CURRICULUM VITAE
Jonathan J. Fortney

OFFICE ADDRESS:

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CURRENT POSITION:

July 2015-present:
Professor, Department of Astronomy & Astrophysics, University of California, Santa Cruz
Director, Other Worlds Laboratory (OWL)

PREVIOUS RESEARCH POSITIONS:

July 2011-June 2015, Associate Professor, Department of Astronomy and Astrophysics, University of California, Santa Cruz
January 2008-June 2011, Assistant Professor, Department of Astronomy and Astrophysics, University of California, Santa Cruz

POSTDOCTORAL POSITIONS:

August 2006-December 2007, *Spitzer* Fellow, NASA Ames Research Center and Principal Investigator, Carl Sagan Center, the SETI Institute, Advisor: Mark S. Marley
March 2004-July 2006, National Research Council (NRC) Postdoctoral Fellow, NASA Ames Research Center, Advisor: Mark S. Marley

EDUCATION:

2004 – Ph.D., Planetary Sciences, University of Arizona
Dissertation Title: "The Evolution of Giant Planets," Advisor: William B. Hubbard
1999 – B.S., Physics, Iowa State University, with Distinction and Honors Program

HONORS and AWARDS:

2021, Simons Investigator in Astrophysics
2020, Paolo Farinella Prize
2010, Urey Prize, AAS Division for Planetary Sciences
2010, Alfred P. Sloan Research Fellowship
2006, NASA Early Career Fellowship in Planetary Sciences

INVITED LECTURESHIPS:

2022, Distinguished Lectures on Exoplanets, Peking University
2017, Ahrens Lecture, Geologic and Planetary Sciences, California Institute of Technology
2016, Yuval Ne'eman Distinguished Lectures in Geophysics, Atmospheric, and Space Sciences, Tel Aviv University

INVITED TALKS and SEMINARS:

Around 150 talks since 2004

RECENT SERVICE:

Director, OWL Exoplanet Summer Program, UC Santa Cruz, 2017-

Member, Steering Committee, Astro2020 Decadal Survey, 2019-2021
Member, NASA Neptune-Odyssey Mission Study Team, 2019-2020
Founding Member, NASA Nexus for Exoplanet Systems Science (NExSS), 2015-2022
Member, Gemini Planet Imager (GPI) Exoplanet Survey Science Team, 2009-2020
Member, NASA Astrophysics Division Senior Review, 2019
Member, NASA Science and Technology Definition Team (STDT) for the Origins Space Telescope, 2018-19
Scientific Director, Kavli Summer Program in Astrophysics: Exoplanetary Atmospheres, 2016
Member, NASA *Cassini* Mission Science Team, 2016-2019
Member, NASA Science Definition Team (SDT) for future Ice Giant space missions, 2015-17
Kepler Science Team, 2008-2011, and Mission Collaborator, 2011-2017

GRADUATE PhD STUDENTS SUPERVISED:

Anna Gagnebin, Observations and modeling of the atmospheres of water world exoplanets
Aditya Sengupta, Modeling clouds in brown dwarfs and giant planets
Evan Davis, M dwarf structure and evolution modeling
Sagnick Mukherjee, Atmospheric mixing and spectra of brown dwarfs and giant planets
Yao Tang, Modeling sub-Neptune mass loss and evolution
Callie Hood (PhD, 2023), "The Promise and Challenge of Substellar Atmospheres at Increased Spectral Resolution"
Maggie Thompson (PhD, 2023), "Terrestrial Exoplanet Atmospheres: From Primordial Compositions to Likely Observable Biosignatures"
Kat Feng (PhD, 2020), "Advancing Retrievals of Exoplanetary Spectra in the Era of Large Space-Based Telescopes"
Chris Mankovich (PhD, 2019), "Interior Structure of the Gas Giants: Thermal evolution and normal mode seismology"
Daniel Thorngren (PhD, 2019), "Bayesian Statistical Inference of Giant Planet Physics"
Caroline Morley (PhD, 2016), "Clouds and Hazes in Exoplanets and Brown Dwarfs"
Eric Lopez (PhD, 2014), "Understanding Kepler's Super-Earths and Sub-Neptunes: Insights from Thermal Evolution and Photo-Evaporation"
Neil Miller (PhD, 2013), "Beneath the Surface of Giant Planets: Evolution, Structure, and Composition"

PREVIOUS POSTDOCS SUPERVISED:

Nadine Nettelman (Univ of Zurich), Philip Nutzman (Financial Industry), Eliza Kempton (Univ of Maryland), Michael Line (ASU), Vivien Parmentier (Univ of Nice), Ty Robinson (Arizona), Ian Crossfield (Kansas), Henriette Schwarz (Business Owner), Theodora Karalidi (Central Florida), Natasha Batalha (NASA Ames), Naor Movshovitz (Teacher), Josh Krissansen-Totten (Washington), Peter Gao (Carnegie), Kazumasa Ohno (NAOJ), Xinting Yu (UT San Antonio), Paul Dalba (Apple)

CURRENT POSTDOCS SUPERVISED:

Elizabeth Bailey, Melodie Kao, ZJ Zhang, Artem Aguichine, Benjamin Idini, Brianna Lacy

PUBLICATIONS:

389 papers in refereed journals, 43,000+ citations, h-index of 109.

RESEARCH ACHIEVEMENTS:

Created the first spectra from 2D and 3D models of transiting exoplanet atmospheres

Fortney, J. J., Sudarsky, D., Hubeny, I., Cooper, C. S., Hubbard, W. B., Burrows, A., & Lunine, J. I. (2003), Astrophysical Journal, 589, 615.

Fortney, J. J., Cooper, C. S., Showman, A. P., Marley, M. S., & Freedman, R. S. (2006), Astrophysical Journal, 652, 746.

Fortney, J. J., Shabram, M., Showman, A. P., Lian, Y., Freedman, R. S., Marley, M. S., & Lewis, N. K. (2010), Astrophysical Journal, 709, 1396.

Developed helium rain as the source of Saturn's luminosity anomaly

Fortney, J. J., & Hubbard, W. B. (2003), Icarus, 164, 228.

Mankovich, C. R., & Fortney, J. J. (2020), Astrophysical Journal, 889, 51.

Pioneered the role of minor cloud species in shaping exoplanet and brown dwarf spectra

Fortney, J. J. (2005), Monthly Notices of the Royal Astronomical Society, 364, 649.

Morley, C. V., Fortney, J. J., Marley, M. S., Visscher, C., Saumon, D., & Leggett, S. K. (2012), Astrophysical Journal, 756, 172.

Morley, C. V., Fortney, J. J., Kempton, E. M.-R., Marley, M. S., Visscher, C., & Zahnle, K. (2013), Astrophysical Journal, 775, 33.

Identified the "cold start" / "hot start" dichotomy in early giant planet evolution

Marley, M. S., Fortney, J. J., Hubickyj, O., Bodenheimer, P., & Lissauer, J. J. (2007), Astrophysical Journal, 655, 541.

Fortney, J. J., Marley, M. S., Saumon, D., & Lodders, K. (2008), Astrophysical Journal, 683, 1104.

Created the standard models for giant planet and sub-Neptune radius evolution

Fortney, J. J., Marley, M. S., & Barnes, J. W. (2007), Astrophysical Journal, 659, 1661.

Lopez, E. D., & Fortney, J. J. (2014), Astrophysical Journal, 792, 1.

Developed hot Jupiter atmospheric classification based on temperature inversions

Fortney, J. J., Lodders, K., Marley, M. S., & Freedman, R. S. (2008), Astrophysical Journal, 678, 1419.

Developed the first atmospheric general circulation model for giant exoplanets

Showman, A. P., Fortney, J. J., Lian, Y., Marley, M. S., Freedman, R. S., Knutson, H. A., & Charbonneau, D. (2009), Astrophysical Journal, 699, 564.

Predicted a gap in the Kepler radius distribution of transiting planets due to photoevaporation

Lopez, E. D., & Fortney, J. J. (2013), Astrophysical Journal, 776, 2.

Predicted an atmospheric mass-metallicity relation from core-accretion planet formation

Fortney, J. J., Mordasini, C., Nettelmann, N., Kempton, E. M.-R., Greene, T. P., & Zahnle, K. (2013), Astrophysical Journal, 775, 80.

Determined the bulk mass-metallicity relation for transiting giant planets

Thorngren, D. P., Fortney, J. J., Murray-Clay, R. A., & Lopez, E. D. (2016), Astrophysical Journal, 831, 64.

Identified the character of the hot Jupiter radius inflation mechanism

Thorngren, D. P. & Fortney, J. J., (2018), Astronomical Journal, 155, 214.