Ryan J. MacDonald

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CAREER & EDUCATION

NASA Sagan Fellow 2022 –
University of Michigan, Department of Astronomy, USA

Research Associate 2019–2022
Cornell University, Department of Astronomy and Carl Sagan Institute, USA

PhD. Astronomy 2015–2019
University of Cambridge, Institute of Astronomy, UK
Thesis: *Revealing the Nature of Exoplanetary Atmospheres*

MPhys. Physics 2011–2015
University of Oxford, Department of Physics, UK

SELECTED PRIZES & HONOURS

NASA Sagan Prize Fellowship	2022
Royal Astronomical Society Travel Award	2018
Paul Murdin Prize, University of Cambridge	2017
Kavli Summer Program in Astrophysics Fellowship, UC Santa Cruz	2016
STFC PhD Studentship, UK	2015–2019
Public Outreach Prize, University of Oxford	2014
Gibbs Prize (twice awarded), University of Oxford	2013, 2014
Scholarship, University College, University of Oxford	2012–2014

PUBLICATIONS

55 papers: 9 first author, 6 second author, 6 third author, 1500+ citations (ADS List)

First author:

1. ⋆May, E.M. & ⋆**MacDonald, R.J.**, Bennett, K.A., et al., 2023, *Double Trouble: Two Transits of the Super-Earth GJ 1132 b Observed with JWST NIRSpec G395H*, ApJL (in press) (⋆ = Co-lead authors)
2. **MacDonald, R.J.**, 2023, *POSEIDON: A Multidimensional Atmospheric Retrieval Code for Exoplanet Spectra*, JOSS, 8(81), 4873
3. **MacDonald, R.J.** & Lewis N.K., 2022, *TRIDENT: A Rapid 3D Radiative Transfer Model for Exoplanet Transmission Spectra*, ApJ, 929, 20
4. ⋆Kaltenegger, L. & ⋆**MacDonald, R.J.**, Kozakis, T., et al., 2020, *The White Dwarf Opportunity: Robust Detections of Molecules in Earth-like Exoplanet Atmospheres with the James Webb Space Telescope*, ApJL 901, L1 (⋆ = Co-lead authors)
5. **MacDonald, R.J.**, Goyal, J.M, & Lewis N.K., 2020, *Why Is it So Cold in Here? Explaining the Cold Temperatures Retrieved from Transmission Spectra of Exoplanet Atmospheres*, ApJL, 893, L43

6. **MacDonald, R.J.** & Madhusudhan, N., 2019, *The Metal-Rich Atmosphere of the Exo-Neptune HAT-P-26b*, MNRAS, 486, 1292
7. **MacDonald, R.J.**, Marley, M.S., Fortney, J.J., & Lewis N.K., 2018, *Exploring H_2O Prominence in Reflection Spectra of Cool Giant Planets*, ApJ, 858, 69
8. **MacDonald, R.J.** & Madhusudhan, N., 2017, *Signatures of Nitrogen Chemistry in Hot Jupiter Atmospheres*, ApJL, 850, L15
9. **MacDonald, R.J.** & Madhusudhan, N., 2017, *HD 209458b in New Light: Evidence of Nitrogen Chemistry, Patchy Clouds and Sub-Solar Water*, MNRAS 469, 1979

Second author († = student supervised by **MacDonald, R.J.**):

10. Fournier-Tondreau, M., **MacDonald, R.J.**, Radica, M., et al., 2023, *Near-Infrared Transmission Spectroscopy of HAT-P-18 b with NIRISS: Disentangling Planetary and Stellar Features in the Era of JWST*, MNRAS (accepted)
11. †Gomez Barrientos, J., **MacDonald, R.J.**, Lewis N.K., & Kaltenegger, L., 2023, *In Search of the Edge: A Bayesian Exploration of the Detectability of the Red-Edge in Exoplanet Reflection Spectra*, ApJ, 946, 96
12. Xu, S., ⋆Diamond-Lowe, H., ⋆**MacDonald, R.J.**, et al., 2021, *Gemini/GMOS Transmission Spectroscopy of the Grazing Planet Candidate WD 1856+534 b*, AJ, 162, 296 (⋆ = equal contribution)
13. Rathcke, A.D., **MacDonald, R.J.**, Barstow, J.K., et al., 2021, *HST PanCET Program: A Complete Near-UV to Infrared Transmission Spectrum for the Hot Jupiter WASP-79b*, AJ, 162, 138
14. Lin, Z., **MacDonald, R.J.**, Kaltenegger, L., & Wilson, D.J., 2021, *Differentiating Modern and Prebiotic Earth Scenarios for TRAPPIST-1e: High-resolution Transmission Spectra and Predictions for JWST*, MNRAS, 505, 3562
15. Sedaghati, E., **MacDonald, R.J.**, Casasayas-Barris, N., et al., 2021, *A Spectral Survey of WASP-19b with ESPRESSO*, MNRAS, 505, 435

Third author († = student supervised by **MacDonald, R.J.**):

16. †Gomez Barrientos, J., Kaltenegger, L., & **MacDonald, R.J.**, 2023, *A Venus in the Making? Predictions for JWST Observations of the Ultracool M-Dwarf Planet LP 890-9 c*, MNRAS Letters, 524, L5
17. Alderson, L., Wakeford, H.R, **MacDonald, R.J.**, et al., 2022, *A Comprehensive Analysis of WASP-17b's Transmission Spectrum from Space-Based Observations*, MNRAS, 512, 4185
18. Kirk, J., Rackham, B., **MacDonald, R.J.**, et al., 2021, *ACCESS and LRG-BEASTS: A Precise New Optical Transmission Spectrum of the Ultrahot Jupiter WASP-103b*, AJ, 162, 34
19. Alam, M.K., López-Morales, M., **MacDonald, R.J.**, et al., 2021, *Evidence of a Clear Atmosphere for WASP-62b: the Only Known Transiting Gas Giant in the JWST Continuous Viewing Zone*, ApJL, 906, L10
20. Lewis, N.K., Wakeford, H.R., **MacDonald, R.J.**, et al., 2020, *Into the UV: The Atmosphere of the Hot Jupiter HAT-P-41b Revealed*, ApJL, 902, L19
21. Sedaghati, E., Boffin, H.M.J., **MacDonald, R.J.**, et al., 2017, *Detection of Titanium Oxide in the Atmosphere of a Hot Jupiter*, Nature, 549, 238

Co-authored:

22. Espinoza, N, Steinrueck, M.E., Kirk, J., **MacDonald, R.J.**, Savel, A.B., et al., 2023, *The Morning and Evening Atmosphere of the Exoplanet WASP-39 b*, Nature (submitted)
23. Kirk, J., et al. (including **MacDonald, R.J.**), 2023, *JWST/NIRCam Transmission Spectroscopy of the Nearby Sub-Earth GJ 341b*, AJ (submitted)
24. Powell, D., et al. (including **MacDonald, R.J.**), 2023, *Detection of SO_2 in the Mid-Infrared Transmission Spectrum of WASP-39b*, Nature (submitted)
25. Grant, D., et al. (including **MacDonald, R.J.**), 2023, *JWST-TST DREAMS: Quartz Clouds in the Atmosphere of WASP-17b*, ApJL, 956, L29
26. Deibert, E.K, et al. (including **MacDonald, R.J.**), 2023, *ExoGemS High-Resolution Transmission Spectroscopy of WASP-76b with GRACES*, AJ, 166, 141
27. Radica, M., et al. (including **MacDonald, R.J.**), 2023, *Awesome SOSS: Transmission Spectroscopy of WASP-96b with NIRISS/SOSS*, MNRAS, 524, 835
28. Taylor, J, Radica, M., Welbanks, L., **MacDonald, R.J.**, Blecic, J., et al., 2023, *Awesome SOSS: Atmospheric Characterization of WASP-96b Using the JWST Early Release Observations*, MNRAS, 524, 817
29. Lim, O., Benneke, B., Doyon, R., **MacDonald, R.J.**, Piaulet, C., et al., 2023, *Atmospheric Reconnaissance of TRAPPIST-1 b with JWST/NIRISS: Evidence for Strong Stellar Contamination in the Transmission Spectra*, ApJL, 955, L22
30. Coulombe, L., et al. (including **MacDonald, R.J.**), 2023, *A Broadband Thermal Emission Spectrum of the Ultra-hot Jupiter WASP-18b*, Nature, 620, 292
31. Lustig-Yaeger, J., et al. (including **MacDonald, R.J.**), 2023, *A JWST transmission spectrum of the nearby Earth-sized exoplanet LHS 475 b*, Nature Astronomy (in press)
32. Flagg, L., et al. (including **MacDonald, R.J.**), 2023, *ExoGemS Detection of a Metal Hydride in an Exoplanet Atmosphere at High Spectral Resolution*, ApJL, 953, L19
33. Albert, L., et al. (including **MacDonald, R.J.**), 2023, *The Near Infrared Imager and Slitless Spectrograph for the James Webb Space Telescope – III. Single Object Slitless Spectroscopy*, PASP, 135, 075001
34. Libralato, M., et al. (including **MacDonald, R.J.**), 2023, *JWST-TST Proper Motions. I. High-Precision NIRISS Calibration and Large Magellanic Cloud Kinematics*, ApJ, 950, 101
35. Moran, S.E, Stevenson, K.B., Sing, D.K., **MacDonald, R.J.**, Kirk, J., et al., 2023, *High Tide or Riptide on the Cosmic Shoreline? A Water-rich Atmosphere or Stellar Contamination for the Warm Super-Earth GJ 486b from JWST Observations*, ApJL, 948, L11
36. Ridden-Harper, A., et al. (including **MacDonald, R.J.**), 2023, *High-Resolution Transmission Spectroscopy of the Terrestrial Exoplanet GJ 486b*, AJ, 165, 170
37. Feinstein, A., et al. (including **MacDonald, R.J.**), 2023, *Early Release Science of the exoplanet WASP-39b with JWST NIRISS*, Nature, 614, 670
38. Alderson, L., et al. (including **MacDonald, R.J.**), 2023, *Early Release Science of the Exoplanet WASP-39b with JWST NIRSpec G395H*, Nature, 614, 664

39. Rustamkulov, Z., et al. (including **MacDonald, R.J.**), 2023, *Early Release Science of the exoplanet WASP-39b with JWST NIRSpec PRISM*, Nature, 614, 659

40. Ahrer, E., et al. (including **MacDonald, R.J.**), 2023, *Early Release Science of the exoplanet WASP-39b with JWST NIRCam*, Nature, 614, 653 653

41. The JWST Transiting Exoplanet Community Early Release Science Team, et al. (including **MacDonald, R.J.**), 2023, *Identification of Carbon Dioxide in an Exoplanet Atmosphere*, Nature, 614, 649

42. Rackham, B., Espinoza, N., Berdyugina, S.V., Korhonen, H., **MacDonald, R.J.**, et al., 2023, *The Effect of Stellar Contamination on Low-resolution Transmission Spectroscopy: Needs Identified by NASA's Exoplanet Exploration Program Study Analysis Group 21*, RASTI, 2, 148

43. Wong, I., et al. (including **MacDonald, R.J.**), 2022, *The Hubble PanCET Program: A Featureless Transmission Spectrum for WASP-29b and Evidence of Enhanced Atmospheric Metallicity on WASP-80b*, AJ, 164, 30

44. Barstow, J.K., et al. (including **MacDonald, R.J.**), 2022, *A Retrieval Challenge Exercise for the Ariel Mission*, Experimental Astronomy, 53, 447

45. Foote, T.O, et al. (including **MacDonald, R.J.**), 2022, *The Emission Spectrum of the Hot Jupiter WASP-79b from HST/WFC3*, AJ, 163, 7

46. Goyal, J.M., Lewis, N.K., Wakeford, H.R., **MacDonald, R.J.**, & Mayne, N.J., 2021, *Why is it So Hot in Here? Exploring Population Trends in Spitzer Thermal Emission Observations of Hot Jupiters using Planet-Specific Self-Consistent Atmospheric Models*, ApJ, 923, 242

47. Mishra, I., et al. (including **MacDonald, R.J.**), 2021, *A Comprehensive Revisit of Select Galileo/NIMS Observations of Europa*, PSJ, 2, 183

48. Deibert, E.K, et al. (including **MacDonald, R.J.**), 2021, *Detection of Ionized Calcium in the Atmosphere of the Ultra-Hot Jupiter WASP-76b*, ApJL, 919, L15

49. Weaver, I., et al. (including **MacDonald, R.J.**), 2021, *ACCESS: An Optical Transmission Spectrum of the High-gravity, Hot Jupiter HAT-P-23b*, AJ, 161, 278

50. Mishra, I., et al. (including **MacDonald, R.J.**), 2021, *Bayesian analysis of Juno / JIRAM's NIR observations of Europa*, Icarus, 357, 114215

51. Tinetti, G., et al. (including **MacDonald, R.J.**), 2020, *Ariel: Enabling planetary science across light-years*, ESA Ariel Mission Definition Study Report

52. Molaverdikhani, K., Helling, Ch., Lew, B.W.P., **MacDonald, R.J.**, et al., 2020, *Understanding the atmospheric properties and chemical composition of the ultra-hot Jupiter HAT-P-7b: II. Mapping the effects of gas kinetics*, A&A, 635, A31

53. Helling, Ch., et al. (including **MacDonald, R.J.**), 2019, *Understanding the atmospheric properties and chemical composition of the ultra-hot Jupiter HAT-P-7b: I. Cloud and chemistry mapping*, A&A, 631, A79

54. Pinhas, A., Madhusudhan, N., Gandhi, S., & **MacDonald, R.J.**, 2018, *H_2O Abundances and Cloud Properties in Ten Hot Giant Exoplanets*, MNRAS, 482, 1485

55. Kilpatrick, B.M, et al. (including **MacDonald, R.J.**), 2018, *Community Targets of JWST's Early Release Science Program: Evaluation of WASP-63b*, AJ, 156, 103

GRANT AWARDS

1. NASA Hubble Fellowship Program (**PI: MacDonald, R.J.**) 2022 –
   A Multidimensional Approach to Exploring Disequilibrium Chemistry in Exoplanet Atmospheres
   Grant Award: **$263,274**
2. Heising-Simons Foundation Grant #2023-4742 (Leads: Holmbeck, E.M, Ong, J.M., & **MacDonald, R.J.**) 2023
   Astronomy Mentorship Program for Upcoming Postdocs Workshop
   Grant Award: **$50,000**
3. JWST Cycle 2, GO 4098 (PI: Benneke, B.) 2023–2026
   Exploring the Existence and Diversity of Volatile-rich Water Worlds
   Grant Award: **$22,068**
4. JWST Cycle 2, GO 3969 (PI: Espinoza, N.) 2023–2026
   Hot Jupiter Atmospheric Forecast: Are Mornings Cloudier than Evenings in Other Worlds?
   Grant Award: **$23,084**
5. NASA ROSES XRP (PI: Faherty, J.) 2022–2025
   Read Between the Lines: Determining Atmosphere and Bulk Compositions for Planetary Mass Objects Using Spectral Retrievals
   Grant Award: **$209,999**
6. JWST Cycle 1, GO 2358 (**PI: MacDonald, R.J.**) 2022–2025
   Revealing the Atmospheric Composition of a White Dwarf Planet
   Grant Award: **$91,220**
7. JWST Cycle 1, GO 1981 (PI: Stevenson, K.) 2023–2025
   Measuring the Prevalence and Diversity of M-Dwarf Planet Atmospheres
   Grant Award: **$23,710**

ACCEPTED OBSERVING PROPOSALS

1. **JWST Cycle 2 (DDT)**, 16 hrs, GO 6543 (PI: Cadieux, C.) 2023
   Stellar Activity Characterization of LHS 1140 — Is LHS 1140 b a Mini-Neptune or a Water World?
2. **JWST Cycle 2**, 82 hrs, GO 4098 (PI: Benneke, B.) 2023
   Exploring the existence and diversity of volatile-rich water worlds
3. **JWST Cycle 2**, 62 hrs, GO 3969 (PI: Espinoza, N.) 2023
   Hot Jupiter Atmospheric Forecast: Are mornings cloudier than evenings in other worlds?
4. **JWST Cycle 2**, 7 hrs, GO 4082 (PI: Radica, M.) 2023
   Putting it all Together: Dynamics and Chemistry Probed Through Transmission Spectroscopy of a Cloud-Free Exoplanet
5. **JWST Cycle 2**, 14 hrs, GO 4105 (PI: Alderson, l.) 2023
   Not Your Normal Neptune: Exploring the Chemical Processes at Play in HAT-P-11b
6. **HST Cycle 30**, 122 orbits, GO 17183 (PI: Wakeford, H.) 2022
   Hubble Ultraviolet-optical Survey of Transiting Legacy Exoplanets (HUSTLE) Treasury Program

7. **JWST Cycle 1**, 13 hrs, GO 2358 (**PI: MacDonald, R.J.**) 2021
   Revealing the Atmospheric Composition of a White Dwarf Planet
8. **JWST Cycle 1**, 76 hrs, GO 1981 (PI: Stevenson, K.) 2021
   Measuring the Prevalence and Diversity of M-Dwarf Planet Atmospheres
9. **JWST Cycle 1**, 3 hrs, GO 2507 (PI: Vanderburg, A.) 2021
   Thermal Emission from the First Planet Transiting a White Dwarf
10. **HST Cycle 29**, 23 orbits, GO 16695 (PI: Rustamkulov, Z.) 2021
    Mapping Atmospheric Dynamics at the Limbs of an Exceptional Hot Saturn
11. WIYN, 10 hrs, 2022A-115052 (PI: Ridden-Harper, A.) 2021
    First Atmospheric Characterization of the Ultra-hot Jupiter KELT-17b
12. Gemini, 224 hrs, N0394/Gemini 2020-LP-10 (PI: Turner, J.) 2020
    Exploring the Diversity of Exoplanet Atmospheres at High Spectral Resolution

COLLOQUIA, SEMINARS, & CONFERENCE TALKS

TASTY Astrophysics Seminar, University of Toronto, Canada (invited) 2023
Astronomy Colloquium, University of British Columbia, Canada (invited) 2023
Exoclimes VI, Exeter, UK 2023
Astrophysics Seminar, Université de Montréal, Canada (invited) 2023
Physics & Astronomy Colloquium, University of Toledo, USA (invited) 2023
ITC Colloquium, Harvard University, USA (invited) 2023
241st American Astronomical Society Meeting, Seattle, USA 2023
JWST's First Six Months of Exoplanet Data, Bavaria, Germany (invited) 2022
Astronomy Colloquium, University of Rochester, USA (invited) 2022
Astronomy Colloquium, University of Michigan, USA 2022
Planetary Lunch Seminar, UC Santa Cruz, USA (invited) 2022
ESO Atmo 2021 (invited lecturer) 2021
CloudNineCon (keynote speaker) 2021
Exocoffee, MPIA Heidelberg, Germany (invited) 2021
NASA ExoPAG SAG 21 Community Symposium 2021
Exoplanet Modelling in the James Webb Era, RAS, UK 2021
Exoplanets Presentation, Harvard University, USA (invited) 2020
Exoplanet Journal Club Seminar, JPL, USA (invited) 2020
Planetary Science Group Talk, LPL, University of Arizona, USA (invited) 2020
JWST Exo-Webbinar (invited) 2020
BDEXOCON III, University of Delaware, USA 2019
Exoplanets II, University of Cambridge, UK 2018
UK Exoplanet Community Meeting, University of Oxford, UK 2018
Kavli Summer Program in Astrophysics, UC Santa Cruz, USA 2016

INTERNATIONAL SCIENCE TEAMS

Hubble HUSTLE UV Treasury Program Team (Member, PI: Wakeford H.) 2022 –
JWST Telescope Scientist GTO Team (Member, PI: Clampin M) 2021 –
JWST Transiting Exoplanet ERS Program (Member, PI: Batalha N.) 2020 –
JWST Canadian NIRISS GTO Team (Member, PI: Lafrenière D.) 2020 –
STARGATE Collaboration (**Executive Committee Member**) 2019 –
ACCESS Ground-based Exoplanet Survey (Collaborator) 2020–2021
Roman Science Investigation Team (Member, PI: Macintosh B.) 2019–2021
Hubble PanCET Treasury Program Team (Member, PI: Sing D.) 2019–2022

TEACHING & PROFESSIONAL DEVELOPMENT

Guest Lecturer, U. Michigan	2023
Postdoctoral Short Course on College Teaching in STEM, U. Michigan	2023
JWST First Exoplanet Spectrum Workshop, Cornell University	2022
Guest Lecturer, Cornell University	2019–2023
Invited Lecturer, ESO Atmo 2021 Workshop	2021
Postdoctoral Leadership Program, Cornell University	2020
Astronomy Tutor, Weizmann Summer Science School, Cambridge	2018
Teaching Assistant, University of Cambridge	2015–2017
Physics & Mathematics Tutor, Cambridge	2015–2018

STUDENT SUPERVISION

Supervisor, Sarahi Palma, Undergraduate Student (U. Michigan)	2023 –
Supervisor, Alicia Highland, Undergraduate Student (U. Michigan)	2023
Co-Supervisor, Elijah Mullens, Graduate Student (Cornell)	2022 –
Supervisor, Ruizhe Wang, Undergraduate Student (Cornell)	2022 –
Supervisor, John Kappelmeier, Undergraduate Student (Cornell)	2022–2023
Supervisor, Jonathan Gomez Barrientos, Undergraduate Student (Cornell)	2021–2022
Co-Supervisor, Ishan Mishra, Gostgraduate Student (Cornell)	2019–2022
Supervisor, Arnav Agrawal, Undergraduate Student (Cornell)	2020–2021

ACADEMIC SERVICE

JWST Telescope Allocation Committee	Various
NASA ROSES Grant Review Panelist	Various
NASA FINESST Research Proposal Reviewer	Various
NSF Grant Review Panelist	Various
Astronomy Mentorship Program for Upcoming Postdocs, Co-Lead	2023 –
Referee for AAS Journals, A&A, MNRAS, RASTI	2019 –
NASA ExoPAG SAG 21, Subgroup Co-Lead	2020–2022
NASA Exoplanet Archive Atmospheres Environment Group	2021
Scientific Organizing Committee, ESO Atmo 2021 Workshop	2021
ESA Ariel Mission Retrieval Challenge	2019
Local Organising Committee, Exoplanets II, Cambridge, UK	2018
Graduate Student Forum, Institute of Astronomy, Cambridge, UK	2015–2018
Undergraduate Teaching Committee, Department of Physics, Oxford, UK	2013–2015

PRESS RELEASES

* *"Webb Detects Tiny Quartz Crystals in the Clouds of a Hot Gas Giant"* (NASA)	2023
* *"JWST's first spectrum of a TRAPPIST-1 planet"* (U. Michigan)	2023
* *"Water, temperature variations confirmed in hot gas giant"* (U. Michigan)	2023
* *"Webb Finds Water Vapor, But From a Rocky Planet or Its Star?"* (NASA)	2023
* *"NASA's Webb Confirms Its First Exoplanet"* (NASA)	2023
* *"An exoplanet atmosphere as never seen before"* (U. Michigan)	2022
* *"NASA's Webb Detects Carbon Dioxide in Exoplanet Atmosphere"* (NASA)	2022
* *"Can life survive a star's death? Webb telescope will explore"* (Cornell)	2020
* *"Researchers use 'hot Jupiter' data to mine exoplanet chemistry"* (Cornell)	2020
* *"Inferno World with Titanium Skies"* (ESO)	2017

SCIENCE COMMUNICATION & PUBLIC OUTREACH

JWST Early Release Science Program Communications Team	2022 –
BBC Radio Guest Expert	2015 –
YouTube Channel with 6.2 Million+ Views	2014 –
Physics Magazine - *"The Skinny on Detecting Life with the JWST"*	2023
Scientific American - *"Did JWST Just Find Water on a Rocky Exoplanet?"*	2023
YouTube - *"Discovery of SO_2 in an Exoplanet Atmosphere"* (10,000+ views)	2022
Carl Sagan Institute Video Outreach Team Leader	2020–2022
Solve It! Podcast - *"Where are the Aliens?"*	2021
Total Space Interview - *"JWST: Looking Forward to the Past"*	2021
Forbes - *"Can Life Outlive Its Host Star? NASA's Webb Telescope Will Find Out"*	2020
YouTube - *"When will Alien Life be Found on Exoplanets?"* (50,000+ views)	2020
The Cosmic Companion - *"Half Planet, Half Star?"*	2020
Centauri Dreams - *"Exoplanet Atmospheres: Recalibrating Our Models"*	2020
Fascinate Pod - *"Earth, Mars, then Beyond."*	2019
New Scientist Freelance Article - *"Weather Forecasts from Alien Worlds"*	2018
Public Observing Evenings, Institute of Astronomy, Cambridge	2015–2018
The Naked Scientists Podcast - *"Exoplanet Atmosphere Explored by Astronomers"*	2017
The Unseen Podcast - *"Exoplanet Atmospheres"*	2017
Stargazing Oxford Stallholder & Demonstrator	2012–2015
Zooniverse Citizen Science Projects, *Higgs Hunters Science Blog Writer*	2014

SELECTED PUBLIC TALKS

Treasure Coast Astronomical Society, FL, USA (online)	2023
City Club of Ithaca, NY, USA (online)	2022
JWST Cycle 1 Science Sampler, STScI, MD, USA (online)	2021
JWST Pre-Launch Event, Newark Museum of Art, NJ, USA (online)	2021
Warren Astronomical Society, MI, USA (online)	2020
High Energy Physics and Astrophysics Club, Morocco (online)	2020
Kopernik Observatory, NY, USA	2020
Cambridge University Astronomical Society, UK	2019
Seething Observatory, Norwich, UK	2018
Physics and Astronomy Society, University of Aberystwyth, UK	2018
Long Eaton Astronomical Society, Derbyshire, UK	2017
Papworth Astronomy Club, Cambridgeshire, UK	2017
Institute of Astronomy Open Evenings, Cambridge, UK	2016–2018
Edinburgh International Science Festival, UK	2016
Pint of Science, Cambridge, UK	2016
Big Bang Fair East Midlands, Derby, UK	2015
Oxford University Space and Astronomy Society, UK	2015
Department of Physics, University Oxford, UK	2014

PROFESSIONAL AFFILIATIONS

Member, Canadian Astronomical Society (CASCA)	2023 –
Member, American Astronomical Society (AAS)	2021 –
Member, AAS Division for Planetary Sciences (DPS)	2021 –
Fellow of the Royal Astronomical Society	2016 –