Michael R. Line

Associate Professor
School of Earth & Space Exploration
The College
Arizona State University
October 2025

CONTACT INFORMATION

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POSITIONS

Associate Professor	Arizona State University	2022-
Assistant Professor	Arizona State University	2016-2022
Hubble Postdoctoral Fellow	NASA Ames Research Center	2015-2016
Postdoctoral Researcher	University of California-Santa Cruz	2013-2015

EDUCATION

Ph.D. (Planetary Science)	California Institute of Technology	2013
M.S. (Planetary Science)	California Institute of Technology	2010
B.S. (Physics, Astronomy)	University of Wisconsin-Madison	2008

NOTABLE ACHIEVEMENTS

2015	NASA Hubble Postdoctoral Fellowship
2015	NSF Astronomy & Astrophysics Postdoctoral Fellowship (declined)
2015	Caltech/JPL Comparative Exoplanet/Planetary Postdoctoral Fellowship (declined)
2014	NASA Astrobiology Early Career Collaboration Award

RESEARCH INTERESTS

I am a theoretical & observational planetary astrophysicist. My primary research drive is to understand the nature of exoplanetary and sub-stellar atmospheres and to lay the theoretical groundwork for ultimately detecting exoplanet bio-signatures. My key theoretical research tools include atmospheric radiative transfer/spectroscopy, Bayesian statistical methods, data-model synthesis, and atmospheric chemistry and key observational tools include spectroscopy with large ground-based telescopes.

GRANTS

In my 9 years as Faculty I have been involved **in 18 successful grants, with 12 as PI or Co-PI**. The total award volume of which I have been directly involve amount to **~$9 million**; or considering only allocations to my group I have brought in **a total of ~$5 million**.

Major Grants (18—blue=Line or ASU Student/Post-doc Led):

1. Developing robust multi-dimensional atmospheric retrieval methods for high-resolution cross-correlation spectroscopy; **PI M. Line**; NASA Exoplanets Research Program; 1/1/2025 – 12/31/2027; $1,024,020 (Line: $458,711)

2. Leveraging cutting-edge tools across scientific disciplines to transcend our understanding of exoplanet atmospheres and the keys to life; PI M. Weiner-Mansfield (ASU post-doc); Heising-Simons Foundation 51-Pegasi b Post-doctoral Fellowship; 8/1/2024 – ($430,000)
3. Unifying theory and modeling to bridge the gap between exoplanet atmospheric observations and their interpretation; PI L. Welbanks (ASU post-doc); Heising-Simons Foundation 51-Pegasi b Post-doctoral Fellowship; 8/1/2024 – ($430,000)
4. Let the data speak for itself. Understanding the limits of current exoplanetary atmospheric models and their missing physics in a data-driven era; PI L. Welbanks (ASU post-doc); NASA Exoplanets Research Program; 1/1/2025 – 12/31/2027 ($735,157)
5. Collaborative Research: Revealing Exoplanet Atmospheres Using High-Resolution Spectroscopy; PI J. Bean (Co-PI Line); NSF Astronomy & Astrophysics Grants; 9/2023-9/2026; (Line: $421,796)
6. High-Definition Exo-Atmospheric Characterization with Transit Spectroscopy; PI L. Welbanks (ASU post-doc); NASA Hubble Fellowship Program; 12/1/2021 – 8/1/2024; ($364,102)
7. Innovations in Characterizing Exoplanet Atmospheres with High Resolution Cross-Correlation Spectroscopy; PI P. Smith (Inst PI M. Line) NASA Future Investigators in NASA Earth and Space Science and Technology (**FINESST**); 8/18/2022-8/17/2025; $150,000
8. Innovations in Characterizing Exoplanet Atmospheres with High Resolution Cross-Correlation Spectroscopy; PI A. Iyer (Inst PI M. Line) NASA Future Investigators in NASA Earth and Space Science and Technology (**FINESST**); 8/17/2021-8/16/2023; $90,000
9. Collaborative Research: A Fresh Look at M Dwarfs, From the Bottom Up ; PI J. Fortney (Co-I M. Line); National Science Foundation Astronomy & Astrophysics Grants; 8/1/2020 – 7/31/23 (Line: $358,632)
10. Characterizing the Atmospheres of Brown Dwarfs in the Era of JWST with Spectral Retrieval; PI J. Zalesky (Inst. PI M. Line); NASA Future Investigators in NASA Earth and Space Science and Technology (**FINESST**); 8/15/2019-8/14/2022; $123,297
11. Characterization of Transiting Exoplanet Atmospheres with High Dispersion Cross-Correlation Spectroscopy; **PI M. Line**; NASA Exoplanets Research Program; 1/1/19 – 12/31/21; $723,236 (Line: $376,083)
12. Probing Exoplanet Atmospheric Physics with the Exoplanet Climate Infrared Telescope (EXCITE); PI Nat Butler (ASU), NASA Astrophysics Research and Analysis Program; 3/26/2019-3/25/2024; $1,803,935 (ASU: $360,787, Line ~1/4x)
13. A Comprehensive View of Giant Planet Atmospheres in the JWST Era; PI J. Fortney (Co-I M. Line); NASA Exoplanets Research Program; 1/1/19 – 12/31/20; $522,798 (Line: $153,658)
14. Back to the Basics: Assessing Earth's Atmospheric Biosignatures from Space Across Time; PI T. Robinson (Co-I M. Line); NASA Exobiology Program; 12/1/18 – 11/30/21; $466,962 (Line: $24,915)
15. The Virtual Planetary Laboratory: Advancing the Search for Life Beyond the Solar System; PI V. Meadows (Co-I M. Line); NASA Astrobiology Institute; 1/1/18 – 12/31/22; $10,974,365 (Line: $169,075)
16. Back and Forth, Big and Small: Forward and Inverse Models of Super-Earth and Mini-Neptune Exoplanets; PI T. Robinson (Co-I M. Line); NASA Exoplanets Research Program; 1/1/18 – 12/31/20; $544,341 (Line: $7,678)
17. Testing Atmospheric Retrieval Modeling Assumptions for Transiting Planet Atmospheres: Preparatory Science for JWST and Beyond; **PI M. Line**; NASA Exoplanets Research Program; 1/1/17 – 12/31/19; $448,963 (Line: $314,274)
18. A Systematic Data Driven Characterization of the Atmospheres of Brown Dwarfs: At the Boundary Between Stars and Planets; **PI M. Line**; NSF Astronomy & Astrophysics Grants Program; 8/1/16 – 7/31/19; $443,158 (Line: $408,178)

Space Telescope Observing Proposal Awards (20)—Funded (blue= Line or student/post-doc Led):

1. Around the World in less than two days: observing the spectral phase curve of an ultra-hot Jupiter with JWST/NIRSpec; PI J. Wardenier (**US PI Line**); STScI JWST GO; 1/1/2025-12/31/2026 (Line: $114,712)
2. Maximizing the Science Return from HST UV Observations of Transiting Exoplanet Atmospheres; **PI Line**; STScI HST AR Theory; 1/1/2023 – 12/31/2025 (Line: $168,649)
3. From East to West: The First Simultaneous Temperature and Cloud Map of a Hot Jupiter; PI V. Parmentier (**US PI Line**); STScI JWST GO; 5/1/22-4/30/25 (Line: $40,000)
4. The nature, origin, and fate of two planets of a newborn system through the lens of their relative atmospheric properties; PI J-M Desert (Co-I Line); STScI JWST GO; 5/1/22-4/30/25 (Line: $40,000)
5. A Grid Idea: A New Comprehensive Self-Consistent Radiative-Convective Model Grid for Exoplanet Atmospheres; **PI Line**; STScI HST AR Theory; 10/1/20-9/30/23 (Line: $64,185, total $120,000)
6. Cooking a planet: The heating and cooling of an exoplanet atmosphere; PI J-M Desert (Co-I Line); STScI HST; 10/1/20-9/30/23 (Line: $14,979)
7. Water and methane in a juvenile transiting exoplanet, PI K. Todorov (**US PI Line**); STScI HST GO; 9/1/20-8/31/22 (Line: $55,172)
8. Measuring the First [Fe/H] of an Exoplanet, PI L. Pino/J. Bean (Co-I Line); STScI HST GO; 10/1/19-9/30/21 (Line: $37,991)
9. Determining Benchmark Precision Abundances for Ultracool Companions, PI J. Patience (Co-I Line); STScI HST GO; 10/1/19-9/3021 (Line: $20,000) – **ASU Team Proposal**
10. Testing the Hypothesis of a Low Metallicity Atmosphere for the Extremely Inflated Sub-Saturn-Mass Planet KELT-11b, PI K. Colon (Co-I Line); STScI HST GO; 10/1/19-9/30/21; (Line: $15,675)
11. Composition Dependent Molecular Opacity Database for High-Metallicity Exoplanet Atmospheres, PI E. Gharib-Nezhad (Co-I Line); STScI HST AR Theory; 10/1/19-9/30/21; (Line: $21,553)- **ASU Student Led**
12. Reconnaissance of the Hottest Neptune-Class Planet Transiting a Bright Parent Star, PI T. Beatty (Co-I Line); STScI HST GO; 7/01/19-6/30/20; (Line: $13,101)
13. The Nature of 55 Cancri-e, PI J. Bean (Co-I Line); STScI HST GO; 4/1/16-3/31/19; (Line: $12,000)
14. The First Precise Atmospheric Metallicity Measurement for a Sub-Jovian Exoplanet, PI J. Bean (Co-I Line); STScI HST GO; 11/1/16-10/31/19; (Line: $9,999)
15. Remastering the Classics: A Thermal Inversion for the Hot Jupiter Archetype HAT-P-7b, PI J. Bean (Co-I Line); STScI HST GO; 12/1/16-11/30/19; (Line: $9,999)
16. The first near-infrared reflectance spectrum of an exoplanet, PI J.-M. Desert (Co-I Line); STScI HST GO; 4/1/18-3/31/20; (Line: $11,435)
17. The KELT-11b Opportunity: Measuring the Atmospheric Water Abundance for a Sub-Saturn-Mass Planet around a Metal-Rich Star, PI K. Colon (Co-I Line); STScI HST GO; 4/1/18-3/31/20; (Line: $11,435)
18. Sub-Neptune Atmosphere Characterization in a Multi-Planet System, PI C. Hedges (Co-I Line); STScI HST GO; 1/1/18-12/31/18; (Line: $13,139)
19. The Ultimate Spitzer Phase Curve Survey, PI K. Stevenson (Co-I Line); NASA-JPL; 3/10/17-9/30/17; (Line: $10,000)
20. The Transiting Exoplanet Community Early Release Science Program, PI N. Batalha (Co-I Line); STScI ERS; TBD; (Line: $63,985)

Ground-based Observing Proposal Awards (Unfunded) ***blue=student/post-doc Led***

1. Quantifying the Thermal Inversion Transition in Exoplanet Atmospheres, NOIRLabs Gemini-North (IGRINS-2), GN-2025B-Q-205, PI M. Line,, **40 hrs**

2. From the Ashes: Investigating the Survival of the Lowest Mass Planet Orbiting an Evolved Star, NOIRLabs Gemini-North (IGRINS-2), GN-2025B-FT-103, PI P. Smith, **ASU student led, 8 hrs**
3. Unraveling the Formation History of a Saturn-Mass Exoplanet, NOIRLabs Gemini-North (IGIRNS-2), GN-2025A-FT-107, PI S. Kanumalla, **ASU student led, 3 hrs**
4. Settling the debate on the molecular makeup of two classic exoplanets, NOIRLabs Gemini-North (IGIRNS-2), GN-2025A-Q-201, PI S. Kanumalla, **ASU student led, 16 hrs**
5. Assessing the Influence of Metallicity in Shaping the Inflated Radius of a Sub-Saturn WASP-193b, NOIRLabs Gemini-North (IGRINS-2), GN-2024A-FT-201, PI S. Kanumalla, **ASU student led, 9.5 hrs**
6. A Ridge Too Far: Unveiling the Mysterious Origins of Intermediate-sized Planets on the Neptune Ridge, NOIRLabs Gemini-North (IGRINS-2), GN-2025A-Q-209, PI P. Smith, **ASU student led, 20 hrs**
7. Singing in the (iron) rain: interrogating the Hypothesis of Fe Condensation on an Ultra Hot Jupiter, NOIRLabs Gemini-South (GHOST), GS-2024B-FT-103, PI P. Smith, **ASU student led, 8 hrs**
8. Assessing the Influence of Metallicity in Shaping the Inflated Radius of a Sub-Saturn WASP-193b, NOIRLabs Gemini-South (IGRINS), GS-2024A-FT-201, PI S. Kanumalla, **ASU student led, 9.5 hrs**
9. A Definitive C/O Ratio Determination of a Sub-Jovian Exoplanet, NOIRLabs Gemini-South (IGRINS), GS-2024A-FT-101, PI P. Smith, **ASU student led, 3.5 hrs**
10. What is the Abundance Inventory of the Warmest Sub-Neptune, NOIRLabs Gemini-South (IGRINS), GS-2024A-FT-201, PI L. Welbanks, **ASU post-doc led, 6 hrs**
11. Dude, Where's My Methane?: Searching for the Atmospheric Imprints of Chemical Disequilibrium in a Warm Sub-Neptune , NOIRLabs Gemini-South (IGRINS), GS-2023B-Q-129, PI L. Welbanks, **ASU post-doc led, 10.4 hrs**
12. The Elemental Abundance Inventory of a Rare Jovian Mass Planet Around an M-dwarf , NOIRLabs Gemini-South (IGRINS), GS-2023B-Q-227, PI L. Welbanks, **ASU post-doc led, 7.1 hrs**
13. Desert Oasis: Confirming the Detection of Water in a Neptune Desert Planet, NOIRLabs Gemini-South (IGRINS), GS-2023B-Q-110, PI P. Smith, **ASU student led, 8 hrs**
14. Dude, who puffed my marshmallow?: Understanding the conditions that give rise to the inflated atmosphere of WASP-127b, NOIRLabs Gemini-South (IGRINS), GS-2023A-FT-207, PI S. Kanumalla, **ASU student led, 4.8 hrs**
15. Exploring Synergies between Ground Based High Resolution Spectroscopy and JWST Observations of an Ultra-hot Exoplanet, NOIRLabs Gemini-South (IGRINS), GS-2022B-FT-203, **PI M. Line, 3 hrs**
16. Lorentz vs. Navier-Stokes: the answer is blowing in the wind, NOIRLabs Gemini-North (MAROON-X), GN-(2022B-2023B)-Q-128, PI V. Parmentier (Co-I M. Line), **39 hrs**
17. Atmospheric structure, chemistry and heating processes in the day-side of the hottest gaseous giants with MAROON-X, NOIRLabs Gemini-North (MAROON-X), GN-(2022B-2024A)-Q-218, PI L. Pino (Co-I M. Line), **72.5 hrs**
18. Unveiling the 3D Structure of the ultra-hot Jupiter WASP-121 using multiple Molecules, NOIRLabs Gemini-South (IGRINS), GS-2022B-Q-133, PI J. Wardenier (Co-I M. Line), **8 hrs**
19. Tracing the Day-Night Structure of WASP-76b with Multi-Phase High-Resolution Spectroscopy, NOIRLabs Gemini-South (IGRINS), GS-2022B-Q-132, PI E. Rauscher (Co-I M. Line), **20 hrs**
20. Revealing the Composition of the Canonical Hot Jupiter HD209458b, NOIRLabs Gemini-South (IGRINS), GS-2022A-FT-212, PI J. Sanchez, **ASU student led, 4 hrs**
21. The First Definitive C/O Ratio Determination for a Sub-Jovian Exoplanet, NOIRLabs Gemini-South (IGRINS), GS-2022A-FT-106, PI P. Smith, **ASU student led, 4.5 hrs**

22. A Rose in the Hot Neptune Desert: Constraining the Composition and Thermal Structure of LTT 9779b, NOIRLabs Gemini-South (IGRINS), GS-2022A-FT-203, PI M. Mansfield (Co-I M. Line), **13.6 hrs**
23. Guilt by Dissociation: Searching for Thermochemical Gradients in an Ultra-Hot Jupiter NOIRLabs Gemini-South (IGRINS), GS-2022A-Q-107, PI M. Mansfield (Co-I M. Line), **12 hrs**
24. Confirmation of a Carbon Isotope in the Atmosphere of a Transiting Hot Jupiter, NOIRLabs Gemini-South (IGRINS), GS-2021B-Q-113, PI P. Smith, **ASU student led, 16.3 hrs**
25. Roasting Marshmallows: Disentangling Composition & Climate in Hot Jupiter Atmospheres through High-Resolution Thermal Emission Cross-Correlation Spectroscopy, NOIRLabs Gemini-South (IGRINS), GS-(2021B-2023B)-LP-206, **PI M. Line, 117 hrs**
26. Characterizing the Atmosphere of a Canonical Hot Jupiter with High Resolution Cross-Correlation Spectroscopy, NOAO Gemini-South (IGRINS), GS-2020B-Q-113, **PI M. Line, 6.5 hrs**
27. Exploring Thermal Inversions in Hot Jupiters with IGRINS, NOIRLabs Gemini-South (IGRINS), GS-2020B-Q-250, PI J. Zalesky, **ASU student led , 13 hrs,**
28. A High-Resolution Survey of Molecular Abundances in Transiting Exoplanet Atmospheres, NOIRLabs Gemini-South (IGRINS), GS-(2020B-2023A)-LP-107, PI M. Mansfield **(**Co-I M. Line**), 54 hrs**

TEACHING/MENTORING EXPERIENCE

Mentoring:

I have recruited and funded **11 SESE/ASU graduate students** and funded/co-advised two UC-Santa Cruz students. ***Three*** of my students have been awarded ***Future Investigators in* NASA *Earth and Space Science and Technology (*FINESST*)*** awards. I also have had 3 post-docs, one of whom was a ***NASA Hubble Post-doctoral Fellow and two of whom are Heising-Simons Foundation 51-Pegasi b Fellows.*** I was/am also a 2nd project advisor for 8 students and advised **several undergrads**.

Funded Current & *former* Students & Postdocs

Name (Department)	***Level***	***Dates***
*Zalesky, Joe (SESE)***	*PhD 2022 (now in DoD, LLNL)*	*1/2017 – 8/2022*
Tremblay, Luke (SESE)	*M.S.2019 (now industry: Apple)*	*9/2017 – 12/2019*
*Iyer, Aisha (SESE)***	*PhD 2023 (now an NPP at Goddard)*	*9/2017 – 6/2023*
Gharib-Nezhad, Ehsan (SMS)	*PhD 2019 (AMES research staff)*	*9/2017 – 7/2019*
Feng, Katherina (UCSC)	*PhD 2020 (industry: startup)*	*9/2016 – 5/2020*
Kopytova, Taiysia (SESE)	*Post-doc (left the field)*	*9/2016 – 3/2019*
Saboi, Kezman (SESE)	*M.S. 2020 (industry, tech)*	*5/2018 – 12/2020*
Callie Hood (UCSC)	*PhD 2023 (industry: tech)*	*9/2019 – 8/2023*
Mai, Chuhong (SESE)	*PhD 2020 (NPP UCLA)*	*Fall 2019*
Lindsay Wiser (SESE)	*PhD 2025 (Post-doc APL)*	*9/2020 – 5/2025*
Peter Smith (SESE)**	PhD Grad (5th year)	9/2020 –
Jorge Sanchez (SESE)	PhD Grad (4th year)	9/2021-
*Isabella Huckabee**	*Undergraduate (now at Cornell)*	*9/2019 –5/2022*
Luis Welbanks	*Hubble Fellow → Heising-Simons 51 Pegasi b Fellow → Faculty ASU*	*12/2021–8/2025*
Krishna Kanumalla	PhD Grad (4th year)	9/2022 –
Yoav Rotman	PhD Grad (4th year)	9/2022 –
Lana Tilke	PhD Grad (3rd year)	9/2023 –
Megan Weiner-Mansfield	*Post-doc Heising-Simons 51 Pegasi b Fellow → Faculty UMD*	*9/2024-9/2025*

***awarded NASA FINESST Graduate Fellowship*

**NASA Space Grant, Goldwater Fellowship award winner*

Teaching:

I have taught **5 different classes** out of the 14 semesters while at ASU (relief the 1st semester, paternity leave Fall 2022). The three upper division undergrad/grad courses, An Overview of Planetary Atmospheres, AstroStatstics, and Exoplanets, I invented (or re-invented) from scratch. I have also taught the introductory level astronomy class for non-majors (AST112) and a core graduate class on stellar radiative transfer (AST521). Additionally, **I obtained a credential in the Effective Instruction from the Association of College and University Educators (ACUE)** in 2019.

Fall 2016	Teaching Release
Spring 2017	SES494/598 "An Overview of Planetary Atmospheres" (Grad/Ugrad Elective)
Fall 2017	SES494/598 "Astro Statistics" (Grad/Ugrad Elective)
Spring 2018	AST112 "Introduction to Stars, Galaxies, and Cosmology" (Intro Ugrad)
Fall 2018	AST521 "Stellar Atmospheres" (Grad Core Class)
Spring 2019	AST112 "Introduction to Stars, Galaxies, and Cosmology" (Intro Ugrad)
Fall 2019	SES494/598 "Astro Statistics" (Grad/Ugrad Elective)
Spring 2020	AST112 "Introduction to Stars, Galaxies, and Cosmology" (Intro Ugrad)
Fall 2020	SES494/598 "An Overview of Planetary Atmospheres" (Grad/Ugrad Elective)
Spring 2021	AST112 "Introduction to Stars, Galaxies, and Cosmology" (Intro Ugrad)
Fall 2021	SES494/598 "Astro Statistics" (Grad/Ugrad Elective)
Spring 2022	SES494/598 "Exoplanets" (Grad/Ugrad Elective)
Fall 2022	Parental Leave
Spring 2023	SES494/598 "An Overview of Planetary Atmospheres" (Grad/Ugrad Elective)
Fall 2023	SES494/598 "Astro Statistics" (now a core grad astro class)
Spring 2024	SES494/598 "Exoplanets" (Grad/Ugrad Elective)
Fall 2024	AST 521 Stars & the Interstellar Medium I (core grad astro class)
Spring 2025	SES494/598 "An Overview of Planetary Atmospheres" (Grad/Ugrad Elective)
Fall 2025	Sabbatical

RESEARCH & CREATIVE ACTIVITIES

Refereed & Submitted Publications:

I have **141 publications (104 as Faculty)**, including **14 as first author,** 24 as second author, **24 papers with student or postdoc first authors under my direction**. According to the Astrophysics Data System, my total publications have accumulated **10240 citations** (1,627 for first author) and **an h-index of 59** (13 for first author). Regarding notation below: student led or funded by Line grants are indicated in bold. >=3rd author indicates substantial effort (>25% effort). 10-25% indicates a figure or analysis was provided. 1-10% indicates draft was read, minor comments suggested and/or minor work performed on proposal that led to the publication results.

(see publications document)

Invited Talks

28 invited conference talks/seminars (**19 since beginning as Faculty**)

11/2025 JHU Astronomy Colloquium, Baltimore, MD

01/2025 Yale Astronomy Colloquium, New Haven, CT
07/2023 Sagan Summer School, Exoplanet Atmospheres, Pasadena, CA
07/2023 Kavli Symposium in Astrochemistry, Traverse City MI
04/2021 Exoplanets Tea Talk, Massachusetts Institute of Technology, remote/zoom
11/2019 Rocky Exoplanets in The Era of JWST Symposium, NASA Goddard, MD
05/2019 Harvard CfA, Institute for Theory & Computation Seminar, Cambridge, MA
04/2019 New York University-Abu Dhabi Physics Colloquium, Abu Dhabi, UAE
02/2019 Kavli Fellow: Frontiers of Science/National Academy of Sciences Symposium, Irvine, CA
01/2019 AAS Splinter Session "Biosignatures in the 2030's and Beyond", Seattle, WA
10/2018 Multi-Dimensional Characterization of Distant Worlds Workshop, Ann Arbor, MI
10/2018 High Resolution Spectroscopy for Exoplanet Atmospheres Conference, Nice, Fr.
06/2018 Southwest Research Institute Seminar, San Antonio
11/2017 School of Earth and Space Exploration Colloquium, Arizona State University
10/2017 Lunar & Planetary Laboratory Colloquium, University of Arizona
07/2017 CRAQ Exoplanet Summer School, University of Montreal
07/2017 Enabling Transiting Exoplanet Science with JWST Workshop, STScI
02/2017 Lowell Observatory Colloquium
09/2016 Linking Exoplanet and Disk Compositions Workshop, STScI
--pre Faculty below--
07/2016 Sagan Summer Workshop: Is there a planet in my data?, NExScI
07/2016 Exoplanets I Conference, Davos Switzerland
04/2015 Frontiers of Stellar Spectroscopy in the Local Group and Beyond Conference, MPIA
03/2015 University of Bern, Center for Space and Habitability Seminar
12/2014 Remote Sensing of Exoplanets Winter School, University of Lethbridge
05/2014 University of California-LA, Department of Earth, Planetary, and Space Sciences Seminar
05/2014 University of Washington, Astrobiology Colloquium
05/2014 Northwestern, CIERA Seminar
04/2012 University of California-Santa Cruz, Earth and Marine Sciences Lunch Seminar

NASA Telescope Mission Involvement

A non-negligible fraction of time has been spent on **NASA space-telescope mission preparation**, both near term and beyond (decade+). This is largely unfunded, high risk effort with the potential for high reward.

1. Spectral Modeling Lead, *NASA Origins Space Telescope Exoplanet Working Group* (2017-)
2. US Theory Lead, *NASA JWST Exoplanet Early Release Science Program:* PI N. Batalha (2016-)
3. Theory Lead, *NASA JWST NIRCam Exoplanet Guaranteed Time Observations:* PI T. Greene (2016-)
4. Co-I, *NASA Contribution to Arial Spectroscopy of Exoplanets:* PI M. Swain (2016-)
5. Science Case "B" Lead, *UVScope—a Submitted NASA MidEx Exoplanet UV Mission:* PI E. Shkolnik (2019-) (Declined, ~Aug 2022)
6. Science Theory Lead, *FINESSE—a NASA MidEx Exoplanet Infrared Proposal (declined):* PI M. Swain (2012-2017)

Other/Public

1. ASU PBS Phoenix Horizons, "Water on the Super-Earth K2-18b" (9/2019)
2. RMACC (Compute Cluster Admin. Meeting @ ASU): "Exoplanets on ASU Clusters" (8/2019)
3. ASU Press Release on Ultra-Hot Jupiters: https://sese.asu.edu/about/news/article/3537 (8/2018)
4. Beer on Tap Public Talk, San Antonio, "Exoplanets" (6/2018)
5. Saguaro Astronomy Club Public Talk: "Exoplanets" (1/2018)

6. Open House/New Discoveries Lecture Series on: "The Planets Way Out There" (9/2017)
7. Interview CBS5 local News, Preston Phillips on Airplane Contrails (4/2017)

SERVICE

Department

Geophysics Faculty Search Committee (2017), Colloquium Committee (2017-2020)
Post-doctoral Fellowship Committee incl. Chair (2016-2021), Graduate Committee (2022-2024), Chair 2024, Graduate Astrophysics Curriculum Redesign (2023), Graduate Committee Chair (2024)
University Contact for H-S 51-Pegasi b Fellowship Program (2023-)

Professional

Referee for Nature, Science, Icarus, ApJ, AJ, A&A, MNRAS, PASP, Panelist for NSF CAREER, NSF A&A Postdoc., NASA ATP, NASA Keck TAC, HST TAC, NASA FINESST

Refereed & Submitted Publications

I have **141 publications (104 as Faculty)**, including **14 as first author,** 24 as second author, **28 papers with student or postdoc first authors under my direction**. According to the Astrophysics Data System, my total publications have accumulated **12,928 citations** and **an h-index of 66**. Regarding notation below: student led or funded by Line grants are indicated in bold. >=3rd author indicates substantial effort (>25% effort). 10-25% indicates a figure or analysis was provided. 1-10% indicates draft was read, minor comments suggested and/or minor work performed on proposal that led to the publication results.

2025 (7, 4 student/postdoc Led)

1. Faherty, J. K., Meisner, A. M., Burningham, B., Visscher, C., **Line, M.,** Suárez, G., Gagné, J., Alejandro Merchan, S., Rothermich, A. J., Burgasser, A. J., Schneider, A. C., Caselden, D., Kirkpatrick, J. D., Kuchner, M. J., Bardalez Gagliuffi, D. C., Eisenhardt, P., Gelino, C. R., Gonzales, E. C., Marocco, F., Leggett, S., Lodieu, N., Casewell, S. L., Tremblin, P., Cushing, M., Zapatero Osorio, M. R., Béjar, V. J. S., Gauza, B., Wright, E., Phillips, M. W., Zhang, J.-Y., & Martin, E. L.. (2025), Silicate precursor silane detected in cold low-metallicity brown dwarf, Nature, 645, 8079.—**30%**

2. Rotman, Y., Welbanks, L., Line, M. R., McGill, P., Radica, M., & Nixon, M. C.. (2025), Enabling Robust Exoplanet Atmospheric Retrievals with Gaussian Processes, The Astrophysical Journal, 989, 2. **ASU Student Led**

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83. Arcangeli, J., Désert, J.-M., Parmentier, V., Stevenson, K. B., Bean, J. L., **Line,** M. R., Kreidberg, L., Fortney, J. J., & Showman, A. P. (2019), Climate of an ultra hot Jupiter. Spectroscopic phase curve of WASP-18b with HST/WFC3, Astronomy and Astrophysics, 625, A136. **-10%**

84. Brogi, M., & **Line,** M. R. (2019), Retrieving Temperatures and Abundances of Exoplanet Atmospheres with High-resolution Cross-correlation Spectroscopy, The Astronomical Journal, 157, 114.-**2nd author, though I count this as a 1st author as it was truly 50-50**

85. Gharib-Nezhad, E., & **Line,** M. R. (2019), The Influence of H2O Pressure Broadening in High-metallicity Exoplanet Atmospheres, The Astrophysical Journal, 872, 27.- **ASU PhD Student Led, on Line Grant**

2018 (15, 3 2nd author, 5 3rd author)

86. Mansfield, M., Bean, J. L., Oklopčić, A., Kreidberg, L., Désert, J.-M., Kempton, E. M.-R., **Line,** M. R., Fortney, J. J., Henry, G. W., Mallonn, M., Stevenson, K. B., Dragomir, D., Allart, R., & Bourrier, V. (2018), Detection of Helium in the Atmosphere of the Exo-Neptune HAT-P-11b, The Astrophysical Journal, 868, L34. **-5%**

87. Bean, J. L., Stevenson, K. B., Batalha, N. M., Berta-Thompson, Z., Kreidberg, L., Crouzet, N., Benneke, B., **Line,** M. R., Sing, D. K., Wakeford, H. R., Knutson, H. A., Kempton, E. M.-R., Désert, J.-M., Crossfield, I., Batalha, N. E., de Wit, J., Parmentier, V., Harrington, J., Moses, J. I., Lopez-Morales, M., Alam, M. K., Blecic, J., Bruno, G., Carter, A. L., Chapman, J. W., Decin, L., Dragomir, D., Evans, T. M., Fortney, J. J., Fraine, J. D., Gao, P., García Muñoz, A., Gibson, N. P., Goyal, J. M., Heng, K., Hu, R., Kendrew, S., Kilpatrick, B. M., Krick, J., Lagage, P.-O., Lendl, M., Louden, T., Madhusudhan, N., Mandell, A. M., Mansfield, M., May, E. M., Morello, G., Morley, C. V., Nikolov, N., Redfield, S., Roberts, J. E., Schlawin, E., Spake, J. J., Todorov, K. O., Tsiaras, A., Venot, O., Waalkes, W. C., Wheatley, P. J., Zellem, R. T., Angerhausen, D., Barrado, D., Carone, L., Casewell, S. L., Cubillos, P. E., Damiano, M., de Val-Borro, M., Drummond, B., Edwards, B., Endl, M., Espinoza, N., France, K., Gizis, J. E., Greene, T. P., Henning, T. K., Hong, Y., Ingalls, J. G., Iro, N., Irwin, P. G. J., Kataria, T., Lahuis, F., Leconte, J., Lillo-Box, J., Lines, S., Lothringer, J. D., Mancini, L., Marchis, F., Mayne, N., Palle, E., Rauscher, E., Roudier, G., Shkolnik, E. L., Southworth, J., Swain, M. R., Taylor, J., Teske, J., Tinetti, G., Tremblin, P., Tucker, G. S., van Boekel, R., Waldmann, I. P., Weaver, I. C., & Zingales, T. (2018), The Transiting Exoplanet Community Early Release Science Program for JWST, Publications of the Astronomical Society of the Pacific, 130, 114402. **-15%**

88. Bonnefoy, M., Perraut, K., Lagrange, A.-M., Delorme, P., Vigan, A., **Line,** M., Rodet, L., Ginski, C., Mourard, D., Marleau, G.-D., Samland, M., Tremblin, P., Ligi, R., Cantalloube, F., Mollière, P., Charnay, B., Kuzuhara, M., Janson, M., Morley, C., Homeier, D., D'Orazi, V., Klahr, H., Mordasini, C., Lavie, B., Baudino, J.-L., Beust, H., Peretti, S., Musso Bartucci, A., Mesa, D., Bézard, B., Boccaletti, A., Galicher, R., Hagelberg, J., Desidera, S., Biller, B., Maire, A.-L., Allard, F., Borgniet, S., Lannier, J., Meunier, N., Desort, M., Alecian, E., Chauvin, G., Langlois, M., Henning, T., Mugnier, L., Mouillet, D., Gratton, R., Brandt, T., Mc Elwain, M., Beuzit, J.-L., Tamura, M., Hori, Y., Brandner, W., Buenzli, E., Cheetham, A., Cudel, M., Feldt, M., Kasper, M., Keppler, M., Kopytova, T., Meyer, M., Perrot, C., Rouan, D., Salter, G., Schmidt, T., Sissa, E., Zurlo, A., Wildi, F., Blanchard, P., De Caprio, V., Delboulbé, A., Maurel, D., Moulin, T., Pavlov, A., Rabou, P., Ramos, J., Roelfsema, R., Rousset, G., Stadler, E., Rigal, F., & Weber, L. (2018), The GJ 504 system revisited. Combining interferometric, radial velocity, and high contrast imaging data, Astronomy and Astrophysics, 618, A63. **-15%**
89. Piskorz, D., Buzard, C., **Line,** M. R., Knutson, H. A., Benneke, B., Crockett, N. R., Lockwood, A. C., Blake, G. A., Barman, T. S., Bender, C. F., Deming, D., & Johnson, J. A. (2018), Ground- and Space-based Detection of the Thermal Emission Spectrum of the Transiting Hot Jupiter KELT-2Ab, The Astronomical Journal, 156, 133. **-3rd author**

90. Kilpatrick, B. M., Cubillos, P. E., Stevenson, K. B., Lewis, N. K., Wakeford, H. R., MacDonald, R. J., Madhusudhan, N., Blecic, J., Bruno, G., Burrows, A., Deming, D., Heng, K., **Line,** M. R., Morley, C. V., Parmentier, V., Tucker, G. S., Valenti, J. A., Waldmann, I. P., Bean, J. L., Beichman, C., Fraine, J., Krick, J. E., Lothringer, J. D., & Mandell, A. M. (2018), Community Targets of JWST's Early Release Science Program: Evaluation of WASP-63b, The Astronomical Journal, 156, 103. **-20%**

91. Parmentier, V., **Line,** M. R., Bean, J. L., Mansfield, M., Kreidberg, L., Lupu, R., Visscher, C., Désert, J.-M., Fortney, J. J., Deleuil, M., Arcangeli, J., Showman, A. P., & Marley, M. S. (2018), From thermal dissociation to condensation in the atmospheres of ultra hot Jupiters: WASP-121b in context, Astronomy and Astrophysics, 617, A110.**-2nd author**

92. Schlawin, E., Greene, T. P., **Line,** M., Fortney, J. J., & Rieke, M. (2018), Clear and Cloudy Exoplanet Forecasts for JWST: Maps, Retrieved Composition, and Constraints on Formation with MIRI and NIRCam, The Astronomical Journal, 156, 40.**-3rd author**

93. Kreidberg, L., **Line,** M. R., Parmentier, V., Stevenson, K. B., Louden, T., Bonnefoy, M., Faherty, J. K., Henry, G. W., Williamson, M. H., Stassun, K., Beatty, T. G., Bean, J. L., Fortney, J. J., Showman, A. P., Désert, J.-M., & Arcangeli, J. (2018), Global Climate and Atmospheric Composition of the Ultra-hot Jupiter WASP-103b from HST and Spitzer Phase Curve Observations, The Astronomical Journal, 156, 17.**-2nd author**

94. Mansfield, M., Bean, J. L., **Line,** M. R., Parmentier, V., Kreidberg, L., Désert, J.-M., Fortney, J. J., Stevenson, K. B., Arcangeli, J., & Dragomir, D. (2018), An HST/WFC3 Thermal Emission Spectrum of the Hot Jupiter HAT-P-7b, The Astronomical Journal, 156, 10.**-3rd author**

95. Kreidberg, L., **Line,** M. R., Thorngren, D., Morley, C. V., & Stevenson, K. B. (2018), Water, High-altitude Condensates, and Possible Methane Depletion in the Atmosphere of the Warm Super-Neptune WASP-107b, The Astrophysical Journal, 858, L6.**-2nd author**

96. Feng, Y. K., Robinson, T. D., Fortney, J. J., Lupu, R. E., Marley, M. S., Lewis, N. K., Macintosh, B., & **Line,** M. R. (2018), Characterizing Earth Analogs in Reflected Light: Atmospheric Retrieval Studies for Future Space Telescopes, The Astronomical Journal, 155, 200. **-5%**

97. Batalha, N. E., Lewis, N. K., **Line,** M. R., Valenti, J., & Stevenson, K. (2018), Strategies for Constraining the Atmospheres of Temperate Terrestrial Planets with JWST, The Astrophysical Journal, 856, L34.-**3rd author**

98. Dang, L., Cowan, N. B., Schwartz, J. C., Rauscher, E., Zhang, M., Knutson, H. A., **Line,** M., Dobbs-Dixon, I., Deming, D., Sundararajan, S., Fortney, J. J., & Zhao, M. (2018), Detection of a westward hotspot offset in the atmosphere of hot gas giant CoRoT-2b, Nature Astronomy, 2, 220. -**5%**

99. Arcangeli, J., Désert, J.-M., **Line,** M. R., Bean, J. L., Parmentier, V., Stevenson, K. B., Kreidberg, L., Fortney, J. J., Mansfield, M., & Showman, A. P. (2018), H⁻ Opacity and Water Dissociation in the Dayside Atmosphere of the Very Hot Gas Giant WASP-18b, The Astrophysical Journal, 855, L30.-**3rd author**

100. Bruno, G., Lewis, N. K., Stevenson, K. B., Filippazzo, J., Hill, M., Fraine, J. D., Wakeford, H. R., Deming, D., Kilpatrick, B., **Line,** M. R., Morley, C. V., Collins, K. A., Conti, D. M., Garlitz, J., & Rodriguez, J. E. (2018), A Comparative Study of WASP-67 b and HAT-P-38 b from WFC3 Data, The Astronomical Journal, 155, 55. -**5%**

2017 (10, 2 student led, 1 1st author, 2 2nd author, 3 3rd author)

101. Chapman, J. W., Zellem, R. T., **Line,** M. R., Vasisht, G., Bryden, G., Willacy, K., Iyer, A. R., Bean, J., Cowan, N. B., Fortney, J. J., Griffith, C. A., Kataria, T., Kempton, E. M.-R., Kreidberg, L., Moses, J. I., Stevenson, K. B., & Swain, M. R. (2017), Quantifying the Impact of Spectral Coverage on the Retrieval of Molecular Abundances from Exoplanet Transmission Spectra, Publications of the Astronomical Society of the Pacific, 129, 104402.-**3rd author**

102. **Line,** M. R., Marley, M. S., Liu, M. C., Burningham, B., Morley, C. V., Hinkel, N. R., Teske, J., Fortney, J. J., Freedman, R., & Lupu, R. (2017), Uniform Atmospheric Retrieval Analysis of Ultracool Dwarfs. II. Properties of 11 T dwarfs, The Astrophysical Journal, 848, 83.-**1st author**

103. Burningham, B., Marley, M. S., **Line,** M. R., Lupu, R., Visscher, C., Morley, C. V., Saumon, D., & Freedman, R. (2017), Retrieval of atmospheric properties of cloudy L dwarfs, Monthly Notices of the Royal Astronomical Society, 470, 1177.-**3rd author**

104. Zellem, R. T., Swain, M. R., Roudier, G., Shkolnik, E. L., Creech-Eakman, M. J., Ciardi, D. R., **Line,** M. R., Iyer, A. R., Bryden, G., Llama, J., & Fahy, K. A. (2017), Forecasting the Impact of Stellar Activity on Transiting Exoplanet Spectra, The Astrophysical Journal, 844, 27.-**5%**

105. Brogi, M., **Line,** M., Bean, J., Désert, J.-M., & Schwarz, H. (2017), A Framework to Combine Low- and High-resolution Spectroscopy for the Atmospheres of Transiting Exoplanets, The Astrophysical Journal, 839, L2.-**2nd author**

106. Batalha, N. E., & **Line,** M. R. (2017), Information Content Analysis for Selection of Optimal JWST Observing Modes for Transiting Exoplanet Atmospheres, The Astronomical Journal, 153, 151. – **Summer Intern Led, advised by Line when Post-doc**

107. Morley, C. V., Knutson, H., **Line,** M., Fortney, J. J., Thorngren, D., Marley, M. S., Teal, D., & Lupu, R. (2017), Forward and Inverse Modeling of the Emission and Transmission Spectrum of GJ 436b: Investigating Metal Enrichment, Tidal Heating, and Clouds, The Astronomical Journal, 153, 86.**-3rd author (Line's idea)**

108. Stevenson, K. B., **Line,** M. R., Bean, J. L., Désert, J.-M., Fortney, J. J., Showman, A. P., Kataria, T., Kreidberg, L., & Feng, Y. K. (2017), Spitzer Phase Curve Constraints for WASP-43b at 3.6 and 4.5 μm, The Astronomical Journal, 153, 68.**-2nd author**

109. Schlawin, E., Rieke, M., Leisenring, J., Walker, L. M., Fraine, J., Kelly, D., Misselt, K., Greene, T., **Line,** M., Lewis, N., & Stansberry, J. (2017), Two NIRCam Channels are Better than One: How JWST Can Do More Science with NIRCam's Short-wavelength Dispersed Hartmann Sensor, Publications of the Astronomical Society of the Pacific, 129, 015001. **-5%**

110. Cartier, K. M. S., Beatty, T. G., Zhao, M., **Line,** M., Ngo, H., Mawet, D., Stassun, K. G., Wright, J. T., Kreidberg, L., Fortney, J., & Knutson, H. (2017), Near-infrared Emission Spectrum of WASP-103b Using Hubble Space Telescope/Wide Field Camera 3, The Astronomical Journal, 153, 34. -1**5%**

--- pre-Faculty Position below------
2016 (11, 1 student led, 2 1st author, 2 2nd author)-- post-doc year

111. Lupu, R. E., Marley, M. S., Lewis, N., **Line,** M., Traub, W. A., & Zahnle, K. (2016), Developing Atmospheric Retrieval Methods for Direct Imaging Spectroscopy of Gas Giants in Reflected Light. I. Methane Abundances and Basic Cloud Properties, The Astronomical Journal, 152, 217. -**15%**

112. **Line,** M. R., Stevenson, K. B., Bean, J., Desert, J.-M., Fortney, J. J., Kreidberg, L., Madhusudhan, N., Showman, A. P., & Diamond-Lowe, H. (2016), No Thermal Inversion and a Solar Water Abundance for the Hot Jupiter HD 209458b from HST/WFC3 Spectroscopy, The Astronomical Journal, 152, 203.**-1st author**

113. Moses, J. I., Marley, M. S., Zahnle, K., **Line,** M. R., Fortney, J. J., Barman, T. S., Visscher, C., Lewis, N. K., & Wolff, M. J. (2016), On the Composition of Young, Directly Imaged Giant Planets, The Astrophysical Journal, 829, 66. **-20%**

114. Stevenson, K. B., Lewis, N. K., Bean, J. L., Beichman, C., Fraine, J., Kilpatrick, B. M., Krick, J. E., Lothringer, J. D., Mandell, A. M., Valenti, J. A., Agol, E., Angerhausen, D., Barstow, J. K., Birkmann, S. M., Burrows, A., Charbonneau, D., Cowan, N. B., Crouzet, N., Cubillos, P. E., Curry, S. M., Dalba, P. A., de Wit, J., Deming, D., Désert, J.-M., Doyon, R., Dragomir, D., Ehrenreich, D., Fortney, J. J., García Muñoz, A., Gibson, N. P., Gizis, J. E., Greene, T. P., Harrington, J., Heng, K., Kataria, T., Kempton, E. M.-R., Knutson, H., Kreidberg, L., Lafrenière, D., Lagage, P.-O., **Line,** M. R., Lopez-Morales, M., Madhusudhan, N., Morley, C. V., Rocchetto, M., Schlawin, E., Shkolnik, E. L., Shporer, A., Sing, D. K., Todorov, K. O., Tucker, G. S., & Wakeford, H. R. (2016), Transiting Exoplanet Studies and Community Targets for JWST's Early Release Science Program, Publications of the Astronomical Society of the Pacific, 128, 094401. -**5%**

115. Feng, Y. K., **Line,** M. R., Fortney, J. J., Stevenson, K. B., Bean, J., Kreidberg, L., & Parmentier, V. (2016), The Impact of Non-uniform Thermal Structure on the Interpretation of Exoplanet

Emission Spectra, The Astrophysical Journal, 829, 52- **UCSC PhD Student Led, advised by Line when Post-doc**

116. Iyer, A. R., Swain, M. R., Zellem, R. T., **Line,** M. R., Roudier, G., Rocha, G., & Livingston, J. H. (2016), A Characteristic Transmission Spectrum Dominated by H₂O Applies to the Majority of HST/WFC3 Exoplanet Observations, The Astrophysical Journal, 823, 109. **-15%**

117. Todorov, K. O., **Line,** M. R., Pineda, J. E., Meyer, M. R., Quanz, S. P., Hinkley, S., & Fortney, J. J. (2016), The Water Abundance of the Directly Imaged Substellar Companion κ And b Retrieved from a Near Infrared Spectrum, The Astrophysical Journal, 823, 14.**-2nd author**

118. Beichman, C., Livingston, J., Werner, M., Gorjian, V., Krick, J., Deck, K., Knutson, H., Wong, I., Petigura, E., Christiansen, J., Ciardi, D., Greene, T. P., Schlieder, J. E., **Line,** M., Crossfield, I., Howard, A., & Sinukoff, E. (2016), Spitzer Observations of Exoplanets Discovered with the Kepler K2 Mission, The Astrophysical Journal, 822, 39. **-5%**

119. **Line,** M. R., & Parmentier, V. (2016), The Influence of Nonuniform Cloud Cover on Transit Transmission Spectra, The Astrophysical Journal, 820, 78.**-1st author**

120. Stevenson, K. B., Bean, J. L., Seifahrt, A., Gilbert, G. J., **Line,** M. R., Désert, J.-M., & Fortney, J. J. (2016), A Search for Water in the Atmosphere of HAT-P-26b Using LDSS-3C, The Astrophysical Journal, 817, 141. **-15%**

121. Greene, T. P., **Line,** M. R., Montero, C., Fortney, J. J., Lustig-Yaeger, J., & Luther, K. (2016), Characterizing Transiting Exoplanet Atmospheres with JWST, The Astrophysical Journal, 817, 17.**-2nd authors**

2015 (6, 1 1st author, 1 2nd author, 1 3rd author)—post doc year

122. Morley, C. V., Fortney, J. J., Marley, M. S., Zahnle, K., **Line,** M., Kempton, E., Lewis, N., & Cahoy, K. (2015), Thermal Emission and Reflected Light Spectra of Super Earths with Flat Transmission Spectra, The Astrophysical Journal, 815, 110. **-5%**

123. Kreidberg, L., **Line,** M. R., Bean, J. L., Stevenson, K. B., Désert, J.-M., Madhusudhan, N., Fortney, J. J., Barstow, J. K., Henry, G. W., Williamson, M. H., & Showman, A. P. (2015), A Detection of Water in the Transmission Spectrum of the Hot Jupiter WASP-12b and Implications for Its Atmospheric Composition, The Astrophysical Journal, 814, 66.**-2nd author**

124. Macintosh, B., Graham, J. R., Barman, T., De Rosa, R. J., Konopacky, Q., Marley, M. S., Marois, C., Nielsen, E. L., Pueyo, L., Rajan, A., Rameau, J., Saumon, D., Wang, J. J., Patience, J., Ammons, M., Arriaga, P., Artigau, E., Beckwith, S., Brewster, J., Bruzzone, S., Bulger, J., Burningham, B., Burrows, A. S., Chen, C., Chiang, E., Chilcote, J. K., Dawson, R. I., Dong, R., Doyon, R., Draper, Z. H., Duchêne, G., Esposito, T. M., Fabrycky, D., Fitzgerald, M. P., Follette, K. B., Fortney, J. J., Gerard, B., Goodsell, S., Greenbaum, A. Z., Hibon, P., Hinkley, S., Cotten, T. H., Hung, L.-W., Ingraham, P., Johnson-Groh, M., Kalas, P., Lafreniere, D., Larkin, J. E., Lee, J., **Line,** M., Long, D., Maire, J., Marchis, F., Matthews, B. C., Max, C. E., Metchev, S., Millar-Blanchaer, M. A., Mittal, T., Morley, C. V., Morzinski, K. M., Murray-Clay, R., Oppenheimer, R., Palmer, D. W., Patel, R., Perrin, M. D., Poyneer, L. A., Rafikov, R. R., Rantakyrö, F. T., Rice, E. L., Rojo, P., Rudy, A. R., Ruffio, J.-B., Ruiz, M. T., Sadakuni, N., Saddlemyer, L., Salama, M., Savransky, D., Schneider, A. C., Sivaramakrishnan, A., Song, I., Soummer, R., Thomas, S., Vasisht, G., Wallace, J. K., Ward-Duong, K., Wiktorowicz, S. J., Wolff, S. G., & Zuckerman, B.

(2015), Discovery and spectroscopy of the young jovian planet 51 Eri b with the Gemini Planet Imager, Science, 350, 64. **-5%**

125. Kammer, J. A., Knutson, H. A., **Line,** M. R., Fortney, J. J., Deming, D., Burrows, A., Cowan, N. B., Triaud, A. H. M. J., Agol, E., Desert, J.-M., Fulton, B. J., Howard, A. W., Laughlin, G. P., Lewis, N. K., Morley, C. V., Moses, J. I., Showman, A. P., & Todorov, K. O. (2015), Spitzer Secondary Eclipse Observations of Five Cool Gas Giant Planets and Empirical Trends in Cool Planet Emission Spectra, The Astrophysical Journal, 810, 118.**-3rd author**

126. **Line,** M. R., Teske, J., Burningham, B., Fortney, J. J., & Marley, M. S. (2015), Uniform Atmospheric Retrieval Analysis of Ultracool Dwarfs. I. Characterizing Benchmarks, Gl 570D and HD 3651B, The Astrophysical Journal, 807, 183.**-1st author**

127. Kataria, T., Showman, A. P., Fortney, J. J., Stevenson, K. B., **Line,** M. R., Kreidberg, L., Bean, J. L., & Désert, J.-M. (2015), The Atmospheric Circulation of the Hot Jupiter WASP-43b: Comparing Three-dimensional Models to Spectrophotometric Data, The Astrophysical Journal, 801, 86. **-5%**

2014 (8, 2 1st author, 1 2nd author, 1 3rd author)—post doc year

128. Stevenson, K. B., Désert, J.-M., **Line,** M. R., Bean, J. L., Fortney, J. J., Showman, A. P., Kataria, T., Kreidberg, L., McCullough, P. R., Henry, G. W., Charbonneau, D., Burrows, A., Seager, S., Madhusudhan, N., Williamson, M. H., & Homeier, D. (2014), Thermal structure of an exoplanet atmosphere from phase-resolved emission spectroscopy, Science, 346, 838.**-3rd author**

129. Orton, G. S., Fletcher, L. N., Moses, J. I., Mainzer, A. K., Hines, D., Hammel, H. B., Martin-Torres, F. J., Burgdorf, M., Merlet, C., & **Line,** M. R. (2014), Mid-infrared spectroscopy of Uranus from the Spitzer Infrared Spectrometer: 1. Determination of the mean temperature structure of the upper troposphere and stratosphere, Icarus, 243, 494. **-5%**

130. Orton, G. S., Moses, J. I., Fletcher, L. N., Mainzer, A. K., Hines, D., Hammel, H. B., Martin-Torres, J., Burgdorf, M., Merlet, C., & **Line,** M. R. (2014), Mid-infrared spectroscopy of Uranus from the Spitzer infrared spectrometer: 2. Determination of the mean composition of the upper troposphere and stratosphere, Icarus, 243, 471. **-5%**

131. Diamond-Lowe, H., Stevenson, K. B., Bean, J. L., **Line,** M. R., & Fortney, J. J. (2014), New Analysis Indicates No Thermal Inversion in the Atmosphere of HD 209458b, The Astrophysical Journal, 796, 66. **-25%**

132. Kreidberg, L., Bean, J. L., Désert, J.-M., **Line,** M. R., Fortney, J. J., Madhusudhan, N., Stevenson, K. B., Showman, A. P., Charbonneau, D., McCullough, P. R., Seager, S., Burrows, A., Henry, G. W., Williamson, M., Kataria, T., & Homeier, D. (2014), A Precise Water Abundance Measurement for the Hot Jupiter WASP-43b, The Astrophysical Journal, 793, L27. **-25%**

133. **Line,** M. R., Fortney, J. J., Marley, M. S., & Sorahana, S. (2014), A Data-driven Approach for Retrieving Temperatures and Abundances in Brown Dwarf Atmospheres, The Astrophysical Journal, 793, 33.**-1st author**

134. Swain, M. R., **Line,** M. R., & Deroo, P. (2014), On the Detection of Molecules in the Atmosphere of HD 189733b Using HST NICMOS Transmission Spectroscopy, The Astrophysical Journal, 784, 133.**-2nd author**

135. **Line,** M. R., Knutson, H., Wolf, A. S., & Yung, Y. L. (2014), A Systematic Retrieval Analysis of Secondary Eclipse Spectra. II. A Uniform Analysis of Nine Planets and their C to O Ratios, The Astrophysical Journal, 783, 70.**-1st author**

2013 (6, 3 1st author, 1 2nd author)—PhD year/graduate school

136. **Line,** M. R., & Yung, Y. L. (2013), A Systematic Retrieval Analysis of Secondary Eclipse Spectra. III. Diagnosing Chemical Disequilibrium in Planetary Atmospheres, The Astrophysical Journal, 779, 3.**-1st author**

137. **Line,** M. R., Knutson, H., Deming, D., Wilkins, A., & Desert, J.-M. (2013), A Near-infrared Transmission Spectrum for the Warm Saturn HAT-P-12b, The Astrophysical Journal, 778, 183.**-1st author**

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