

CV for Dr. Tiffany Kataria

Scientist, Jet Propulsion Laboratory
4800 Oak Grove Drive, Pasadena, CA 91109

office: 626-524-8261
email: tiffany.kataria@jpl.nasa.gov

EDUCATION

Doctor of Philosophy , Planetary Sciences University of Arizona, Tucson, AZ	2014
Bachelor of Science , Astronomy/Planetary Science with Honors, Magna Cum Laude State University of New York at Stony Brook, Stony Brook, NY	2009
Bachelor of Science , Physics, Magna Cum Laude State University of New York at Stony Brook, Stony Brook, NY	2009

RESEARCH AND TEACHING EXPERIENCE

Postdoctoral Research Fellow , University of Exeter, Exeter, UK	2014 – 2016
Graduate Research Assistant , University of Arizona, Tucson, AZ	2009 – 2014
Graduate Teaching Assistant , University of Arizona, Tucson, AZ	2009 – 2010

PUBLICATIONS

- Mikal-Evans, T., D. K. Sing, **T. Kataria** et al. 2020. "Confirmation of water emission in the dayside spectrum of the ultrahot Jupiter WASP-121b." *MNRAS*, 496, 1638.
- Tremblay, L., M. R. Line, K. B. Stevenson, **T. Kataria** et al. 2020. 'The Detectability and Constraints of Biosignature Gases in the Near & Mid-Infrared from Transit Transmission Spectroscopy'. Accepted to *AJ*, arXiv:1912.10939.
- Kilpatrick, B. M., **T. Kataria**, N. K. Lewis, R. T. Zellem, G. Henry et al. 2020. 'Evaluating Climate Variability Of The Canonical Hot Jupiters HD 189733b & HD 209458b Through Multi-epoch Eclipse Observations". *AJ*, 159, 51.
- Chachan, Y., H. A. Knutson, P. Gao, **T. Kataria**, I. Wong et al. 2019. "A Hubble PanCET Study of HAT-P-11b: A Cloudy Neptune with a Low Atmospheric Metallicity". *Accepted to AJ*, arXiv:1910.07523.
- Mikal-Evans, T., D. K. Sing, J. M. Goyal, B. Drummond, A. L. Carter, G. W. Henry, H. R. Wakeford, N. K. Lewis, M. S. Marley, P. Tremblin, N. Nikolov, **T. Kataria** et al. 2019. "An emission spectrum for WASP-121b measured across the 0.8-1.1 μm wavelength range using the Hubble Space Telescope". *MNRAS*, 488, 2222.
- dos Santos, L. A., D. Ehrenreich, V. Bourrier, A. Lecavelier des Etangs, M. López-Morales, D. K. Sing, G. Ballester, L. Ben-Jaffel, L. A. Buchhave, A. García Muñoz, G. W. Henry, **T. Kataria** et al. 2019. "The Hubble PanCET program: an extensive search for metallic ions in the exosphere of GJ 436 b". *A&A*, 629, A47.
- Sing, D. K., P. Lavvas, G. E. Ballester, A. Lecavelier des Etangs, M. S. Marley, N. Nikolov, L. Ben-Jaffel, V. Bourrier, L. A. Buchhave, D. L. Deming, D. Ehrenreich, T. Mikal-Evans, **T. Kataria** et al. 2019, "The Hubble Space Telescope PanCET Program: Exospheric Mg II and Fe II in the Near-ultraviolet Transmission Spectrum of WASP-121b Using Jitter Decorrelation". *AJ*, 158, 91.
- Evans, T. M., D. K. Sing, J. M. Goyal, N. Nikolov, M. S. Marley, K. Zahnle, G. W. Henry, J. K. Barstow, M. K. Alam, J. Sanz-Forcada, **T. Kataria** et al. 2018. "An Optical Transmission Spectrum for the Ultra-hot Jupiter WASP-121b Measured with the Hubble Space Telescope". *AJ*, 156, 283.

- Bourrier, V., A. Lecavelier des Etangs, D. Ehrenreich, J. Sanz-Forcada, R. Allart, G. E. Ballester, L. A. Buchhave, O. Cohen, D. Deming, T. M. Evans, A. García Muñoz, G. W. Henry, **T. Kataria** et al. 2018. "Hubble PanCET: an extended upper atmosphere of neutral hydrogen around the warm Neptune GJ 3470b". *A&A*, 620, A147.
- Battersby, C., L. Armus, E. Bergin, **T. Kataria** et al. 2018. "The Origins Space Telescope". *Nature Astronomy*, 2, 596.
- Tinyanont, S., M. Millar-Blanchaer, R. Nilsson, D. Mawet, H. Knutson, T. Kataria et al. 2019. "WIRC+Pol: low-resolution near-infrared spectropolarimeter". *SPIE*, 107023J, SPIE10702.
- Nikolov, N., D. K. Sing, J. J. Fortney, J. M. Goyal, B. Drummond, and 18 coauthors including **T. Kataria** 2018. "An absolute sodium abundance for a cloud-free 'hot Saturn' exoplanet". *Nature*, 557, 526.
- Nikolov, N., D. K. Sing, J. Goyal, G. W. Henry, H. R. Wakeford, T. M. Evans, M. López-Morales, A. García Muñoz, L. Ben-Jaffel, J. Sanz-Forcada, G. E. Ballester, **T. Kataria** et al. 2018. "Hubble PanCET: an isothermal day-side atmosphere for the bloated gas-giant HAT-P-32Ab". *MNRAS*, 474, 1705.
- Zhang, M., H. K. Knutson, **T. Kataria**, J. C. Schwartz, N. B. Cowan et al 2018. "Phase curves of WASP-33b and HD 149026b and a New Correlation Between Phase Curve Offset and Irradiation Temperature". *AJ*, 155, 83.
- Lora, J. M., **T. Kataria**, P. Gao 2018. "Atmospheric circulation, chemistry, and infrared spectra of Titan-like exoplanets around different stellar types". *ApJ*, 853, 58.
- Wakeford, H. R., D. K. Sing, D. Deming, N. K. Lewis, J. Goyal, T. J. Wilson, J. Barstow, **T. Kataria** et al. 2018. "The Complete Transmission Spectrum of WASP-39b with a Precise Water Constraint". *AJ*, 155, 29.
- Chapman, J. W., R. T. Zellem, M. R. Line, G. Bryden, K. Willacy, A. R. Iyer, G. Vasisht, J. Bean, N. B. Cowan, J. J. Fortney, C. A. Griffith, **T. Kataria**, E. M.-R. Kempton, L. Kreidberg, J. I. Moses, K. B. Stevenson, M. R. Swain 2017. "Quantifying the Impact of Spectral Coverage on the Retrieval of Molecular Abundances from Exoplanet Transmission Spectra". *PASP*, 129, 104402.
- Bell, T. J., N. Nikolov, N. B. Cowan, J. K. Barstow, T. S. Barman, I. J. M. Crossfield, N. P. Gibson, T. M. Evans, D. K. Sing, H. A. Knutson, **T. Kataria** et al 2017. "The Very Low Albedo of WASP-12b from Spectral Eclipse Observations with Hubble". *ApJL*, 847, L2.
- Yee, J.C. and 45+ authors, 2017. "The Science Case for an Extended Spitzer Mission". arXiv:1710.04194
- Evans, T. M., D. K. Sing, **T. Kataria**, J. Goyal, H. R. Wakeford, D. Deming, M. S. Marley et al 2017. "An ultrahot gas-giant exoplanet with a stratosphere". *Nature*, 548, 58.
- Lewis, N. K., V. Parmentier, **T. Kataria**, J. de Wit, A. P. Showman, J. J. Fortney, M. S. Marley 2017. "Atmospheric Circulation and Cloud Evolution on the Highly Eccentric Extrasolar Planet HD 80606b". *ApJ*, submitted. arXiv:1706.00466.
- Sanghavi, S., M. Millar-Blanchaer, A. Shporer, A. Riedel, S. Tinyantont, R. Nilsson, **T. Kataria**, D. Mawet 2017. "Photopolarimetric characteristics of brown dwarfs bearing uniform cloud decks". *ApJ*, submitted, arXiv:1705.05041.
- Wakeford, H R., D. K. Sing, **T. Kataria**, D. Deming, N. Nikolov, E. D. Lopez, P. Tremblin, D. S. Amundsen, N. K. Lewis, A. Mandell, J. J. Fortney, H. Knutson, B. Benneke, T. M. Evans 2017. "HAT-P-26b: A Neptune-mass exoplanet with a well-constrained heavy element abundance". *Science*, 356, 628-631.
- Gibson, N. P., N. Nikolov, D. K. Sing, J. K. Barstow, T. M. Evans, **T. Kataria**, P. A. Wilson 2017. "VLT/FORS2 comparative transmission spectroscopy II: Confirmation of a cloud deck and Rayleigh scattering in WASP-31b, but no potassium?". *MNRAS*, 467, 4591.

- Wakeford, H. R., K. B. Stevenson, N. K. Lewis, D. K. Sing, M. López-Morales, M. Marley, **T. Kataria**, A. Mandell et al. 2017. "HST PanCET program: A Cloudy Atmosphere for the Promising JWST Target WASP-101b". *ApJL*, 835, L12.
- Stevenson, K. B., M. R. Line, J. L. Bean, J.-M. Désert, J. J. Fortney, A. P. Showman, **T. Kataria** et al. 2017. "Spitzer Phase Curve Constraints for WASP-43b at 3.6 and 4.5 microns". *ApJ*, 153, 68.
- Wakeford, H. R., C. Visscher, N. K. Lewis, **T. Kataria**, M. S. Marley, J. J. Fortney, A. M. Mandell 2017. "High temperature condensate clouds in super-hot Jupiter atmospheres". *MNRAS*, 464, 4247.
- Kilpatrick, B. M., N. K. Lewis, **T. Kataria**, D. Deming, J. G. Ingalls, J. E. Krick, G. S. Tucker 2017. "Spitzer Secondary Eclipse Depths with Multiple Intrapixel Sensitivity Correction Methods Observations of WASP-13b, WASP-15b, WASP-16b, WASP-62b, and HAT-P-22b". *ApJ*, 153, 22.
- Nikolov, N., D. K. Sing, N. P. Gibson, J. J. Fortney, T. M. Evans, J. K. Barstow, **T. Kataria**, P. A. Wilson 2016. "VLT FORS2 comparative transmission spectroscopy: Detection of Na in the atmosphere of WASP-39b from the ground". *ApJ*, 832, 191.
- Stevenson, K. B., N. K. Lewis, J. L. Bean, C. Beichman, J. Fraine, B. M. Kilpatrick, ... , **T. Kataria** et al. 2016. "Transiting Exoplanet Studies and Community Targets for JWST's Early Release Science Program". *PASP*, 128, 094401.
- Fischer, P. D., H. A. Knutson, D. K. Sing, G. W. Henry, M. W. Williamson, J. J. Fortney, A. S. Burrows, **T. Kataria**, N. Nikolov, A. P. Showman, G. E. Ballester, J.-M. Désert et al. 2016. "HST Hot-Jupiter Transmission Spectral Survey: Clear Skies for Cool Saturn WASP-39b". *ApJ*, 827, 19.
- Evans, T. M., D. K. Sing, H.R. Wakeford, N. Nikolov, G. E. Ballester, B. Drummond, **T. Kataria**, N. P. Gibson, D. S. Amundsen, J. Spake 2016. "Detection of H₂O and evidence for TiO/VO in an ultra hot exoplanet atmosphere". *ApJL*, 822, L4.
- Demory, B.-O., M. Gillon, J. de Wit, N. Madhusudan, E. Bolmont, K. Heng, **T. Kataria** et al. 2016. "A map of the large day-night temperature gradient of a super-Earth exoplanet". *Nature*, 532, 207.
- Kataria, T.**, D. K. Sing, N. K. Lewis, C. Visscher, A. P. Showman, J. J. Fortney, M. S. Marley 2016. "The Atmospheric Circulation of a Nine-Hot Jupiter Sample: Probing Circulation and Chemistry Over a Wide Phase Space". *ApJ*, 821, 9.
- Wong, I., H. A. Knutson, **T. Kataria**, N. K. Lewis, A. S. Burrows, J. J. Fortney, J. Schwartz, A. Shporer, E. Agol, N. B. Cowan, D. Deming, J.-M. Désert, et al. 2016. "3.6 and 4.5 μm Phase Curves of Highly-Irradiated Hot Jupiters WASP-19b and HAT-P-7b". *ApJ*, 823, 122.
- Sing, D. K., J. J. Fortney, N. Nikolov, H. R. Wakeford, **T. Kataria**, T. M. Evans, S. Aigrain, G. E. Ballester, A. S. Burrows, D. Deming, J.-M. Désert, N. P. Gibson et al. 2016. "A continuum from clear to cloudy hot-Jupiter exoplanets without primordial water depletion". *Nature*, 529, 59.
- Wong, I., H. A. Knutson, N. K. Lewis, **T. Kataria**, A. S. Burrows, E. Agol, N. B. Cowan, D. Deming, J.-M. Désert, J. J. Fortney, B. J. Fulton, A. Howard, et al. 2015. "3.6 and 4.5 μm Phase Curves of the Highly-Irradiated Eccentric Hot Jupiter WASP-14b". *ApJ*, 811, 122.
- Kataria, T.**, N. K. Lewis, Y. Lian, J.-M. Campin, A. P. Showman, C. N. Hill, V. Parmentier 2015. "MITgcm Dynamical Core as Applied to Hot Exoplanets: Intercomparison Test Cases". *ApJ*, in preparation.
- Kataria, T.**, A.P. Showman, J.J. Fortney, K. B. Stevenson, M. R. Line, L. Kreidberg, et al. 2015. "The Atmospheric Circulation of the Hot Jupiter WASP-43b: Comparing Three-Dimensional Models to Spectrophotometric Data". *ApJ*, 801, 86.

- Stevenson, K. B., J.-M. Désert, M. R. Line, J. L. Bean, J. J. Fortney, A. P. Showman, **T. Kataria** et al. 2014. "Thermal structure of an exoplanet atmosphere from phase-resolved emission spectroscopy". *Science*, 346, 838.
- Kreidberg, L., J. L. Bean, J.-M. Désert, M. R. Line, J. J. Fortney, N. Madhusudhan, **T. Kataria** et al. 2014. "A Precise Water Abundance Measurement for the Hot Jupiter WASP-43b". *The ApJ Letters*, 793(2), L27.
- Kataria, T.**, A. P. Showman, J. J. Fortney, M. S. Marley and R. S. Freedman 2014. "Three-dimensional Atmospheric Circulation of super Earth GJ1214b: Dependence on composition and metallicity". *ApJ*, 785, 92.
- Lewis, N. K., M. S. Marley, A. P. Showman, **T. Kataria**, J. J. Fortney, C. V. Morley, K. L. Cahoy, M. W. Webber and B. O. Demory. "Three-Dimensional Equilibrium Cloud Properties of Kepler-7b". *ApJ*, in preparation.
- Lewis, N. K., H. A. Knutson, J. de Wit, J. J. Fortney, A. P. Showman, **T. Kataria**, A. Burrows, E. Rauscher, A. W. Howard, N. B. Cowan, E. Agol, D. Charbonneau, D. Deming, J. Langton, and G. Laughlin. "3.6 and 4.5 μm Full-Orbit Phase Curves of the Hot-Saturn HD 149026b". *ApJ*, in preparation.
- Kataria, T.**, A. P. Showman, N. K. Lewis, J. J. Fortney, M. S. Marley and R. S. Freedman 2013. "Three-dimensional Atmospheric Circulation of Hot Jupiters on Highly Eccentric Orbits." *ApJ*, 760, 76.
- Kataria, T.** and M. Simon 2010. "Detection of Exoplanets in the Beta Pic Moving Group with the Gemini Planet Imager." *Astronomical Journal*, 140, 206-214.

AWARDS, PRIZES AND HONORS

Recipient , Group Achievement Award, NASA	2019
Recipient , Voyager Award, Jet Propulsion Laboratory	2019
Recipient , Voyager Award, Jet Propulsion Laboratory	2017
Recipient , Team Award, Jet Propulsion Laboratory	2017
Recipient , Galileo Circle Scholars, University of Arizona	2014
Fellow , NASA-Harriett G. Jenkins Pre-doctoral Fellowship Program (JPFP)	2011 – 2014
Recipient , Galileo Circle Scholars, University of Arizona	2012
Recipient , PTYS Graduate Teaching Assistant Excellence Award	2009

FUNDED GRANTS AND OBSERVING ACTIVITIES

Hubble Space Telescope, (PI Tiffany Kataria)	2020
"Constructing the First Spectroscopic, Multi-Dimensional Map of a Hot Jupiter" (PID #16180)	
Spitzer Space Telescope, (CoI, PI Thomas Evans)	2018
"A global map of the atmospheric circulation and thermal structure for an ultrahot exoplanet" (PID #13242)	
Hubble Space Telescope, (Co-PI Tiffany Kataria & Thomas Evans)	2017
"A global map of thermal inversions for an ultra-hot planet" (Cycle 25, ID #15134)	
Hubble Space Telescope, (CoI, Co-PIs David Sing & Nikole Lewis)	2017
"How small and how high? Enabling UV exoplanet cloud and exosphere science with WFC3/UVIS" (Cycle 25, ID #15288)	
Hubble Space Telescope, (CoI, PI Thomas Evans)	2017
"An exoplanet with a stratosphere: seeking the unknown absorber" (Cycle 25, ID #15135)	
Hubble Space Telescope, (CoI, PI Brendan Bowler)	2017
"Rotation Periods and Cloud Dynamics of Directly Imaged Exoplanets" (Cycle 25, ID #15197)	

Spitzer Space Telescope, (Col, PI Drake Deming)	2016
"Transits and Eclipses of the Best of the Best: 23 Hot Jupiters for Atmospheric Characterization by Spitzer, Hubble, and JWST" (PID #13044)	
Spitzer Space Telescope, (Col, PI Kevin Stevenson)	2016
"The Ultimate Spitzer Phase Curve Survey" (PID #13038)	
Hubble Space Telescope, (Col, PI David Sing)	2016
"The Panchromatic Comparative Exoplanetary Treasury Program" (Cycle 24, ID #14767)	
Hubble Space Telescope, (Col, PI Kevin Stevenson)	2016
"A Preparatory Program to Identify the Single Best Transiting Exoplanet for JWST Early Release Science" (Cycle 24, ID #14642)	
Hubble Space Telescope, (Col, PI Ian Crossfield)	2016
"Atmospheric Albedos, Alkalis, and Aerosols of Hot Jupiters" (Cycle 24, ID #14797)	
Hubble Space Telescope, (Col, PI Jessica Spake)	2016
"Characterising the atmosphere of a uniquely low-density, sub-Saturn mass planet" (Cycle 24, ID #14619)	
Hubble Space Telescope, (Col, PI Gilda Ballester)	2016
"Connecting the lower and upper atmospheres of a warm-Neptune. Implications for planetary evolution." (Cycle 24, ID #14625)	
Hubble Space Telescope, (Col, PI Thomas Evans)	2015
"Characterizing an extreme planet on the verge of tidal disruption" (Cycle 23, ID #14468)	
Hubble Space Telescope, (Col, PI Thomas Evans)	2015
"Measuring the L-T transition for a warm Saturn exoplanet" (Cycle 23, ID #14099)	
Hubble Space Telescope, (Col, PI David Sing)	2015
"Characterizing the atmosphere of the enlarged Neptune-mass planet HAT-P-26b" (Cycle 23, ID #14110)	
Hubble Space Telescope, (Col, PI Hannah Wakeford)	2015
"Measuring the absolute H ₂ O abundance of WASP-39b's atmosphere" (Cycle 23, ID #14169)	
Travel Grant, "Driving UK HPC enabled science and innovation through US collaborations"	2015
"Theoretical eclipse mapping of transiting hot Jupiters"	
Spitzer Space Telescope, (Col, PI Kevin Stevenson)	2014
"The Newest Hot Jupiter Archetype Through the Eyes of NASA's Great Observatories, Part 2 of 2" (PID #11089)	
Spitzer Space Telescope, (Col, PI Brice-Olivier Demory)	2014
"A Benchmark Infrared Characterisation of the Super-Earth 55 Cnc e" (PID # 11001)	
NASA-Harriett G. Jenkins Pre-doctoral Fellowship Program (JFPF), (Advisor: Adam Showman)	2011-2014
"Atmospheric dynamics of terrestrial extrasolar planets and super Earths"	

ADVISING AND MENTORING EXPERIENCE

Nina Robbins-Blanch (undergraduate, UC Santa Cruz, June 2020-present)
Ekaterina Kryuchkova (graduate student, Cornell, co-advised by N. Lewis, Dec 2019-present)
Danica Adams (graduate student, Caltech, co-advised by H. Knutson and Y. Yung, Sept 2018-present)
Elizabeth Fletes (undergraduate, UC Riverside, Summer 2019)
Sophia Sanchez-Maes (undergraduate, Yale University, Summer 2018)
Brian Kilpatrick (graduate student, Brown University, 2016-2019)

PROFESSIONAL ACTIVITIES AND SERVICE

Member, JWST Users Committee	May 2021-present
Steering Committee Chair, ExoExplorers Science Series	June 2020-present
Panelist, Astro2020 Panel on Exoplanets, Astrobiology and the Solar System	Aug 2019-present
Member, Exoplanets Program Analysis Group Executive Committee	May 2019-present
Science and Technology Definition Team Member, Origins Space Telescope Astrophysics 2020 Decadal Mission Concept	2018-present
Committee Member, JPL Diversity and Best Practices Advisory Panel	2016-present
External Reviewer, Exoplanets Research Program (XRP) Panel	2015, 2016
Executive Secretary, Solar System Workings (SSW) Panel	November 2014
Graduate Student Member, Lunar and Planetary Laboratory Academic Program Review	2013
Graduate Representative, University of Arizona, Tucson, AZ	Fall 2012 – Summer 2014
Executive Secretary, Astrobiology Science and Technology Instrument Development (ASTID) Panel	November 2011

INVITED TALKS

University of Washington Astrobiology Colloquium, virtual, October 2020.
Benjamin Dean Astronomy Lecture, California Academy of Sciences, San Francisco, CA, USA, March 2020.
Stars and Planets Seminar, Harvard Center for Astrophysics, Cambridge, MA, USA, February 2018.
American Astronomical Society Meeting, National Harbor, MD, USA, January 2018.
Bay Area Exoplanet Meeting, Mountain View, CA, USA, September 2017.
Caltech/IPAC, Pasadena, CA, USA, May 2017.
ExSoCal 2016 Meeting, Pasadena, CA, USA, September 2016.
University of Amsterdam, Amsterdam, Netherlands, March 2016.
University of Oxford, Oxford, UK, March 2016.
Jet Propulsion Laboratory, Pasadena, CA, USA, September 2015.
University of Cambridge, June 2015, Cambridge, UK.
University of Exeter, Exeter, UK, March 2015.
American Astronomical Society Meeting, Seattle, WA, January 2015.
NASA Ames Research Center, Mountain View, CA, August 2013.
UC Santa Cruz, Santa Cruz, CA, August 2013.
Southwest Research Institute, Boulder, CO, March 2013.
UC Santa Cruz, Santa Cruz, CA, August 2012.

OUTREACH AND MEDIA APPEARANCES

PlanetFest '21 panel, "Are We Alone? The Search for Life", February 2021.
San Diego Comic Con 2019 panel, "Science of Star Trek", July 2019.
San Diego Comic Con 2019 panel, "Alien Worlds: NASA's Quest for Life", July 2019.
San Diego Comic Con 208 panel, "Alien Worlds: NASA's Quest for Life", July 2018.
NBC Nightly News, National Broadcasting Company, February 2017.
The Stars of Passengers Quiz NASA Scientist, NASA, December 2016.
<https://www.youtube.com/watch?v=3mrSJoogdyw>