

# IAN WONG

## PLANETARY SCIENCE RESEARCHER

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## EDUCATION

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<b>PhD</b>	<b>Caltech</b> Planetary Science Thesis: “Probing the Trojan-Hilda-KBO Connection: An Empirical Test of Dynamical Instability Models of Solar System Evolution” Adviser: Michael E. Brown	2013–2018
<b>B.A.</b>	<b>Princeton University</b> Independent concentration in Linguistics Graduated <i>magna cum laude</i> (GPA: 3.98/4.00)	2008–2012

## RESEARCH POSITIONS

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<b>Staff Scientist</b> Space Telescope Science Institute	April 2024–present
<b>Research Assistant Professor</b> Department of Physics, American University	August 2023–April 2024
<b>Postdoctoral Researcher</b> NASA Goddard Space Flight Center	August 2023–April 2024
<b>NASA Postdoctoral Program Fellow</b> NASA Goddard Space Flight Center	August 2021–July 2023
<b>51 Pegasi b Postdoctoral Fellow</b> Department of Earth, Atmospheric and Planetary Sciences, MIT	June 2018–July 2021
<b>Graduate Research Assistant</b> Division of Geological and Planetary Sciences, Caltech	June 2013–May 2018

## OTHER PROFESSIONAL ACTIVITIES

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<b>Outreach mentor</b> , NASA <i>Lucy</i> mission Here 2 Observe program	2023–present
<b>Member</b> , MAST Users Group	2023–present
<b>Affiliate member</b> , JWST Transiting Exoplanet Community Early Release Science Team	2022–2023
<b>Member</b> , JWST Solar System GTO team	2021–present
<b>Reviewer/panelist</b> on various NSF, NOIRLab, NASA, HST, JWST proposal cycles	2021–present

<b>Affiliate member</b> , NASA <i>Lucy</i> mission science team	2018–present
<b>Referee</b> , AJ, PSJ, A&A, Icarus, MNRAS	2016–present
<b>Research adviser</b>	
• Shiqi Chen: <i>Undergraduate Research Opportunities Program</i> , MIT	2020–2021
• Prajwal Niraula: <i>Graduate Generals Project</i> , MIT	2019–2021
• Aakash Mishra: <i>Research in Science &amp; Engineering</i> , Boston University	Summer 2018
• Angelica Zhou: <i>Summer Undergraduate Research Fellowship</i> , Caltech	Summer 2017
• Yixiao Yan: <i>Summer Undergraduate Research Fellowship</i> , Caltech	Summer 2015
<b>Member of Scientific Organizing Committee</b> , 52 <sup>nd</sup> Annual DPS Conference	2020
<b>Teaching assistant</b> , Caltech	2014–2018
• Ge 103: Introduction to the Solar System	
• Ge 108: Applications of Physics to the Earth Sciences	
<b>Work intern</b> , Advanced Propulsion Laboratory, NASA Marshall Space Flight Center	Fall 2012
<b>Research intern</b>	
- <i>Undergraduate Student Research Program</i> , Princeton University	Summer 2012
- <i>Program in Plasma Science and Technology</i> , PPPL	Summers 2010 & 2011

## FUNDING PROPOSALS

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JWST Cycle 3 GO Program #5940 (PI) – <i>pending approval</i>	2024–2026
\$48,917 [0.10 FTE]	
JWST Cycle 2 DD Program #4621 (PI)	2024–2026
\$53,194 [0.075 FTE]	
JWST Cycle 2 GO Program #3399 (co-I)	2023–2024
\$57,494 [0.32 FTE]	
HST Cycle 25 GO-15249 (PI)	2018–2021
\$108,107.80	

## PUBLICATIONS

Full references are provided in my [NASA ADS Library](#).

h-index = 28

### First- and second-author papers (32)

1. Wong I, Holler B J, Hines D C, et al. “A JWST view of Triton: Complex surface ice chemistry, constraints on  $^{13}\text{C}/^{12}\text{C}$  and  $^{18}\text{O}/^{16}\text{O}$  ratios, and atmospheric CO fluorescence”. PSJ, in prep (2024).
2. Wong I, Protopapa S, Villanueva G, et al. “Methane and carbon dioxide in the coma of a distantly active Centaur”. Nature, in prep (2024).
3. Wong I, Cook, J C, Stansberry J A, et al. “JWST/NIRSpec spectra of Salacia-Actaea and 2002 MS4 reveal crystalline H<sub>2</sub>O and CO<sub>2</sub> ices”. PSJ, in prep (2024).
4. Wong I, Brown M E, Emery J P, et al. “JWST near-infrared spectroscopy of the Lucy Jupiter Trojan flyby targets: Evidence for OH absorption, aliphatic organics, and CO<sub>2</sub>”. PSJ 5 87 (2024).
5. Emery J P, Wong I, Stansberry J A, et al. “A tale of 3 dwarf planets: Compositions of Sedna, Gonggong, and Quaoar from JWST spectroscopy”. Icarus, 414 116017 (2024).
6. Grundy W M, Wong I, Glein C R, et al. “Measurement of D/H and  $^{13}\text{C}/^{12}\text{C}$  ratios in methane ice on Eris and Makemake: Evidence for internal activity”. Icarus, 401 115923 (2024).
7. Wong I & Brown M E. “Photometric validation and characterization of the Ennomos collisional family in the Jupiter Trojans”. AJ 165 15 (2023).
8. Wong I, Chachan Y, Knutson H A, et al. “The Hubble PanCET program: A featureless transmission spectrum for WASP-29b and evidence of enhanced atmospheric metallicity on WASP-80b”. AJ 164 30 (2022).

9. Wong I, Shporer A, Vissapragada S, et al. “TESS revisits WASP-12: Updated orbital decay rate and constraints on atmospheric variability”. *AJ* 163 175 (2022).
10. Wong I, Shporer A, Zhou G, et al. “TOI-2109: An ultrahot gas giant on a 16 hr orbit”. *AJ* 162 256 (2021).
11. Wong I, Kitzmann D, Shporer A, et al. “Visible-light phase curves from the second year of the TESS primary mission”. *AJ* 162 127 (2021).
12. Beatty T G, Wong I, Fetherolf T, et al. “The TESS phase curve of KELT-1b suggests a high dayside albedo”. *AJ* 160 211 (2020).
13. Wong I, Shporer A, Daylan T, et al. “Systematic phase curve study of known transiting exoplanet systems from Year 1 of the TESS Mission”. *AJ* 160 155 (2020).
14. Wong I, Shporer A, Kitzmann D, et al. “Exploring the atmospheric dynamics of the extreme ultra-hot Jupiter KELT-9b using TESS photometry”. *AJ* 160 88 (2020).
15. Wong I, Benneke B, Gao P, et al. “Optical to near-infrared transmission spectrum of the warm sub-Saturn HAT-P-12b”. *ApJ* 159 234 (2020).
16. Wong I, Benneke B, Shporer A, et al. “*TESS* phase curve of the ultra-hot Jupiter WASP-19b”. *AJ* 159 104 (2020).
17. Wong I, Shporer A, Becker J C, et al. “The full *Kepler* phase curve of the eclipsing hot white dwarf binary system KOI-964” *ApJ* 159 29 (2020).
18. Benneke B, Wong I, Piaulet C, et al. “Water vapor and clouds on the habitable-zone sub-Neptune exoplanet K2-18b”. *ApJL* 887 L14 (2019).
19. Wong I, Mishra A, & Brown M E “Photometry of active Centaurs: Colors of dormant active Centaur nuclei” *AJ* 157 225 (2019).
20. Wong I & Brown M E. “Multiband observations of a Patroclus-Menoetius mutual event: Constraints on surface inhomogeneity”. *AJ* 157 203 (2019).
21. Shporer A, Wong I, Huang C X, et al. “*TESS* full orbital phase curve of the WASP-18b system” *AJ* 157 178 (2019).
22. Wong I, Brown M E, Blacksberg J, Ehlmann B L, & Mahjoub A. “*Hubble* ultraviolet spectroscopy of Jupiter Trojans”. *AJ* 157 161 (2019).
23. Wong I, Brown M E, & Emery J P. “0.7-2.5  $\mu\text{m}$  spectra of Hilda asteroids”. *AJ* 154 104 (2017).
24. Wong I & Brown M E. “The bimodal color distribution of small Kuiper Belt objects”. *AJ* 153 145 (2017).
25. Wong I & Brown M E. “The color-magnitude distribution of Hilda asteroids: Comparison with Jupiter Trojans”. *AJ* 153 69 (2017).
26. Wong I & Brown M E. “A hypothesis for the color bimodality of Jupiter Trojans”. *AJ* 152 90 (2016).
27. Wong I, Knutson H A, Kataria T, et al. “3.6 and 4.5  $\mu\text{m}$  *Spitzer* phase curves of the highly irradiated hot Jupiters WASP-19b and HAT-P-7b”. *ApJ* 823 122 (2016).
28. Wong I & Brown M E. “The color-magnitude distribution of small Jupiter Trojans”. *AJ* 150 174 (2015).
29. Wong I, Knutson H A, Lewis, N K, et al. “3.6 and 4.5  $\mu\text{m}$  phase curves of the highly irradiated eccentric hot Jupiter WASP-14b”. *ApJ* 811 122 (2015).
30. Wong I, Brown M E, & Emery J P. “The differing magnitude distributions of the two Jupiter Trojan color populations”. *AJ* 148 112 (2014).
31. Wong I, Knutson H A, Cowan N B, et al. “Constraints on the atmospheric circulation and variability of the eccentric hot Jupiter XO-3b”. *ApJ* 794 134 (2014).
32. Wong I, Grigoriu A, Roslund J, Ho T S, & Rabitz H. “Laser-driven direct quantum control of nuclear excitations”. *Phys. Rev. A* 84 053429 (2011).

### Other co-author papers (30)

1. Licandro J, Pinilla-Alonso N, Holler B J, et al. “Surface composition of Centaurs: Insights into the thermal evolution of TNOs”. *Nature Astronomy*, in revision (2024).

2. Pinilla-Alonso N, Brunetto R, de Prá M N, et al. “A DiSCo-TNOs portrait of the primordial Solar System”. *Nature Astronomy*, in revision (2024).
3. Pinilla-Alonso N, Licandro J, Brunetto R, et al. “Spectroscopic insights into the complex nature of active Centaur (2060) Chiron”. *A&A Letters*, accepted (2024).
4. Protopapa S, Raut U, Wong I, et al. “Discovery of carbon dioxide and hydrogen peroxide on Charon’s stratified surface with JWST”. *Nature Communications*, accepted (2024).
5. Glein C R, Grundy W M, Lunine J I, et al. “Moderate D/H ratios in methane ice on Eris and Makemake as evidence of hydrothermal or metamorphic processes in their interiors: Geochemical analysis”. *Icarus* 412 115999 (2024).
6. Rivkin A S, Thomas C A, Wong I, et al. “Near to mid-Infrared spectroscopy of (65803) Didymos as observed by JWST: Characterization observations supporting the Double Asteroid Redirection Test”. *PSJ* 4 214 (2023).
7. Coulombe J-P, Benneke B, Challener R, et al. “A broadband thermal emission spectrum of the ultra-hot Jupiter WASP-18b”. *Nature* 620 292 (2023).
8. Piaulet C, Benneke B, Almenara J M, et al. “Evidence for the volatile-rich composition of a 1.5-Earth-radius planet”. *Nature Astronomy* 7 206 (2022).
9. Marschall R, Nesvorný D, Deienno R, et al. “Implications for the collisional strength of Jupiter Trojans from the Eurybates family”. *AJ* 164 167 (2022).
10. Niraula P, Shporer A, Wong I, & de Wit J. “Revisiting Kepler transiting systems: Unvetting planets and constraining relationships among harmonics in phase curves”. *AJ* 163 172 (2022).
11. Addison B C, Knudstrup E, Wong I, et al. “TOI-1431b/MASCARA-5b: A highly irradiated ultra-hot Jupiter orbiting one of the hottest & brightest known exoplanet host stars”. *AJ* 162 292 (2021).
12. Cabot S H C, Bello-Arufe A, Mendonça J M, et al. “TOI-1518b: A misaligned ultra-hot Jupiter with iron in its atmosphere”. *AJ* 162 218 (2021).
13. Levison H F, Olkin C B, Noll, K S, et al. “Lucy Mission to the Trojan asteroids: Science goals”. *PSJ* 2 171 (2021).
14. Guerrero N M, Seager S, Huang C X, et al. “The TESS Objects of Interest catalog from the TESS Prime Mission”. *ApJS* 254 39 (2021).
15. Daylan T, Günther M N, Mikal-Evans T, et al. “TESS observations of the WASP-121b phase curve”. *AJ* 161 131 (2021).
16. Crossfield I J M, Dragomir D, Cowan N B, et al. “Phase curves of hot Neptune LTT 9779b suggest a high-metallicity atmosphere with nonzero albedo”. *ApJL* 903 L7 (2020).
17. Dragomir D, Crossfield I J M, Benneke B, et al. “Spitzer reveals evidence of molecular absorption in the atmosphere of the hot Neptune LT9779b”. *ApJL* 903 L6 (2020).
18. Chachan Y, Jontof-Hutter D, Knutson H A, et al. “A featureless infrared transmission spectrum for the super-puff planet Kepler-79d”. *AJ* 160 201 (2020).
19. Teske J, Días M R, Luque R, et al. “TESS reveals a short-period sub-Neptune sibling (HD 86226c) to a known long-period giant planet”. *AJ* 160 96 (2020).
20. Huang C X, Quinn S N, Vanderburg A, et al. “TESS spots a hot Jupiter with an inner transiting Neptune”. *ApJL* 892 L7 (2020).
21. Mansfield M, Bean J L, Stevenson K B, et al. “Evidence for H<sub>2</sub> dissociation and recombination heat transport in the atmosphere of KELT-9b”. *ApJL* 888 L15 (2020).
22. Chachan Y, Knutson H A, Gao P, et al. “A *Hubble* PanCET study of HAT-P-11b: A cloudy Neptune with a low atmospheric metallicity” *AJ* 158 244 (2019).
23. Zhou G, Huang C X, Bakos G Á, et al. “Two new HATNet hot Jupiters around A stars, and the first glimpse at the occurrence rate of hot Jupiters from *TESS*” *AJ* 158 141 (2019).
24. Benneke B, Knutson H A, Lothringer J, et al. “A Sub-Neptune atmosphere with solar water abundance, strong methane depletion, and Mie-scattering aerosols”. *Nature Astronomy* 3 813 (2019).
25. Rodriguez J E, Quinn S N, Huang C X, et al. “An eccentric massive Jupiter orbiting a sub-giant on a 9.5 day period discovered in the *Transiting Exoplanet Survey Satellite* Full Frame Images”. *ApJ* 157 191 (2019).

26. Poston M J, Mahjoub A, Ehlmann B L, et al. “Visible near-infrared spectral evolution of irradiated mixed ices and application to Kuiper Belt objects and Jupiter Trojans”. *ApJ* 856 124 (2018).
27. Ingalls J G, Krick J E, Carey S J, et al. “Repeatability and accuracy of exoplanet eclipse depths measured with post-cryogenic *Spitzer*”. *AJ* 152 44 (2016).
28. Krick J E, Ingalls J, Carey S, et al. “*Spitzer* IRAC sparsely sampled phase curve of the exoplanet WASP-14b”. *ApJ* 824 27 (2016).
29. Beichman, C, Livingston, J, Werner W, et al. “*Spitzer* observations of exoplanets discovered with the *Kepler* K2 mission”. *ApJ* 822 39 (2016).
30. Buhler, P B, Knutson H A, Batygin, K, et al. “Dynamical constraints on the core mass of hot Jupiter HAT-P-13b”. *ApJ* 821 26 (2016).

## PRESENTATIONS

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1. “JWST observations of Chiron: A unique active Centaur beyond 18 AU”, *The Transneptunian Solar System, Taipei, Taiwan, 2024*.
2. “Exploring the diversity of small bodies in the Solar System with JWST: Insights into planetesimal evolution past and present”, *Planetary Astro Lunch Seminar, University of Maryland, 2024*. [\[invited talk\]](#)
3. “The complex surface and atmospheric properties of Triton revealed by JWST/NIRSpec”, *AGU 2023, San Francisco, California, 2023*.
4. “Studying small bodies with JWST: New insights into solar system history near and far”, *EPL Seminar, Carnegie Institution for Science, Washington D.C., 2023*. [\[invited talk\]](#)
5. “The complex surface and atmospheric properties of Triton revealed by JWST/NIRSpec”, *55<sup>th</sup> DPS Meeting, San Antonio, Texas, 2023*.
6. “Studying small bodies with JWST: New insights into solar system history near and far”, *First Year of JWST Science Conference, Baltimore, Maryland, 2023*. [\[invited talk\]](#)
7. “Exploring the compositional diversity of large Kuiper belt objects with JWST”, *Asteroids, Comets, and Meteors, Flagstaff, Arizona, 2023*.
8. “The complex compositional landscape of the outer protoplanetary disk revealed through JWST GTO observations of large Kuiper belt objects”, *STScI Spring Symposium, Baltimore, Maryland, 2023*.
9. “Transiting Exoplanet Science with JWST”, *AAS Meeting #241, Seattle, Washington, 2023*. [\[invited talk\]](#)
10. “Kuiper Belt Science with JWST”, *JWST First Science Results Conference, Baltimore, Maryland, 2022*.
11. “TESS in the Extended Mission: A powerful tool for time-domain exoplanet science”, *TESS Science Team Meeting #29, Cambridge, Massachusetts, 2022*.
12. “Observational confirmation and characterization of the Ennomos collisional family”, *54<sup>th</sup> DPS Meeting, London, Canada, 2022*.
13. “TOI-2109b: The shortest period gas giant yet discovered”, *CHAMPS Early Career Highlight Seminar, online conference, 2022*.
14. “Observational confirmation and characterization of the Ennomos collisional family”, *53<sup>rd</sup> DPS Meeting, online conference, 2021*.
15. “TOI-2109b: The shortest period gas giant yet discovered”, *TESS Science Conference 2, online conference, 2021*.
16. “Ultra-hot Jupiters in the era of TESS”, *JPL Exoplanet Journal Club, 2021*. [\[invited talk\]](#)
17. “Exoplanet phase curves from TESS: Results from the Primary Mission and future prospects”, *AAS Meeting #237, online conference, 2021*.
18. “Exoplanet phase curves from TESS: Results from the Primary Mission and future prospects”, *52<sup>nd</sup> DPS Meeting, online conference, 2020*.
19. “Icy bodies in the middle and outer Solar System: Tracers of planetary migration”, *Star and Planet Formation Colloquium, University of Michigan, 2020*. [\[invited talk\]](#)

20. “Systematic phase curve study of known transiting systems from the TESS Primary Mission”, *Exoplanets III, online conference, 2020*.
21. “Phase curve studies of known transiting systems with TESS”, *TESS Science Conference 1, Cambridge, Massachusetts, 2019*.
22. “UV spectroscopy of Jupiter Trojans”, *50<sup>th</sup> DPS Meeting, Knoxville, Tennessee, 2018*.
23. “The Trojan-Hilda-KBO connection: An observational test of solar system evolution models”, *The Transneptunian Solar System, Coimbra, Portugal, 2018*. [invited talk]
24. “The Trojan-Hilda-KBO connection: An observational test of solar system evolution models”, *AGU Fall Meeting, New Orleans, Louisiana, 2017*.
25. “The Trojan-Hilda-KBO connection: An observational test of solar system evolution models”, *49<sup>th</sup> DPS Meeting, Provo, Utah, 2017*.
26. “Near-infrared transmission spectra of three cool giant gas exoplanets”, *ExSoCal, Pasadena, California, 2016*.
27. “Multiband Spitzer phase curves of three highly-irradiated hot Jupiters”, *AAS Meeting #227, Kissimmee, Florida, 2016*. [invited talk]
28. “The color-magnitude distribution of small Kuiper Belt objects”, *47<sup>th</sup> DPS Meeting, National Harbor, Maryland, 2015*.
29. “Multiband Spitzer phase curves of three highly-irradiated hot Jupiters”, *11<sup>th</sup> Rencontres du Vietnam, Planetary Systems: A Synergistic View, Quy Nhon, Vietnam, 2015*.
30. “Sub-populations among the Jupiter Trojans”, *Asteroids, Comets, and Meteors, Helsinki, Finland, 2014*.

## PUBLIC TALKS

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1. “A revolution in solar system astronomy with JWST”, *Cosmic Explorations Speaker Series, Lunar and Planetary Institute, 2023*.
2. “Opening a new chapter of exoplanet science with JWST”, *Astronomy Club, Penn State Berks, 2022*.
3. “Opening a new chapter of exoplanet science with JWST”, *Edelman Planetarium, Rowan University, 2021*.
4. “Opening a new chapter of exoplanet science with JWST”, *Brown Planetarium, Ball State University, 2021*.

## CONFERENCE POSTERS

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1. “A detailed exploration of the complex surface chemistry and atmosphere of Triton using JWST”, *The Transneptunian Solar System, Taipei, Taiwan, 2024*.
2. “JWST observations of the *Lucy* flyby targets: New spectroscopic constraints on Jupiter Trojan composition”, *Asteroids, Comets, and Meteors, Flagstaff, Arizona, 2023*.
3. “TOI 618: A benchmark multi-planet system discovered using TESS photometry and long-term RV monitoring”, *AAS Meeting #241, Seattle, Washington, 2023*.
4. “TESS in the Extended Mission: A powerful tool for time-domain exoplanet science”, *Exoplanets IV, Las Vegas, Nevada, 2022*.
5. “Exoplanet phase curves from TESS: Results from the Primary Mission and future prospects”, *TESS Science Conference 2, online conference, 2021*.
6. “TESS in the Solar System: Refining asteroid light curves with long-baseline photometry”, *EPSC-DPS Joint Meeting, Geneva, Switzerland, 2019*.
7. “Phase curve studies of known transiting systems with TESS”, *Extreme Solar Systems IV, Reykjavik, Iceland, 2019*.
8. “A comparison of Hildas and Jupiter Trojans using photometry, spectroscopy, and size distributions”, *48<sup>th</sup> DPS Meeting, Pasadena, California, 2016*.



9. “Near-infrared transmission spectra of three cool giant gas exoplanets”, *ExoClimes, Squamish, Canada, 2016*.
10. “The color-magnitude distribution of small Jupiter Trojans”, *46<sup>th</sup> DPS Meeting, Tucson, Arizona, 2014*.

## **OBSERVING EXPERIENCE**

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(PI programs, unless otherwise indicated)

### **James Webb Space Telescope (JWST)**

- Cycle 3 GO Program #5940 (7.5 hours, NIRSpec)  
“The missing link in the Kuiper belt: Reconnaissance spectroscopy of blue binary cold classical KBOs”
- Cycle 2 DD Program #4621 (4.0 hours, NIRSpec)  
“Time-sensitive observations of Chiron: a unique active Centaur beyond 15 AU”

### **Hubble Space Telescope (HST)**

- Cycle 25 GO-15249 (7 orbits, STIS)  
“An observational test of the dynamical instability hypothesis in the Solar System”

### **Gemini South**

- 2024B (1.5 hours, GMOS)  
“Proving surface inhomogeneities on Patroclus-Menoetius through hemispherically-resolved spectroscopy”

### **Magellan Observatory**

- 2019A+2019B+2020A+2021A (2.5 nights, IMACS, LDSS-3)  
“Colors of active Centaurs: A window into KBO formation and composition”
- 2020A+2021A (1 night, IMACS)  
“Probing the purported Ennomos collisional family in the Jupiter Trojans”
- 2019B+2020B (3 nights, PFS)  
“Exploring the desert: Precise radial velocity confirmation of TESS sub-Saturn candidates”

### **Cerro Tololo Inter-American Observatory (CTIO)**

- 2022A+2022B+2023A (30 hours, CHIRON)  
“Radial velocity characterization of the massive outer companions in the TOI-618 and TOI-2488 systems”
- 2021B (10 hours, CHIRON)  
“Long-term RV monitoring of the benchmark multiplanet system TOI-618”
- 2019A+2019B+2020A (80 hours, CHIRON)  
“Exploring the desert: Precise radial velocity confirmation of TESS sub-Saturn candidates”

### **NASA Infrared Telescope Facility (IRTF)**

- 2020B+2021B (4 nights, SpeX)  
“Constraining the composition and origin of Hilda asteroids: Exploring the 3-micron feature”
- 2016A+2016B (7 nights, SpeX)  
“Near-infrared spectra of bright Hilda asteroids: Probing the Hilda-Trojan connection”

### **Palomar 200-inch Hale Telescope**

- 2017A+2017B (4 nights, LFC)  
“Colors and activity of Centaurs”
- 2018A (2 nights, WASP)  
“Photometric observations of mutual events of the Trojan binary Patroclus-Menoetius”

**Co-I programs and other observing experience:**

- 25.5 hours on JWST Cycle 1 (NIRSpec, MIRI); 42.1 hours on JWST Cycle 2 (NIRSpec); 86.2 hours on JWST Cycle 3 (NIRSpec, NIRCам)
- 30 orbits on HST Cycle 31 (WFC3)
- 4 nights at Palomar 200-inch Hale Telescope (LFC),
- 3 nights at Subaru Telescope (SuprimeCam, Hyper SuprimeCam)
- 5 nights at Keck Observatory (NIRSPEC)

**TECHNICAL SKILLS**

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**Programming:** Python (expert), IDL (advanced), MATLAB (intermediate), FORTRAN (intermediate)

**Developer tools:** Git/GitHub, Jira

**Libraries:** NumPy, SciPy, Astropy, Matplotlib, pandas, scikit-learn, emcee, dynesty

**Applications:** LaTeX, Overleaf, Microsoft Office, ArcGIS, LabVIEW

**Laboratory work:** basic machine shop skills, laboratory electronics, lasers



## REFERENCES

---

### Stefanie Milam

Research Scientist  
Astrochemistry Laboratory (Code 691)  
NASA Goddard Space Flight Center  
Greenbelt, MD 20771  
[stefanie.n.milam@nasa.gov](mailto:stefanie.n.milam@nasa.gov)

*Relationship: Most recent postdoc supervisor, JWST Deputy Project Scientist for Planetary Science, and lead coordinator of JWST Solar System GTO programs*

### Michael Brown

Professor of Planetary Astronomy  
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California Institute of Technology  
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*Relationship: PhD thesis adviser and collaborator on solar system small bodies research*

### Heather Knutson

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*Relationship: Graduate research adviser and collaborator on exoplanet atmospheric characterization*

### Avi Shporer

Research Scientist  
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*Relationship: TESS Science Team member and collaborator on exoplanet research*

### Richard Binzel

Professor of Planetary Sciences  
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*Relationship: NASA Lucy Mission Science Team member and former postdoctoral fellowship supervisor*