

Dr Johanna M. Vos

Postdoctoral Fellow
American Museum of Natural History
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Professional Appointments	Postdoctoral Fellow Department of Astrophysics, American Museum of Natural History Advisor: Dr Jacqueline K. Faherty	2018–Present
Education	Institute for Astronomy, University of Edinburgh <i>PhD in Astronomy</i> PhD Thesis: “Characterising Weather and Rotation on Substellar Worlds” Advisor: Prof. Beth A. Biller 2018 Winton Astronomy Thesis Prize	2014–2018
	Trinity College Dublin <i>BA (Mod) Physics with Astrophysics</i> Undergraduate Thesis: “Sunspots and Solar Flares: The Role of Flows” Advisor: Prof. Peter T. Gallagher Graduated with First Class Honours (I.I)	2010–2014
Grants & Awards	Hubble Space Telescope General Observer Grant, \$102,000, PI NASA Keck Data Award, \$15,500, PI TESS Cycle 3 Guest Investigator Small Program, \$50,000, Co-I Hubble Space Telescope General Observer Grant, \$171,000, PI TESS Cycle 2 Guest Investigator Small Program, \$50,000, Co-I NASA Exoplanets Research Program (XRP), \$400,000, Co-I Other Worlds Lab, UC Santa Cruz, <i>Heising-Simons Foundation</i> , \$1,000 Cool Stars 20 Conference Grant, <i>Boston University</i> , \$500 Winton Thesis Prize, <i>University of Edinburgh</i> , \$1,400 Principal’s Go Abroad Fund, <i>University of Edinburgh</i> , \$1,000 Exoclipse Conference Grant, <i>Boise State University</i> , \$2,000 Principal’s Career Development Scholarship, <i>U of Edinburgh</i> , \$100,000 First Class Book Prize, <i>Trinity College Dublin</i> Entrance Exhibition Scholarship, <i>Trinity College Dublin</i>	2021 2021 2020 2019 2019 2019 2019 2018 2018 2018 2017 2014 2011, 2012, 2013 2010
Invited Talks and Seminars	Invited Colloquium, Carnegie Earth and Planets Laboratory Invited Colloquium, University of California, Santa Cruz Invited Colloquium, University of Texas at Austin Invited Colloquium, Center for Space and Habitability, University of Bern Invited Colloquium, Trinity College Dublin Invited Colloquium, Center for Computational Astrophysics, Flatiron Institute Invited Colloquium, NASA Goddard Space Flight Center Invited Talk, Brown Dwarf to Exoplanet Connection, University of Delaware Invited Colloquium, Dublin Institute for Advanced Studies Invited Colloquium, American Museum of Natural History Invited Colloquium, Royal Observatory of Edinburgh Invited Talk, European Southern Observatories, Santiago, Chile	2022 2021 2021 2021 2021 2020 2020 2019 2019 2019 2017 2017

Conference Talks	Contributed Talk, CHAMPS Exoplanet Early Career Highlight Seminar	2022
	Contributed Talk, AAS Meeting 239 (cancelled due to Covid-19)	2022
	Contributed Talk, Gotham Fest 2021, New York, NY	2021
	Contributed Talk, American Astronomical Society Meeting 237	2021
	Contributed Talk, Exo-Webb Seminar Series	2020
	Contributed Talk, American Astronomical Society Meeting 235, Honolulu, HI	2020
	Contributed Talk, Other Worlds Laboratory, UC Santa Cruz, CA	2019
	Dissertation Talk, American Astronomical Society Meeting 233, Seattle, WA	2019
	Contributed Talk, Gotham Fest 2019, New York, NY	2019
	Plenary Talk, Cool Stars 20, Boston, MA	2018
	Contributed Talk, Exoclipe, Boise, ID	2017
	Contributed Talk, Scottish Exoplanet and Brown Dwarf Meeting	2017
Selected Telescope Time	NASA Keck/NIRSPEC, 0.5 nights PI	2022
	Hubble Space Telescope (6 orbits), PI	2021
	James Webb Space Telescope Cycle 1, (24.6 hr), Co-I	2021
	Gemini-S/IGRINS, (21 hr), PI	2021
	Gemini-N/GNIRS & Gemini-S/IGRINS (13 hr), PI	2020
	Hubble Space Telescope (16 orbits) & Very Large Array (27.6 hr), PI	2019
	Gemini-S/IGRINS, 31 hr, PI	2020
	Spitzer Space Telescope Director's Discretionary Time, 33.1 hr, PI	2019
	Spitzer Space Telescope Medium Program, 70 hr, PI	2018
	James Webb Space Telescope Early Release Science, 39 hr, Collaborator	2017
	Spitzer Space Telescope (30.8 hr) & Very Large Array (33 hr), Co-I	2016–2018
Teaching Experience	Hubble Space Telescope (5 orbits) & Spitzer Space Telescope (17.6 hr), Co-I	2016
	ESO New Technology Telescope, 29 nights, PI	2014–2017
	Research Advisor	2018–Present
	Science Research Mentoring Program (SRMP), <i>American Museum of Natural History</i>	
	Research Experience for Undergraduates (REU), <i>National Science Foundation</i>	
	AstroCom NYC, <i>City University of New York</i>	
	Guest Lecturer , <i>Stanford University</i>	2021
	Peering into Darkness: Research Practices in Contemporary Art & Astrophysics	
	Instructor , <i>American Museum of Natural History</i>	2019–2020
	Designed and delivered “Stars” course for After School Program	
	Head Teaching Assistant , <i>University of Edinburgh</i>	2016–2018
Research Advising	Physics 1B Experimental Lab	
	Observational Astronomy Lab	
	Teaching Assistant , <i>University of Edinburgh</i>	2014–2018
	Maths for Physics 1	
	Introductory Astrophysics	
	11 Undergraduate Students	
	Mohammad Refat (CUNY Baruch College)	2021–Present
	Jose Adorno (CUNY Queens College, now at University of Miami)	2020–Present
	Allison McCarthy (University of Alabama, now at Boston University)	2019–Present
	+8 additional students as co-mentor	2019–Present
	12 High-School Students	
	BL Cadet, Amelia Lobo-Jost & Omar Piron	2021–Present
	Azul Ruiz Diaz, Jai Glazer & Sophia Ameneyro	2020–2021

	Izzy Lapidus, Otis McCallum & William McCartney	2019–2020
	Elko Gerville–Reache, Raunak Amanna, & Nima Brivanlou	2018–2019
Service	External reviewer for Swiss National Science Foundation	2020–Present
	Telescope Time Allocation Committee member (Keck, TESS)	2019–Present
	Journal Referee, <i>ApJ</i> , <i>ApJL</i> , <i>AJ</i>	2018–Present
	Scientific Organizing Committee, Cloud Nine Con, U of Heidelberg	2021
	Astrophysics Seminar Organizer, American Museum of Natural History	2018–2020
	Astronomy Representative, Postgraduate Forum, U of Edinburgh	2017–2018
Selected Outreach Activities	Speaker and Role Model, “About Us”, Festival UK 2022	2021–2022
	Speaker, Science Alliance, AMNH Youth Initiatives	2021
	Question Moderator, AMNH Astronomy Online Programs	2020–2021
	Speaker, STEM to SHTM Internship Program, Stanford University	2020
	Featured Scientist, Million STEM	2020
	Speaker, Harlem Academy High School	2020
	Speaker, Westport Astronomical Society	2019
	Speaker, BridgeUP: STEM Internship Program	2019
	Speaker, Royal Observatory of Edinburgh Winter Talk Series	2018
	Speaker, Pint of Science Festival, Edinburgh UK	2017
	Contributor, Edinburgh University Sci Magazine & Women are Boring	2017–2018
	Speaker, Loreto College Dublin	2016
	Speaker, Royal Observatory of Edinburgh Open Day	2016
	Workshop leader, University of Edinburgh Kickstart Program	2015–2016
	Speaker, Women in Physics Event, Preston Lodge High School, Edinburgh	2015
	Event Assistant, Edinburgh International Science Festival	2015
	STEM Ambassador, StemEast	2014–2018
	Mentor, Transition Year Physics Experience Program, Trinity College Dublin	2012
Selected Media/Press	California Academy of Sciences Universe Update	2022
	NASA Jet Propulsion Laboratory Press Release	2022
	AAS 239 Winter Meeting Press Conference	2022
	Irish Times Research Lives Interview	2020
	NRAO’s 2020 Astronomy Highlights with Phil Plait	2020
	Space.com Science & Astronomy Interview	2020
	NASA Jet Propulsion Laboratory Press Release	2020
	New Scientist Space Research Highlights	2015
	Science Magazine Research Spotlight	2015
First Author Publications	* denotes equal author contribution	
	1. Let The Great World Spin: Revealing the Turbulent, Stormy Nature of Giant Planet Analogs with the Spitzer Space Telescope Vos, J. M. ; Faherty, J. K.; Gagné J.; Marley, M.; Metchev, S.; Gizis, J.; Rice, E., L.; Cruz, K. <i>The Astrophysical Journal</i> , 924, 68, 2022.	
	2. A measurement of the wind speed on a brown dwarf Allers*, K. N.; Vos* , J. M.; Biller*, B. A.; Williams*, P. K.G. <i>Science</i> , 368, 6487, 169–172, 2020.	
	3. Spitzer Variability Properties of Young Giant Planet Analogs Vos, J. M. ; Biller, B. A.; Allers, K. N.; Faherty, J. K.; Liu, Michael C.; Eriksson, S.; Best, W. M. J.; Metchev, S.; Radigan, J.; Allers, K. N.; Janson, M.;	

Buenzli, E.; Dupuy, T. J.; Bonnefoy, M.; Manjavacas, E.; Brandner, W.; Crossfield, I.; Deacon, N.; Henning, T.; Homeier, D.; Schlieder, J., *The Astronomical Journal*, 160(1):38, 2020.

4. [A search for variability in exoplanet analogues and low-gravity brown dwarfs](#)
Vos, J. M.; Biller, B. A.; Bonavita, M.; Eriksson, S.; Liu, Michael C.; Best, W. M. J.; Metchev, S.; Radigan, J.; Allers, K. N.; Janson, M.; Buenzli, E.; Dupuy, T. J.; Bonnefoy, M.; Manjavacas, E.; Brandner, W.; Crossfield, I.; Deacon, N.; Henning, T.; Homeier, D.; Kopytova, T. Schlieder, J., *Monthly Notices of the Royal Astronomical Society*, 483:480–502, 2019.
5. [Variability of the lowest mass objects in the AB Doradus moving group.](#)
Vos, J. M.; Allers, K. N.; Biller, B. A.; Liu, M. C.; Dupuy, T. J.; Gallimore, J. F.; Adenuga, I. J.; Best, W. M. J., *Monthly Notices of the Royal Astronomical Society*, 474(1):1041–1053, 2018.
6. [The Viewing Geometry of Brown Dwarfs Influences Their Observed Colors and Variability Amplitudes](#)
Vos, J. M.; Allers, K. N.; Biller, B. A., *The Astrophysical Journal*, 842(2):78, 2017.

Second–Author Publications

7. [On The Detection of Exomoons Transiting Isolated Planetary-Mass Objects](#)
Limbach, M. A.; **Vos, J. M.**; Winn, J. N.; Heller, R.; Mason, J.; Schneider, A.; Dai, F., *The Astrophysical Journal Letters*, 918, L25, 2021.
8. [Simultaneous Multiwavelength Variability Characterization of the Free-floating Planetary-mass Object PSO J318.5—22.](#)
Biller, B. A.; **Vos, J. M.**; Buenzli, E.; Allers, K.; Bonnefoy, M.; Charnay, B.; Bézard, B.; Allard, F.; Homeier, D.; Bonavita, M.; Brandner, W.; Crossfield, I.; Dupuy, T.; Henning, T.; Kopytova, T.; Liu, M. C.; Manjavacas, E.; Schlieder, J., *The Astronomical Journal*, 155(2):95, 2018.
9. [Variability in a Young, L/T Transition Planetary–Mass Object](#)
Biller, B. A.; **Vos, J. M.**; Bonavita, M.; Buenzli, E.; Baxter, C.; Crossfield, I. J. M.; Allers, K.; Liu, M. C.; Bonnefoy, M.; Deacon, N.; Brandner, W.; Schlieder, J. E.; Dupuy, T.; Kopytova, T.; Manjavacas, E.; Allard, F.; Homeier, D.; Henning, T., *The Astrophysical Journal Letters*, 813(2):1–6, 2015.

Co–Author Publications

10. [The Perkins Infrared Exosatellite Survey \(PINES\) I. Survey Overview, Reduction Pipeline, and Early Results](#)
Tamburo, P.; Muirhead, P. S.; McCarthy, A.; Hart, M.; Gracia, D.; **Vos, J. M.**; Radigan, J.; Bardalez Gagliuffi, D.; Faherty, J. K.; Theissen, C.; Agol, E.; Skinner, J.; Sagar, S., submitted to *The Astrophysical Journal*, January 2022.
11. [Binaries or Variables? Disentangling the Signatures of L/T Transition Blended-Light Atmospheres](#)
Ashraf, A.; Bardalez Gagliuffi, D.; Manjavacas, E.; **Vos, J. M.**; Faherty, J. K., submitted to *The Astrophysical Journal*, November 2021.
12. [A Wide Planetary Mass Companion Discovered Through the Citizen Science Project Backyard Worlds: Planet 9](#)
Faherty, J. K.; Gagné, J.; Popinchalk, M.; **Vos, J. M.**; Burgasser, A. J.; Schümann, J.; Schneider, A. C.; Davy Kirkpatrick, J.; Meisner, A. M.; Kuchner, M. J.; Bardalez Gagliuffi, D. C.; Marocco, F.; Caselden, D.; Gonzales, E.; Rothermich, A.; Casewell, S.; Debes, J. H.; Aganze, C.; Ayala, A.; Hsu, C.; Cooper, W.; Smart, R. L.; Gerasimov, R.; Theissen, C. and The Backyard Worlds Collaboration, *The Astrophysical Journal*, 923 (1), 48, 2021.

**Selected White
Papers &
Research Notes**

13. [Revealing the Vertical Cloud Structure of an AB Pictoris b Analog through Keck I/MOSFIRE spectro-photometric variability](#)
Manjavacas, E.; Karalidi, T.; **Vos, J. M.**; Biller, B. A.; Lew, B. W. P., *The Astronomical Journal*, 162 (5), 179, 2021.
14. [Longitudinally Resolved Spectral Retrieval \(ReSpect\) of WASP-43b](#)
Cubillos, P. E.; Keating, D.; Cowan, N. B.; **Vos, J. M.**; Burningham, B.; Ygouf, M.; Karalidi, T.; Zhou, Y.; Gonzales, E. C., *The Astrophysical Journal*, 915, 45, 2021.
15. [A High-Contrast Search for Variability in HR 8799bc with VLT-SPHERE](#)
Biller, B. A.; Apai, D.; Bonnefoy, M.; Desidera, S.; Gratton, R.; Kasper, M.; Kenworthy, M.; Lagrange, A.; Lazzoni, C.; Mesa, D.; Vigan, A.; **Vos, J. M.**; Wagner, K.; Zurlo, A., *Monthly Notices of the Royal Astronomical Society*, 503(1):743–767, 2021.
16. [The L/T Transition](#)
Vos, J. M. et al., White Paper for Decadal Survey on Astronomy and Astrophysics 2020 by the National Academy of Science, Engineering and Medicine, *Bulletins of the American Astronomical Society*, 2019.
17. [A Tool and Workflow for Radio Astronomical “Peeling” in CASA](#)
Williams, P. K. G.; Allers, K. N.; Biller, B. A.; **Vos, J. M.**, *Research Notes of the American Astronomical Society*, 3, 110, 2019.
18. [Mapping Ultracool Atmospheres: Time-domain Observations of Brown Dwarfs and Exoplanets](#)
Apai, D. et al., incl **Vos, J. M.**, White Paper for Decadal Survey on Astronomy and Astrophysics 2020 by the National Academy of Science, Engineering and Medicine, *Bulletins of the American Astronomical Society*, 2019.
19. [Brown Dwarfs and Directly Imaged Exoplanets in Young Associations](#)
Faherty, J. et al., incl. **Vos, J. M.**, White Paper for Decadal Survey on Astronomy and Astrophysics 2020 by the National Academy of Science, Engineering and Medicine, *Bulletins of the American Astronomical Society*, 2019.
20. [High-Resolution Spectroscopic Surveys of Ultracool Dwarf Stars & Brown Dwarfs](#)
Burgasser, A. et al., incl. **Vos, J. M.**, White Paper for Decadal Survey on Astronomy and Astrophysics 2020 by the National Academy of Science, Engineering and Medicine, *Bulletins of the American Astronomical Society*, 2019.
21. [Fundamental Physics with Brown Dwarfs: The Mass-Radius Relation](#)
Burgasser, A. et al., incl. **Vos, J. M.**, White Paper for Decadal Survey on Astronomy and Astrophysics 2020 by the National Academy of Science, Engineering and Medicine, *Bulletins of the American Astronomical Society*, 2019.