Johanna Vos

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Current Position

- **American Museum of Natural History, NY, USA**
  Postdoctoral Research Fellow *2018–Present*

Education

- **University of Edinburgh, UK**
  PhD Astronomy *2014–2018*

  Thesis: *"Characterising Weather and Rotation on Substellar Worlds"*
  Advisor: Dr Beth A. Biller
- **Trinity College Dublin, Ireland**
  BA (Mod) Physics with Astrophysics, Graduated with First Class Honours *2010–2014*

  Dissertation: *"Sunspots and Solar Flares: The Role of Flows"*
  Advisor: Dr Peter T. Gallagher

Research Interests

- Atmospheres of brown dwarfs and giant exoplanets
- Cloud-driven variability
- Young brown dwarfs as exoplanet analogues

Grants and Awards

- **Cool Stars Travel Grant** *August 2018*
- **Principal's Go Abroad Fund** *University of Edinburgh, June 2018*
- **Exoclipse Travel Grant** *August 2017*
- **Principal's Career Development Scholarship** *University of Edinburgh, 2014–2018*
- **First-Class Book Prize** *Trinity College Dublin, 2011, 2012, 2013.*

Telescope Time Awarded

- **Spatial Cloud Map of a Planetary-Mass Companion**
  Spitzer Director's Discretionary Time, 33.1 hr, ***PI*** *2019*

- **Weather and Rotation on Young Brown Dwarfs**
  Spitzer Medium Program, 70 hr, ***PI*** *2018*
- **Rotational Velocities of Exoplanet Analogues**
  NASA Gemini/GNIRS and IRTF/iSHELL program, 10 nights, ***PI*** *2016–2018*
- **Wind Speeds on Extrasolar Worlds**
  Spitzer Space Telescope, 30.8 hr & Very Large Array, 33 hr, Co-I *2016-2018*
- **Exometeorology: Characterising Weather on a Young, Free-Floating Planet**
  Simultaneous Hubble and Spitzer observations, 17.6 hr, Co-I *2016*
- **The First Search for Exoplanet Weather**
  ESO New Technology Telescope, 29 nights, ***PI*** *2014–2017*

Selected Presentations

- **Weather and Rotation on Substellar Worlds** – Seminar, American Museum of Natural History, February 2019.
- **Detecting Weather Patterns on Low-Gravity Brown Dwarfs** – Oral Presentation, AAS Winter Meeting 2019.
- **Weather Patterns on Exoplanet Analogues** – Plenary Talk, Cool Stars 20, 2018.
- **The Viewing Angle of Exoplanet Analogues Influences Their Observed Colours and Amplitudes** – Contributed Talk, Exoclipse, 2017.
- **Measuring Inclination Angles of Variable Brown Dwarfs** – Contributed Talk, Scottish Exoplanet and Brown Dwarf Meeting, 2017.
- **The First Search for Weather Patterns on Exoplanet Analogues** – Invited Talk, ESO Santiago, 2017.

Teaching Experience

- **Student Research Mentoring Program, AMNH**
  Mentor *2018–Present*
  The Student Research Mentoring Program offers high-school students the opportunity to join ongoing research with scientists at AMNH. I meet with students twice a week to analyse variability data of our closest brown dwarfs, Luhman 16AB.
- **After-School Program, AMNH**
  Instructor *2019–Present*
  Leading classes for the 'Stars' course as part of the museum's After School Program.
- **Univeristy of Edinburgh**
  Teaching Assistant *2014–2018*
  Throughout my PhD I lead undergraduate tutorials and labs for physics, astronomy and maths courses. In my final 2 years I was Head TA for the Observational Astronomy Lab, where I developed and updated the computational lab experiments.

Outreach Activities

- **StemEast** **UK & Ireland**
  STEM Ambassador *2014–2018*
  As a STEM Ambassador, I have given talks in secondary schools around Ireland and Scotland about my research and studying STEM subjects at university.
- **Edinburgh University Science Magazine; Women are Boring; The King's Review**
  Contributor *2016–2018*
  I have written numerous articles for publications explaining astronomical research and concepts to the public.

Refereed Publications

- **Johanna M. Vos**, Beth A. Biller, Mariangela Bonavita, Simon Eriksson, Michael C. Liu, William M. J. Best, Stanimir Metchev, Jacqueline Radigan, Katelyn N. Allers, Markus Janson, Esther Buenzli, Trent J. Dupuy, Mickaël Bonnefoy, Elena Manjavacas, Wolfgang Brandner, Ian Crossfield, and Joshua Schlieder. *"A Search for Variability in Exoplanet Analogues and Low-Gravity Brown Dwarfs." Monthly Notices of the Royal Astronomical Society,* 483:480-502, 2019.
- **Johanna M. Vos**, Katelyn N. Allers, Beth A. Biller, Michael C. Liu, Trent J. Dupuy, Jack F. Gallimore, Iyadunni J. Adenuga, and William M. J. Best. *"Variability of the lowest mass objects in the AB Doradus moving group." Monthly Notices of the Royal Astronomical Society*, 474(1):1041–1053, 2018.
- Beth A. Biller, **Johanna M. Vos**, Esther Buenzli, Katelyn Allers, Mickaël Bonnefoy, Benjamin Charnay, Bruno Bézard, France Allard, Derek Homeier, Mariangela Bonavita, Wolfgang Brandner, Ian Crossfield, Trent Dupuy, Thomas Henning, Taisiya Kopytova, Michael C. Liu, Elena Manjavacas, and Joshua Schlieder. *"Simultaneous Multiwavelength Variability Characterization of the Free-floating Planetary-mass Object PSO J318.5–22." The Astronomical Journal*, 155(2):95, 2018.
- **Johanna M. Vos**, Katelyn N. Allers, and Beth A. Biller. *"The Viewing Geometry of Brown Dwarfs Influences Their Observed Colors and Variability Amplitudes." The Astrophysical Journal*, 842(2):78, 2017.
- Beth A. Biller, **Johanna M. Vos**, Mariangela Bonavita, Esther Buenzli, Claire Baxter, Ian J.M. Crossfield, Katelyn Allers, Michael C. Liu, Mickaël Bonnefoy, Niall Deacon, Wolfgang Brandner, Joshua E. Schlieder, Trent Dupuy, Taisiya Kopytova, Elena Manjavacas, France Allard, Derek Homeier, and Thomas Henning. *"Variability in a young, L/T transition planetary-mass object." Astrophysical Journal Letters*, 813(2):1–6, 2015.

White Papers

- **Johanna M. Vos**, Katelyn Allers, Daniel Apai, Beth Biller, Adam Burgasser, Jacqueline Faherty, Jonathan Gagné, Christiane Helling, Caroline Morley, Jacqueline Radigan, Adam Showman, Xianyu Tan, Pascal Tremblin *"Astro2020 Science White Paper: The L/T Transition"*, 2019.
- Adam Burgasser, Daniel Apai, Daniella Bardalez Gagliuffi, Cullen Blake, Jonathan Gagné, Quinn Konapacky, Emily Martin, Stanimir Metchev, Peter Plavchan, Ansgar Reiners, Everett Schlawin, Clara Sousa-Silva, **Johanna M. Vos** *"Astro2020 Science White Paper: High-Resolution Spectro-*

scopic Surveys of Ultracool Dwarf Stars Brown Dwarfs", 2019.

- Jacqueline Faherty, Katelyn Allers, Daniella Bardalez Gagliuffi, Adam Burgasser, Jonathan Gagné, John Gizis, J. Davy Kirkpatrick, Adric Riedel, Adam Schneider, **Johanna M. Vos** *"Astro2020 Science White Paper: Brown Dwarfs and Directly Imaged Exoplanets in Young Associations"*, 2019.
- Adam Burgasser, Isabelle Baraffe, Matthew Browning, Adam Burrows, Gilles Chabrier, Michelle Creech-Eakman, Brice Demory, Sergio Dieterich, Jacqueline Faherty, Daniel Huber, Nicolas Lodieu, Peter Plavchan, R. Michael Rich, Didier Saumon, Keivan Stassun, Amaury Triaud, Gerard van Belle, Valerie Van Grootel, **Johanna M. Vos**, Rakesh Yadav *"Astro2020 Science White Paper: Fundamental Physics with Brown Dwarfs: The Mass-Radius Relation"*, 2019.