Marta L. Bryan

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Appointments

Assistant Professor, University of Toronto	January 2023 - present
NASA Hubble Fellowship Program Sagan Fellow, UC Berkeley Astronomy Department	Fall 2021 - Fall 2022
51 Pegasi b Postdoctoral Fellow, UC Berkeley Astronomy Department	2018 - Fall 2021

Education

PhD in Astrophysics, California Institute of Technology — May 2018
Advisor: Prof. Heather Knutson
Thesis: *Lurking in the Shadows: Wide-Separation Gas Giants as Tracers of Planet Formation*

MS in Astrophysics, California Institute of Technology — June 2014

BA *cum laude* with High Honors in Astrophysics, Harvard University — June 2012
Undergraduate Thesis Advisor: Prof. David Latham
Thesis: *Characterizing Qatar-2b: A Hot Jupiter Orbiting a K Dwarf*

Research Interests

Exploring the formation, evolution, and architectures of planetary systems; characterizing exoplanet rotation rates and atmospheres using high-resolution spectroscopy; high-contrast AO imaging of exoplanets and brown dwarfs; constraining the frequencies of gas giants in systems hosting different populations of terrestrial and ice giant planets

Awards and Honors

AAS Annie Jump Cannon Award	2023
Connaught New Researcher Award	2023
NASA Hubble Fellowship Program Sagan Fellowship	2021
51 Pegasi b Postdoctoral Fellowship	2018
NASA Hubble Fellowship Program Sagan Fellowship (declined)	2018
David and Barbara Groce Grant to attend the Exoplanets I meeting in Davos Switzerland, California Institute of Technology	2016
AAS 2015 International Travel Grant	2015
National Science Foundation Graduate Research Fellowship Honorable Mention	2014, 2013
Chambliss Astronomy Achievement Student Award Honorable Mention, AAS	2014
Moffet Fellowship, California Institute of Technology	2012-2013
Origins of Life Research Grant, Harvard University	2011-2012
Leo Goldberg Prize for outstanding undergraduate thesis work, Harvard University	2011
U.S. Patent Application published	2008

Grants Awarded

(*****Note Canadian grants are smaller than US grants due to the lower cost of graduate students. Current faculty advisor astronomy graduate student costs at UofT are $15,600 CAD/year)

Heising-Simons Foundation Grant (PI; $125,000 USD)	2023
Connaught New Researcher Award (PI; $20,000 CAD)	2023
NSERC Discovery Grant (PI; $165,000 CAD)	2023
NSERC Discovery Grant Launch Supplement (PI; $12,500 CAD)	2023
UTM Research and Scholarly Activity Fund (PI; $10,000 CAD)	2023
NHFP Sagan Fellowship (Sci. PI; $115,500 USD, took one year of funding)	2021
Heising-Simons Foundation 51 Pegasi b Fellowship (PI; $335,000 USD)	2018

Observing Time Awarded

Keck II (NIRSPEC/NIRC2)	>25 nights
Gemini South (IGRINS)	47.6 hours
Gemini North (MAROON-X)	14.8 hours
VLT (ERIS)	4 hours
CFHT (SPIROU)	75.7 hours

Invited Seminars/Colloquia

UCSC Astronomy Department Colloquium, Santa Cruz, CA, April 22 2024
Five College Astronomy Department Colloquium, Amherst, MA, April 11 2024
Waterloo Centre for Astrophysics Astro Seminar Series, Waterloo, Ontario, February 7 2024
University of Michigan Astronomy Colloquium, Ann Arbor, MI, February 1 2024
University of Montreal Astrophysics Seminar, Montreal, Quebec, January 25 2024
McGill Space Institute Astronomy Seminar, Montreal, Quebec, March 21 2023
University of Toronto Department of Chemical and Physical Sciences Colloquium, Mississauga, Ontario, February 8 2023
UC Berkeley Center for Integrative Planetary Sciences Seminar, Berkeley, CA, October 12 2022
ETH Zurich Exoplanets & Habitability Seminar, virtual, June 1 2022
University of Wisconsin-Madison Colloquium, Madison, WI, April 11 2022
Columbia University Colloquium, NYC, NY, March 28 2022
University of Toronto Mississauga Seminar, virtual, March 17 2022
McMaster University Colloquium, virtual, February 28 2022
Yale University Colloquium, virtual, February 10 2022
Max Planck Institute for Astronomy Seminar, virtual, January 19 2022
Imperial College Stars and Planets Seminar, virtual, December 6 2021
University of Michigan Colloquium, virtual, December 2 2021
NOIRLab FLASH Seminar, virtual, November 19 2021
UC Santa Cruz Colloquium, Santa Cruz, CA, October 27 2021
Canadian Institute for Theoretical Astrophysics Seminar, virtual, October 21 2021
Max Planck Institute for Astronomy Exocoffee, virtual, October 19 2021
Yale University Colloquium, virtual, October 14 2021
Princeton Exoplanet Discussion Group, virtual, March 22 2021
UMass/FCAD Colloquium, virtual, March 11 2021
Northwestern University Special Seminar, virtual, March 9 2021
UC Berkeley Colloquium, virtual, November 12 2020
Exoplanet Diversity SPP 1992 seminar, virtual, November 2 2020
UT Austin Colloquium, virtual, October 20 2020
Carnegie EPL Astronomy Seminar, virtual, October 9 2020
University of Michigan Stars and Exoplanets Seminar, virtual, June 23 2020
University of Maryland Colloquium, virtual, April 8 2020
SFSU Colloquium, San Francisco, CA, November 4 2019
UCSC GAFD Seminar, Santa Cruz, CA, May 9 2019
UChicago Special Seminar, Chicago, IL, February 26 2019
UCB CIPS Seminar, Berkeley, CA, October 3 2018
UCSC FLASH Seminar, Santa Cruz, CA, September 29 2017
UCB CIPS Seminar, Berkeley, CA, September 27 2017

University of Arizona Origins Seminar, Tucson, AZ, September 18 2017
UCLA iPLEX Lunch Seminar, LA, CA, May 12 2017
IPAC Lunch Seminar, Pasadena, CA, March 15 2017
JPL Astrophysics Luncheon Seminar, Pasadena, CA, March 6 2017
Cal State LA Physics Colloquium, LA, CA, September 1 2016
BU Astronomy Lunch Seminar, Boston, MA, April 26 2016

Conference Talks

243rd AAS Meeting, Annie Jump Cannon Award Plenary Lecture (invited speaker), New Orleans, LA, January 2024
CASCA 2023 Annual General Meeting (invited speaker), Penticton, BC, June 2023
Stellar Stats Workshop (invited speaker), Toronto, ON, May 2023
NASA Hubble Fellowship Program Symposium, Baltimore, MD, September 2021
51 Pegasi b Summit, Sausalito, CA, August 17 2022
In the Spirit of Lyot (invited speaker), Leiden, the Netherlands, July 2022
NASA Hubble Fellowship Program Symposium, virtual, October 25 2021
IGNIS Science Workshop (invited speaker), virtual, September 8 2021
51 Pegasi b Summit, virtual, August 11 2021
Atmospheric characterization at high spectral resolution with KPIC (invited speaker), virtual, June 29 2021
Exoplanets III, virtual, July 28 2020
51 Pegasi b Summit, virtual, July 2020
High-Resolution Infrared Spectroscopy for Exoplanet Characterization Hackathon (invited speaker), Pasadena, CA, February 4 2020
235th AAS Meeting, Honolulu, HI, January 6 2020
ExoPAG 21 (invited speaker), Honolulu, HI, January 3 2020
Extreme Solar Systems IV, Reykjavik, Iceland, August 20 2019
Kavli Foundation Futures of Exoplanets Symposium (invited speaker), Boston, MA, August 2 2019
51 Pegasi b Summit, Sausalito, CA, July 2019
233rd AAS Meeting, Seattle, WA, January 7 2019
Bay Area Exoplanet Meeting, NASA Ames, CA, September 7 2018
51 Pegasi b Summit, Sausalito, CA, August 15 2018
Combining high-resolution spectroscopy and high-contrast imaging for exoplanet characterization (invited speaker), Pasadena, CA, June 18 2018
231st AAS Meeting, dissertation talk, National Harbor, MD, January 9 2018
Keck Science Meeting, Santa Cruz, CA, September 14 2017
Inner Solar Systems (invited speaker), 230th AAS Meeting, Austin, TX, June 7 2017
229th AAS Meeting, Grapevine, TX, January 6 2017
ExSoCal, Pasadena, CA, September 22 2016
Exoplanets I, Davos, Switzerland, July 8 2016
Extreme Solar Systems III, Waikoloa, Hawaii, November 30 2015
From Super-Earths to Brown Dwarfs: Who's Who, Paris, France, July 2 2015

Student Mentoring

Michael Poon (UToronto 3rd year graduate student)	2022-present
Jacob Meadus (UToronto 3rd year graduate student)	2022-present
Deepayan Banik (UToronto 3rd year graduate student)	2023-present
Ethen Sun (UToronto 1st year graduate student)	2023-present
Leanne Tran (UToronto undergraduate student)	2023-present
Joseph Tang (UToronto undergraduate student)	2024-present
Matthew Ding (UC Berkeley undergraduate student, current senior)	2021-2022
Wenhao Xuan (Caltech SURF program, Pomona College undergraduate student, current Caltech grad student)	2018-2020

Publications (10 first author, 39 total)

(** denotes student papers supervised by M.L.B.)

Bryan, M. L. & Lee, E. J. 2024, *Friends no Foes: Strong Correlation Between Inner Super-Earths and Outer Gas Giants*, ApJL, 968, L25.

Bryan, M. L., Chiang, E., Morley, C. V. et al 2021, *Obliquity Constraints on the Planetary-Mass Companion HD 106906 b*, AJ, 162, 217.

Bryan, M. L., Ginzburg, S., Chiang, E. et al 2020b, *As the Worlds Turn: Constraining Spin Evolution in the Planetary-Mass Regime*, ApJ, 905, 37.

Bryan, M. L., Chiang, E., Bowler, B. P. et al 2020a, *Obliquity Constraints on an Extrasolar Planetary-Mass Companion*, AJ, 159, id. 181.

Bryan, M. L., Knutson, H. A., Lee, E. et al 2019, *An Excess of Jupiter Analogs in Super-Earth Systems*, AJ, 157, 2.

Bryan, M. L., Benneke, B., Knutson, H. A. et al 2018, *Constraints on the Spin Evolution of Young Planetary Mass Companions*, Nature Astronomy, 2, 138-144.

Bryan, M. L., Bowler, B. P., Knutson, H. A. et al. 2016, *Searching for Scatterers: High-Contrast Imaging of Young Stars Hosting Wide-Separation Planetary-Mass Companions*, ApJ, 827, 100.

Bryan, M. L., Knutson, H. A., Howard, A. W. et al. 2016, *Statistics of Long Period Gas Giant Planets in Known Planetary Systems,* ApJ, 821, 89.

Bryan, M. L., Alsubai, K. A., Latham, D. W. et al. 2012, *Qatar-2: A K Dwarf Orbited by a Transiting Hot Jupiter and a More Massive Companion in an Outer Orbit,* ApJ, 750, 84.

Bryan, M. L., Chapman, G., Hall, D. N. B. et al., 2012, *Investigation of linear-mode photon-counting HgCdTe APDs for astronomical observations*, SPIE Proceedings, 8453, 84532F.

****Poon, M. **Bryan, M. L.**, Rein, H. et al 2024, *Leaning Sideways: VHS 1256-1256 b is a Super-Jupiter with a Uranus-like Obliquity*, submitted to AJ.

****Xuan, J., **Bryan, M. L.**, Knutson, H. A. et al 2020, *A Rotation Rate for the Planetary−Mass Companion DH Tau b*, AJ, 159, 97.

Meshkat, T., Mawet, D., **Bryan, M. L.** et al 2017, *A Direct Imaging Survey of Spitzer Detected Debris Disks: Occurrence of Giant Planets in Dusty Systems*, ApJ, 154, 245.

Bowler, B., Kraus, A., **Bryan, M. L.** et al 2017, *The Young Substellar Companion ROXs 12 B: Near-Infrared Spectrum, System Architecture, and Spin-Orbit Misalignment*, AJ, 154, 165.

Ngo, H., Knutson, H. A., **Bryan, M. L.** et al 2017, *No Difference in Orbital Parameters of RV-detected Giant Planets between 0.1 and 5 au in Single versus Multi-stellar Systems*, AJ, 153, 242.

Xuan, J. W., Hsu, C.-C., Finnerty, L. & 32 coauthors including **Bryan, M. L** 2024, *Are These Planets or Brown Dwarfs? Broadly Solar Compositions from High-resolution Atmospheric Retrievals of* $\sim$*10-30* $M_{\rm Jup}$ *Companions*, ApJ, 970, 71.

Morris, E. C., Wang, J. J., Hsu, C.-C. & 24 coauthors including **Bryan, M. L** 2024, *kappa And b is a fast rotator from KPIC High Resolution Spectroscopy*, accepted to AJ.

Petrus, S., Whiteford, N., Patapis, P. & 119 coauthors including **Bryan, M. L** 2024, *The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems. V. Do Self-consistent Atmospheric Models Represent JWST Spectra? A Showcase with VHS 1256-1257 b*, ApJL, 966, L11.

Inglis, J., Wallack, N. L., Xuan, J. W. & 7 coauthors including **Bryan, M. L** 2024, *Atmospheric Retrievals of the Young Giant Planet ROXs 42B b from Low- and High-Resolution Sectroscopy*, AJ, 167, 218.

Sallum, S., Ray, S., Kammerer, J. & 120 coauthors including **Bryan, M. L** 2024, *The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems IV: NIRISS Aperture Masking Interferometry Performance and Lessons Learned*, ApJL, 963, L2.

Xuan, J. W., Wang, J. Finnerty, L. & 48 coauthors including **Bryan, M. L** 2024, *Validation of Elemental and Isotopic Abundances in Late-M Spectral Types with the Benchmark HIP 55507 AB System*, ApJ, 962,

10.

Ray, S., Sallum, S. Hinkley, S. & 120 coauthors including **Bryan, M. L** 2023, *The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems III: Aperture Masking Interferometric Observations of the star HIP 65426 at 3.8 um*, arXiv:2310.11508.

Carter, A. L., Hinkley, S., Jammerer, J. & 107 coauthors including **Bryan, M. L** 2023, *The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems I: High Contrast Imaging of the Exoplanet HIP 65426 b from 2-16um*, ApJL, 951, L20.

Bowler, B. P., Tran, Q. H., Zhang, Z. & 10 coauthors including **Bryan, M. L** 2023, *Rotation Periods, Inclinations, and Obliquities of Cool Stars Hosting Directly Imaged Substellar Companions: Spin-Orbit Misalignments Are Common*, AJ, 165, 164.

Wang, J., Wang, J. J., Ruffio, J.-B. & 29 coauthors including **Bryan, M. L.** 2023, *Retrieving C and O Abundance of HR 8799 c by Combining High- and Low-Resolution Data*, AJ, 165, 4.

Miles, B. E., Biller, B. A., Patapis, P. & 99 coauthors including **Bryan, M. L** 2022, *The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems II: A 1 to 20 Micron Spectrum of the Planetary-Mass Companion VHS 1256-1257 b*, ApJL, 946, L6.

Echeverri, D, Jovanovic, N. Delorme, J.-R. & 35 coauthors including **Bryan, M. L** 2022, *Phase II of the Keck Planet Imager and characterizer:system-level laboratory characterization and preliminary on-sky commissioning.*, Proceedings of the SPIE, 12184.

Finnerty, K., Schofield, T., Delorme, J.-R. & 26 coauthors including **Bryan, M. L** 2022, *On-sky performance and lessons learned from the phase I KPIC fiber injection unit*, Proceedings of the SPIE, 12184.

Hinkley, S., Carter, A. L., Ray, S. & 86 coauthors including **Bryan, M. L.** 2022, *The JWST Early Release Science Program for the Direct Imaging & Spectroscopy of Exoplanetary Systems*, PASP, 134, 1039.

Zhou, Y., Bowler, B. P., Apai, D. & 5 coauthors including **Bryan, M. L.** 2022, *Roaring Storms in the Planetary-Mass COmpanion VHS 1256-1257 b: Hubble Space Telescope Multi-epoch Monitoring Reveals Vigorous Evolution in an Ultra-cool Atmosphere*, AJ, 164, 239.

Xuan, J. W., Wang, J., Ruffio, J.-B. & 37 coauthors including **Bryan, M. L.** 2022, *A Clear View of a Cloudy Brown Dwarf Companion from High Spectral Resolution*, ApJ, 937, 2.

Wang, J. J., Ruffio, J.-B., Morris, E. & 49 coauthors including **Bryan, M. L.** 2021, *Detection and Bulk Properties of the HR 8799 Planets with High Resolution Spectroscopy*, AJ, 162, 148.

Zhou, Y., Bowler, B. P., Morley, C. V. & 4 coauthors including **Bryan, M. L.** 2020, *Spectral Variability of VHS J1256-1257 b from 1 to 5 um*, AJ, 160, id. 77.

Bowler, B. P., Zhou, Y., Morley, C. V. & 4 coauthors including **Bryan, M. L.** 2020, *Strong Near-infrared Spectral Variability of the Young Cloudy L Dwarf Companion VHS J1256-1257 b*, ApJL, 893, id. L30.

Becker, J. C., Vanderburg, A., Adams, F. C. & 2 coauthors including **Bryan, M. L.** 2017, *Exterior Companions to Hot Jupiters Oribiting Cool Stars Are Coplanar*, AJ, 154, 230.

Mawet, D., Hirsch, L., Lee, E. J. & 27 coauthors including **Bryan, M. L.** 2019, *Deep Exploration of epsilon Eridani with Keck Ms-band vortex coronagraphy and radial velocities: mass and orbital parameters of the giant exoplanet*, AJ, 157, 33.

Xuan, W. J., Mawet, D., Ngo, H. & 15 coauthors including **Bryan, M. L.** 2018, *Characterizing the Performance of the NIRC2 Vortex Coronagraph at W. M. Keck Observatory*, AJ, 156, 4.

Piskorz, D., Benneke, B., Crockett, N.R., & 10 coauthors including **Bryan, M. L.**, 2016, *Evidence for the Direct Detection of the Thermal Spectrum of the Non-Transiting Hot Gas Giant HD 88133 b*, ApJ, 832, 131.

Ngo, H., Knutson, H. A., Hinkley, S., & 11 coauthors including **Bryan, M. L.**, 2016, *Friends of Hot Jupiters IV Stellar Companions Beyond 50 AU Might Facilitate Giant Planet Formation, but Most are Unlikely to Cause Kozai-Lidov Migration*, ApJ, 827, 8.

Teaching, Outreach, and Service

Teaching, AST 320: Astrophysics III - Stellar Physics	Fall 2023, 2024
AST 222: Astrophysics II - Galaxies and Cosmology	Spring 2024
University of Toronto Department of Astronomy Colloquium Committee	2024-present
University of Toronto Department of Chemical and Physical Sciences Colloquium Committee	2023-present
University of Toronto Department of Chemical and Physical Sciences Astronomy Faculty Undergraduate Advisor	2023-present
University of Toronto astronomy mentoring program mentor	2023-present
Organized the University of Toronto Mississauga Solar Eclipse Outreach Event	2023-2024
Canadian Time Allocation Committee	2023-2024
University of Toronto Department of Astronomy Faculty Search Committee	2023-2024
University of Toronto Department of Astronomy Graduate Admissions Committee	2023
University of Toronto Department of Chemical and Physical Sciences Outreach Committee	2023
UC Berkeley Exoplanet Journal Club organizer	2021-2022
UC Berkeley Cal-URSA (Undergraduate Research Scholarships in Astronomy) co-organizer	2021-2022
UC Berkeley Center for Integrative Planetary Science (CIPS) Seminar co-organizer	2019-2022
UC Berkeley Diversity, Equity, Inclusion, and Climate Committee Postdoc Representative	2018-2022
UC Berkeley T.R.A.I.L. Prevention & Response Certificate Training	2021
UC Berkeley Small Council Postdoc Representative	2020 - 2021
NASA Review Panel	2019, 2020, 2022
UC APF Time Allocation Committee	2019
AAS Chambliss Judge	2019, 2020
Referee for A&A, ApJ, AJ, Icarus, JATIS	2018-present
Mentor, Caltech Women Mentoring Women Program	2012 - 2018
Junior/Full Member, AAS	2012 - present
Harvard University Alumni Interviewer	2016-2017, 2018-2019
SOC member for ExSoCal 2016	2016
Teaching Assistant, AY 123: Structure and Evolution of Stars	Fall 2013
AY 126: Interstellar and Intergalactic Medium	Winter 2014
AY 21: Galaxies and Cosmology	Spring 2014