IAN WONG

51 PEG B POSTDOCTORAL FELLOW
PLANETARY SCIENCE RESEARCHER

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Massachusetts Institute of Technology
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Cambridge, MA 02139

EDUCATION

PhD **Caltech** 2013-2018
Planetary Science
Thesis advisor: Michael E. Brown

B.A. **Princeton University** 2008-2012
Independent concentration (*Linguistics; Major GPA: 4.00*)
Graduated *magna cum laude* (*GPA: 3.98*)

RESEARCH AND WORK EXPERIENCE

***51 Pegasi b* Postdoctoral Fellow**
Department of Earth, Atmospheric, and Planetary Sciences, MIT June 2018-present

Research adviser
- Prajwal Niraula: *Graduate Generals Project*, MIT 2019-2020
- Aakash Mishra: *Research in Science & Engineering*, Boston University Summer 2018
- Angelica Zhou: *Summer Undergraduate Research Fellowship*, Caltech Summer 2017
- Yixiao Yan: *Summer Undergraduate Research Fellowship*, Caltech Summer 2015

Referee, Astronomical Journal, Icarus 2016-present

Graduate research assistant, Caltech 2013-2018

Teaching assistant, Caltech 2014-2018
- Ge 103: Introduction to the Solar System
- Ge 108: Applications of Physics to the Earth Sciences

Work intern, NASA Marshall Space Flight Center Fall 2012
Advanced Propulsion Laboratory

Research intern
Undergraduate Student Research Program, Princeton University Summer 2012
Program in plasma Science and Technology, PPPL Summers 20110 & 2011

PUBLICATIONS

First- and second-author papers (22)

1. Wong I, Benneke B, Gao P, et al. "*HST*+*Spitzer* transmission spectra of two cool exoplanets: WASP-29b and WASP-80b". ApJ in prep (2020).
2. Beatty T G, Wong I, Fetherolf T, et al. "*TESS* phase curve of the transiting brown dwarf system KELT-1". AJ in prep (2020).
3. 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 submitted (2020).
4. Wong I, Shporer A, Morris B M, et al. "Exploring the atmospheric dynamics of the extreme ultra-hot Jupiter KELT-9b using *TESS* photometry". AJ in revision (2020).
5. Wong I, Benneke B, Gao P, et al. "Optical to near-infrared transmission spectrum of the warm sub-Saturn HAT-P-12b". ApJ in revision (2020).
6. Wong I, Benneke B, Shporer A, et al. "*TESS* phase curve of the ultra-hot Jupiter WASP-19b". AJ **159** 104 (2020).
7. 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).
8. 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).
9. Wong I, Mishra A, & Brown M E "Photometry of active Centaurs: Colors of dormant active Centaur nuclei" AJ **157** 225 (2019).
10. Wong I & Brown M E. "Multiband observations of a Patroclus-Meneotius mutual event: Constraints on surface inhomogeneity". AJ **157** 203 (2019).
11. Shporer A, Wong I, Huang C X, et al. "*TESS* full orbital phase curve of the WASP-18b system" AJ **157** 178 (2019).
12. Wong I, Brown M E, Blacksberg J, Ehlmann B L, & Mahjoub A. "*Hubble* ultraviolet spectroscopy of Jupiter Trojans". AJ **157** 161 (2019).
13. Wong I, Brown M E, & Emery J P. "0.7-2.5 μm spectra of Hilda asteroids". AJ **154** 104 (2017).
14. Wong I & Brown M E. "The bimodal color distribution of small Kuiper Belt objects". AJ **153** 145 (2017).
15. Wong I & Brown M E. "The color-magnitude distribution of Hilda asteroids: Comparison with Jupiter Trojans". AJ **153** 69 (2017).
16. Wong I & Brown M E. "A hypothesis for the color bimodality of Jupiter Trojans". AJ **152** 90 (2016).
17. Wong I, Knutson H A, Kataria T, et al. "3.6 and 4.5 μm *Spitzer* phase curves of the highly irradiated hot Jupiters WASP-19b and HAT-P-7b". ApJ **823** 122 (2016).
18. Wong I & Brown M E. "The color-magnitude distribution of small Jupiter Trojans". AJ **150** 174 (2015).
19. Wong I, Knutson H A, Lewis, N K, et al. "3.6 and 4.5 μm phase curves of the highly irradiated eccentric hot Jupiter WASP-14b". ApJ **811** 122 (2015).
20. Wong I, Brown M E, & Emery J P. "The differing magnitude distributions of the two Jupiter Trojan color populations". AJ **148** 112 (2014).
21. 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).

22. 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 (11)

1. Daylan T, Günther M, Mikal-Evans T, et al. "*TESS* observations of the WASP-121b phase curve". AJ in revision (2020).
2. Mansfield M, Bean J L, Stevenson K B, et al. "Evidence for H_2 Dissociation and Recombination Heat Transport in the Atmosphere of KELT-9b". ApJL **888** L15 (2020).
3. 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).
4. 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).
5. 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).
6. 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).
7. 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).
8. 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).
9. Krick J E, Ingalls J, Carey S, et al. "*Spitzer* IRAC sparsely sampled phase curve of the exoplanet WASP-14b". ApJ **824** 27 (2016).
10. Beichman, C, Livingston, J, Werner W, et al. "*Spitzer* observations of exoplanets discovered with the *Kepler* K2 mission". ApJ **822** 39 (2016).
11. 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)

OBSERVING EXPERIENCE

(PI programs, unless otherwise indicated)

Magellan Observatory

2019A+2019B+2020A
"Colors of active Centaurs: A window into KBO formation and composition" (2 nights, IMACS/LDSS-3)

2019B
"Exploring the desert: Precise radial velocity confirmation of TESS sub-Saturn candidates" (2 nights, PFS)

2020A
"Probing the purported Ennomos collisional family in the Jupiter Trojans" (0.5 night, IMACS)

Cerro Tololo Inter-American Observatory (CTIO)

2019A+2019B+2020A
"Exploring the desert: Precise radial velocity confirmation of TESS sub-Saturn candidates" (80 hours, CHIRON)

Hubble Space Telescope (HST)

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

NASA Infrared Telescope Facility (IRTF)

2016A & 2016B
"Near-infrared spectra of bright Hilda asteroids: Probing the Hilda-Trojan connection" (7 nights; SpeX)

Palomar 200-inch Hale Telescope

2017A & 2017B
"Colors and activity of Centaurs"
(4 nights; LFC)

2018A
"Photometric observations of mutual events of the Trojan binary Patroclus-Menoetius"
(2 nights; WASP)

Co-I programs and other observing experience:

4 nights at Palomar 200-inch Hale Telescope (LFC)
3 nights at Subaru Telescope (SuprimeCam, Hyper SuprimeCam)
5 nights at Keck Observatory (NIRSPEC)

CONFERENCE TALKS

1. "Phase curve studies of known transiting systems with TESS", *TESS Science Conference 1, 2019, Cambridge, Massachusetts.*
2. "UV spectroscopy of Jupiter Trojans", *50th DPS Meeting, 2018, Knoxville, Tennessee*.
3. "The Trojan-Hilda-KBO connection: An observational test of solar system evolution models", *The Transneptunian Solar System, 2018, Coimbra, Portugal.* [invited talk]
4. "The Trojan-Hilda-KBO connection: An observational test of solar system evolution models", *AGU Fall Meeting, 2017, New Orleans, Louisiana*.
5. "The Trojan-Hilda-KBO connection: An observational test of solar system evolution models", *49th DPS Meeting, 2017, Provo, Utah*.
6. "Near-infrared transmission spectra of three cool giant gas exoplanets", *ExSoCal 2016, Pasadena, California.*
7. "Multiband *Spitzer* phase curves of three highly-irradiated hot Jupiters", *AAS Meeting #227, 2016, Kissimmee, Florida.* [invited talk]
8. "The color-magnitude distribution of small Kuiper Belt objects", *47th DPS Meeting, 2015, National Harbor, Maryland.*
9. "Multiband *Spitzer* phase curves of three highly-irradiated hot Jupiters", *11th Rencontres du Vietnam, Planetary Systems: A Synergistic View, 2015, Quy Nhon, Vietnam.*
10. "Sub-populations among the Jupiter Trojans", *Asteroids, Comets, and Meteors, 2014, Helsinki, Finland*.

CONFERENCE POSTERS

1. "TESS in the Solar System: Refining asteroid light curves with long-baseline photometry", *EPSC-DPS Joint Meeting, 2019, Geneva, Switzerland.*
2. "Phase curve studies of known transiting systems with TESS"*, Extreme Solar Systems IV, 2019, Reykjavik, Iceland.*
3. "A comparison of Hildas and Jupiter Trojans using photometry, spectroscopy, and size distributions", *48th DPS Meeting, 2016, Pasadena, California.*
4. "Near-infrared transmission spectra of three cool giant gas exoplanets", *ExoClimes 2016, Squamish, Canada.*
5. "The color-magnitude distribution of small Jupiter Trojans", *46th DPS Meeting, 2014, Tucson, Arizona.*

WORKSHOPS

2nd La Serena School for Data Science, 2014, La Serena, Chile.

COMPUTER AND OTHER SKILLS

Programming: Python, IDL, MATLAB, FORTRAN
Applications: GitHub, ArcGIS, Mathematica, Maple, LaTeX, LyX, Microsoft Office, LabVIEW
Laboratory skills: basic machine shop skills, laboratory electronics, lasers

LANGUAGES

English: Native language
Russian: Highly proficient (all aspects)
Mandarin: Fluent (speaking and listening); Proficient (reading and writing)
Japanese: Proficient (reading, writing, and listening); Intermediate (speaking)
Spanish: Proficient (reading); Intermediate (writing, listening, and speaking)