Dr Johanna M. Vos

Postdoctoral Fellow
American Museum of Natural History
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Professional Appointments

Postdoctoral Fellow 2018 – Present
Department of Astrophysics, American Museum of Natural History
Advisor: Dr Jacqueline Faherty

Education

Institute for Astronomy, University of Edinburgh 2014-2018
PhD in Astronomy
Thesis: "Characterising Weather and Rotation on Substellar Worlds"
Advisor: Prof. Beth A. Biller

Trinity College Dublin 2010-2014
BA (Mod) Physics with Astrophysics
Graduated with First Class Honours

Research Interests

Atmospheres of brown dwarfs and extrasolar planets
Spectroscopic variability monitoring from ground and space
Disentangling clouds, aurorae and magnetic atmospheric phenomena

Grants & Awards

Hubble Space Telescope General Observer Grant, STSci, **PI** 2019
NASA Exoplanets Research Program (XRP), Co-I 2019
Other Worlds Lab, UC Santa Cruz, *Heising-Simons Foundation* 2019
Cool Stars 20 Conference Grant, *Boston University* 2018
Winton Thesis Prize, *University of Edinburgh* 2018
Principal's Go Abroad Fund, *University of Edinburgh* 2018
Exoclipse Conference Grant, *Boise State University* 2017
Principal's Career Development Scholarship, *University of Edinburgh* 2014
First Class Book Prize, *Trinity College Dublin* 2011, 2012, 2013

Invited Talks and Seminars

Invited Colloquium, Trinity College Dublin 2021
Invited Colloquium, University of Texas at Austin 2021
Invited Colloquium, Center for Computational Astrophysics, Flatiron Institute 2020
Invited Colloquium, NASA/Goddard Space Flight Center 2020
Invited Talk, Brown Dwarf to Exoplanet Connection, University of Delaware 2019
Invited Colloquium, Dublin Institute for Advanced Studies 2019
Invited Colloquium, American Museum of Natural History 2019
Invited Colloquium, Royal Observatory of Edinburgh 2017
Invited Talk, European Southern Observatories, Santiago, Chile 2017

Conference Talks

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
Plenary Talk, Cool Stars 20, Boston, MA 2018

	Contributed Talk, Exoclipe, Boise, ID	2017
	Contributed Talk, Scottish Exoplanet and Brown Dwarf Meeting	2017
Workshops Attended	Tackling the Complexities of Substellar Objects, *Lorentz Centre*	2020
	Other Worlds Laboratory, *University of California Santa Cruz*	2019
	Multi-Dimensional Characterization of Distant Worlds, *U of Michigan*	2019
Selected Telescope Time	Gemini-N/GNIRS & Gemini-S/IGRINS (30 hr), **PI**	2020
	Hubble Space Telescope (16 orbits) & Very Large Array (27.6 hr), **PI**	2019
	Gemini-S/IGRINS, 31 hr, **PI**	2019-2021
	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
	Gemini-S/GNIRS and IRTF/iSHELL program, 10 nights, **PI**	2016-2018
	Spitzer Space Telescope (30.8 hr) & Very Large Array (33 hr), Co-I	2016-2018
	Hubble Space Telescope (5 orbits) & Spitzer Space Telescope (17.6 hr), Co-I	2016
	ESO New Technology Telescope, 29 nights, **PI**	2014-2017
Teaching	**Instructor**	2019-2020
	Stars - After School Program, AMNH	
	Research Mentor	2018-present
	Science Research Mentoring Program, AMNH	
	Head Teaching Assistant	2016-2018
	Physics 1B Experimental Lab, University of Edinburgh	
	Observational Astronomy Lab, University of Edinburgh	
	Teaching Assistant	2014-2018
	Maths for Physics 1, University of Edinburgh	
	Introductory Astrophysics, University of Edinburgh	
Research Mentoring	**Undergraduate Students**	
	Jose Adorno (Queen's College, now at NASA Goddard)	2020
	Allison McCarthy (University of Alabama, now at Boston University)	2019
	High-school students	
	Azul Ruiz Diaz (Brooklyn Technical High School)	2020
	Jai Glazer (The Dalton School)	2020
	Sophia Ameneyo Fourcade (University Neighborhood High School)	2020
	Izzy Lapidus (Fiorello H. LaGuardia High School)	2019
	Otis McCallum (The Beacon School)	2019
	William McCartney (New Explorations Into Science and Technology + Math)	2019
	Elko Gerville-Reache (School of The Future)	2018
	Raunak Amanna (Brooklyn Technical High School)	2018
	Nima Brivanlou (Lycée Français de New York)	2018
Service	Journal Referee	2019-Present
	ApJ, ApJL, AJ	
	External reviewer for national grant allocation	2021
	Time Allocation Committee member for space-based observatory	2020
	Time Allocation Committee member for ground-based observatory	2019-2020
	Scientific Organizing Committee member, CloudCon, 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

Question Moderator, AMNH Astronomy Online Programs	2020-2021
Speaker, STEM to SHTEM Internship Program, Stanford University	2020
Featured Scientist, Million STEM	2020
Speaker, Harlem Academy	2020
Speaker, Westport Astronomical Society	2019
Speaker, BridgeUP: STEM, AMNH	2019
Speaker, Royal Observatory of Edinburgh Winter Talk Series	2018
Contributor, Women are Boring	2018
Speaker, Pint of Science Festival, Edinburgh UK	2017
Contributor, Edinburgh University Science Magazine	2017
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

Irish Times Research Lives Interview	2020
Brown dwarf stars: What's the weather like up there?	
NRAO's 2020 Astronomy Highlights with Phil Plait	2020
Measuring the Wind Speed of a Brown Dwarf a Quadrillion Miles Away	
Space.com Science & Astronomy Interview	2020
How the brown dwarf blows: Wind speed of a 'failed star' measured for 1st time	
New Scientist Space Research Highlights	2015
Molten metal storms rage on orphan planet that lost its star	

First Author Publications

* denotes equal author contribution

1. A measurement of the wind speed on a brown dwarf
   Allers*, K. N.; **Vos*, J. M.**; Biller*, B. A.; Williams*, P. K.G. *Science,* 368, 6487, 169-172, 2020.
2. 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.
3. 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.
4. 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):10411053, 2018.
5. 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.

Co-Author Publications

6. 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., accepted for publication in *Monthly Notices of the Royal Astronomical Society*

7. 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.

8. 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):16, 2015.

Selected White Papers & Research Notes

9. Astro2020 Science White Paper: The L/T Transition
Vos, J. M.; Allers, K.; Apai, D.; Biller, B.; Burgasser, A. J.; Faherty, J.; Gagne, J.; Helling, C.; Morley, C.; Radigan, J.; Showman, A.; Tan, .; Tremblin, P., *Bulletins of the American Astronomical Society*, 2019.

10. 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.

11. Astro2020 Science White Paper: Mapping Ultracool Atmospheres: Time-domain Observations of Brown Dwarfs and Exoplanets
Apai, D.; Biller, B.; Burgasser, A.; Girard, J. H.; Gizis, J. E.; Karalidi, T.; Kraus, Ad. L.; Lew, B. W. P.; Manjavacas, E.; Marley, M.; Miles-Paez, P. A.; Morley, C. V.; Radigan, J.; **Vos, J. M.**; Zhou, Y., *Bulletins of the American Astronomical Society* 2019.

12. Astro2020 Science White Paper: High-Resolution Spectroscopic Surveys of Ultracool Dwarf Stars & Brown Dwarfs Burgasser, A,; Apai, D.; Bardalez Gagliuffi, D.; Blake, C.; Gagne, J.; Konopacky, Q.; Martin, E.; Metchev, S.; Plavchan, P.; Reiners, A.; Schlawin, E.; Sousa-Silva, C.; **Vos, J. M.**, *Bulletins of the American Astronomical Society* 2019.

13. Astro2020 Science White Paper: Brown Dwarfs and Directly Imaged Exoplanets in Young Associations
Faherty, J.; Allers, Katelyn; Bardalez Gagliuffi, D.; Burgasser, A. J.; Gagne, J.; Gizis, J.; Kirkpatrick, J. D.; Riedel, A.; Schneider, A.; **Vos, J. M.**, *Bulletins of the American Astronomical Society* 2019.

14. Astro2020 Science White Paper: Fundamental Physics with Brown Dwarfs: The Mass-Radius Relation Burgasser A.; Baraffe I.; Browning M. ; Burrows A.; Chabrier G.; Creech-Eakman M.; Demory B.; Dieterich S.; Faherty J.; Huber D.; Lodieu N.; Plavchan P.; Michael Rich R.; Saumon D., Stassun K.; Triaud A.; van Belle G.; Van Grootel V.; **Vos, J. M.**; Yadav, R., *Bulletins of the American Astronomical Society* 2019.