**: Transmission Working Group Member
- **JWST GTO Telescope Scientist Team**: Project Level Exoplanet Transit Spectroscopy Member
- **KRONOS (JWST GO-5959)**: Co-Investigator
- **BOWIE-ALIGN Survey (JWST GO-3838)**: Co-Investigator
- **COMPASS Collaboration (JWST GO-2512)**: Co-Investigator
- **HUSTLE Program (HST GO-17183)**: Co-Investigator
- **BOWIE Collaboration**: Member
- **STARGATE Collaboration**: Member

PUBLICATIONS

Refereed Publications: 5 first author, 21 co-author

- **Alderson, L.** et al., *JWST COMPASS: NIRSpec/G395H Transmission Observations of the Super-Earth TOI-776b*, in press, AJ, DOI: 10.3847/1538-3881/adad64
- **Alderson, L.** et al., *JWST COMPASS: NIRSpec/G395H Transmission Observations of the Super-Earth TOI-836b*, 2024, AJ, 167, 5, DOI: 10.3847/1538-3881/ad32c9
- **Alderson, L.** et al., *Early Release Science of the Exoplanet WASP-39b with JWST NIRSpec G395H*, 2023, Nature 614, 664–669, DOI: 10.1038/s41586-022-05591-3
- **Alderson, L.**, et al. *A Comprehensive Analysis of WASP-17b’s Transmission Spectrum from Space-Based Observations*, 2022, MNRAS, 512, 4185, DOI: 10.1093/mnras/stac661
- **Alderson, L.**, et al. *LRG-BEASTS: ground-based detection of sodium and a steep optical slope in the atmosphere of the highly inflated hot-saturn WASP-21b*, 2020, MNRAS, 497, 5182, DOI: 10.1093/mnras/staa2315
- Kirk, J. et al., *BOWIE-ALIGN: JWST reveals hints of planetesimal accretion and complex sulphur chemistry in the atmosphere of the misaligned hot Jupiter WASP-15b*, in press, MNRAS
- Louie, D., Mullens, E., **Alderson, L.** et al., *JWST-TST DREAMS: A Precise Water Abundance for Hot Jupiter WASP-17b from the NIRISS SOSS Transmission Spectrum*, 2025, AJ, 169, 86, DOI: 10.3847/1538-3881/ad9688
- Gressier, A. et al., *JWST-TST DREAMS: A Super-Solar Metallicity in WASP-17 b’s Day-side Atmosphere from NIRISS SOSS Eclipse Spectroscopy*, 2025, AJ, 169, 57, DOI: 10.3847/1538-3881/ad97bf
- Alam, M. K. et al., *JWST COMPASS: The first near- to mid-infrared transmission spectrum of the hot super-Earth L 168-9 b*, 2025, AJ, 169, 15, DOI: 10.3847/1538-3881/ad8eb5
- Boehm, V. A. et al., *The HUSTLE Program: The UV to Near-Infrared HST WFC3/UVIS G280 Transmission Spectrum of WASP-127b*, 2025, AJ, 169, 23, DOI: 10.3847/1538-3881/ad8dde
- Kirk, J. et al., *BOWIE-ALIGN: A JWST comparative survey of aligned vs misaligned hot Jupiters to test the dependence of atmospheric composition on migration history*, 2024, RAS Techniques and Instruments, 3, 691, DOI: 10.1093/rasti/rzae043
- Scarsdale, N. et al., *JWST COMPASS: The 3-5 Micron Transmission Spectrum of the Super-Earth L 98-59 c*, 2024, AJ, 168, 276, DOI: 10.3847/1538-3881/ad73cf
- Valentine, D. et al., *JWST-TST DREAMS: Non-Uniform Dayside Emission for WASP-17b from MIRI/LRS*, 2024, AJ, 168, 123 DOI: 10.3847/1538-3881/ad3917
- Carter, A. L. & May, E. M. et al., *A Benchmark JWST Near-Infrared Spectrum for the Exoplanet WASP-39b*, Nature Astronomy, 2024, 8, 1008–1019, DOI: 10.1038/s41550-024-02292-x
- Wallack, N., Batalha, N., **Alderson, L.**, et al., *JWST COMPASS: A NIRSpec/G395H Transmission Spectrum of the Sub-Neptune TOI-836c*, 2024, AJ, 168, 77 DOI: 10.3847/1538-3881/ad3917
- Waalkes, W., et al., *Quantifying the Transit Light Source Effect on AU Microscopii: Measurements of Spot Temperature and Coverage with High-Resolution Spectroscopy and Multi-Color Photometry*, 2024, ApJ, 962, 1, DOI: 10.3847/1538-4357/ad0bed
- May, E. M. & MacDonald, R. J., et al., *Double Trouble: Two Transits of the Super-Earth GJ 1132 b Observed with JWST NIRSpec G395H*, 2023, ApJL, 959, 1, DOI: 10.3847/2041-8213/ad054f
- Grant, D., et al., *JWST-TST DREAMS: Quartz Clouds in the Atmosphere of WASP-17b*, 2023, ApJL, 956, L29, DOI: 10.3847/2041-8213/acfc3b
- Grant, D., et al., *Detection of CO’s fundamental band structure in WASP-39b’s atmosphere with JWST NIRSpec G395H*, 2023, ApJL, 949, L15, DOI: 10.3847/2041-8213/acd544
- Libralato, M., et al., *JWST-TST Proper Motions: I. High-Precision NIRISS Calibration and LMC Kinematics*, 2023, ApJ, 950, 101, DOI: 10.3847/1538-4357/acd04f
- Tsai, S-M., et al., 2023, *Photochemically produced SO₂ in the atmosphere of WASP-39b*, Nature, 617, 483-487, DOI: 10.1038/s41586-023-05902-2

- Rustamkulov, Z., et al., *Early Release Science of the Exoplanet WASP-39b with JWST NIRSpec PRISM*, 2023, Nature, 614, 659–663, DOI: 10.1038/s41586-022-05677-y
- Ahrer, E-M., et al., *Early Release Science of the Exoplanet WASP-39b with JWST NIRCам*, 2023, Nature, 614, 653–658, DOI: 10.1038/s41586-022-05590-4
- Feinstein, A.D., et al., *Early Release Science of the Exoplanet WASP-39b with JWST NIRISS*, 2023, Nature, 614, 670–675, DOI: 10.1038/s41586-022-05674-1
- The JWST Transiting Exoplanet Community Early Release Science Team, *Identification of carbon dioxide in an exoplanet atmosphere*, 2023, Nature, 614, 649–652, DOI: 10.1038/s41586-022-05269-w
- Batalha, N. E., et al., *Importance of Sample Selection in Exoplanet Atmosphere Population Studies*, 2022, AJ, 165, 14, DOI: 10.3847/1538-3881/ac9f45