

Songhu Wang, Ph.D.

Department of Astronomy
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EDUCATION

NANJING UNIVERSITY, China

Ph.D. in Astronomy, 2016

Thesis: *CSTAR Exoplanet Detection and Transiting Exoplanet Follow-up Research*

Advisor: Ji-Lin Zhou

LANZHOU UNIVERSITY, China

B.S. in Physics, 2008

APPOINTMENTS

YALE UNIVERSITY, New Haven, CT

Inaugural *51 Pegasi b* Fellow

2017 – Present

YALE UNIVERSITY, New Haven, CT

Postdoctoral Research Associate

Advisor: Gregory Laughlin

2016 – 2017

UNIVERSITY OF CALIFORNIA, Santa Cruz, CA

China Scholarship Council Fellow

Advisor: Steven Vogt, Gregory Laughlin

2014 – 2016

FELLOWSHIPS & AWARDS

- *51 Pegasi b* Fellowship, 2017
- Nanjing University Outstanding Ph.D. Graduate Award, 2016
- China Scholarship Council Fellowship, 2014-2016
- Nanjing University Communications Holding Award (Outstanding Award), 2015
- Nanjing University Presidential Award, 2014

OBSERVING PROGRAMS

- Keck I, HIRESr, Are hot Jupiters Dynamically hot?, 2019A, 1 night, PI
- Keck I, HIRESr, Are Multiple-Planet System Generally Co-Planar? 2018B, 1 night, PI
- Keck I, HIRESr, Do Multi-planet Systems Share Alignment with Their Parent Stars?, 2018A, 1 night, PI
- Keck I, HIRESr, Measuring the Spin-Orbit Alignment of a Multi-Planet System, 2017A, 1 night, PI
- SMARTS, CHIRON, Completing the Brightest-ever Sample of hot Jupiters, 2019A, 100hours, PI
- SMARTS, CHIRON, Radial Velocity Confirmation of Bright Warm Jupiter Candidates, 2018B, 15hours, Co-I
- SMARTS, CHIRON, Characterizing Hot Jupiters of the Southern Hemisphere, 2018A, 60 hours, PI
- SMARTS, CHIRON, Characterizing Hot Jupiters of the Southern Hemisphere, 2017B, 30 hours, PI
- Palomar Hale, WIRC, Assessing the Habitability of Trappist-1 Multiple-planet System, 2017B, 11 nights, PI
- The Transiting Exoplanet Monitoring Project, 4*1m telescopes, 2014-Present, 200 nights/year, PI
- Spitzer, Three Transits for the Price of One: Super-Earth Transits of the Nearest Planetary System Discovered By Kepler/K2, Cycle-14, 18.6 hours, Co-I
- The Lick-Carnegie Exoplanet Survey, 2.4m Automated Planet Finder, 2014-Present, 140 nights/year, Co-I
- The Anglo-Australia Planet Search Program, 3.9m Anglo-Australia telescope, 2018B, 27 nights, Co-I
- The Anglo-Australia Planet Search Program, 3.9m Anglo-Australia telescope, 2012A, 9 nights, Co-I

PUBLICATIONS (10 First Author, 11 Second Author, 36 Total)

First Author:

- ◻ *HD 202772A b: A Transiting Hot Jupiter Around a Bright, Mildly Evolved Star Discovered by TESS*
Songhu Wang, Matias Jones, Avi Shporer et al. 2018, **The Astronomical Journal**, 157, 51
- ◻ *Transiting Exoplanet Monitoring Project (TEMP). I. Refined System Parameters and Transit Timing Variations of HAT-P-29b*
Songhu Wang, Xian-Yu Wang, Yong-Hao Wang et al. 2018, **The Astronomical Journal**, 156, 181
- ◻ *Updated Masses for the TRAPPIST-1 Planet*
Songhu Wang, Dong-Hong Wu, Thomas Barclay, and Gregory Laughlin 2018, **The Astrophysical Journal Letter**, Under Review; arXiv:1704.04290
- ◻ *Transiting Exoplanet Monitoring Project (TEMP). III. On the Relocation of the Kepler-9~b Transit*
Songhu Wang, Dong-Hong Wu, Brett Addison et al. 2018, **The Astronomical Journal**, 155, 73
- ◻ *Stellar Spin-Orbit Alignment for Kepler-9, a Multi-transiting Planetary System with Two Outer Planets Near 2:1 Resonance*
Songhu Wang, Brett Addison, Debra Fischer et al. 2018, **The Astronomical Journal**, 155, 70
- ◻ *RV-detected Kepler-multi Analogs Exhibit Intra-system Mass Uniformity*
Songhu Wang 2017, **The Research Note of the American Astronomical Society**, 1, 26
- ◻ *Photometric Variability in the CSTAR Field: Results from the 2008 Data Set*
Songhu Wang, Hui Zhang, Xu Zhou et al. 2015, **The Astrophysical Journal Supplement**, 218, 20
- ◻ *Planetary Transit Candidates in the CSTAR Field: Analysis of the 2008 Data Set*
Songhu Wang, Hui Zhang, Ji-Lin Zhou et al. 2014, **The Astrophysical Journal Supplement**, 211, 26
- ◻ *The Correction of Diurnal Effects on CSTAR Photometry*
Songhu Wang, Xu Zhou, Hui Zhang et al. 2014, **Research in Astronomy and Astrophysics**, 14, 345
- ◻ *The Inhomogeneous Effect of Cloud on CSTAR Photometry and Its Correction*
Songhu Wang, Xu Zhou, Hui Zhang et al. 2012, **The Publications of the Astronomical Society of the Pacific**, 124, 1167

Second Author (***: Student Advised):

- ◻ *Kepler-730: A Hot Jupiter with an Additional, Close-in Transiting Earth-sized Planet*
Caleb I. Canas, **Songhu Wang**, Suvrath Mahadevan, et al. 2018, **The Astrophysical Journal Letters**, 870, 17
- ◻ *Compact Multi-Planet Systems More Common around Metal Poor Hosts*
John M. Brewer, **Songhu Wang**, Debra A. Fischer, et al. 2018, **The Astrophysical Journal Letters**, 867, 3
- ◻ ****Transiting Exoplanet Monitoring Project (TEMP). V. Transit follow-up for the HAT-P-9b, HAT-P-32b and HAT-P-36b*
Yong-Hao Wang, **Songhu Wang**, Tobias Hinse, et al. 2018, **The Astronomical Journal**, 157, 82
- ◻ ****TTV-determined Masses for Warm Jupiters and their Close Companions*
Dong-Hong Wu, **Songhu Wang**, Ji-Lin Zhou, et al. 2018, **The Astronomical Journal**, 156, 96
- ◻ ****Stellar Obliquities & Planetary Alignments (SOPA) I. The Nearly Polar Orbits of Two Transiting Hot Jupiters: WASP-100b and WASP-109b & Spin--Orbit Alignment of the Hot Jupiter WASP-72b*
Brett Addison, **Songhu Wang**, Marshall Johnson, et al. 2018, **The Astronomical Journal**, 156, 197.
- ◻ ****Transiting Exoplanet Monitoring Project (TEMP). IV. Refined System Parameters, Transit Timing Variations, and Orbital Stability of the Transiting Planetary System HAT-P-25*
Xian-Yu Wang, **Songhu Wang**, Tobias Hinse, et al. 2018, **The Publications of the Astronomical Society of the Pacific**, 130, 064401
- ◻ *Kepler Multi-Planet Systems Exhibit Unexpected Intra-system Uniformity in Mass and Radius*
Sarah Millholland, **Songhu Wang**, Gregory Laughlin 2017, **The Astrophysical Journal Letters**, 849, 33
- ◻ ****Transiting Exoplanet Monitoring Project (TEMP). II. Refined System Parameters and Transit Timing Variations of HAT-P-33b*
Yong-Hao Wang, **Songhu Wang**, Hui-Gen Liu et al. 2017, **The Astronomical Journal**, 154, 49
- ◻ ****Stellar Flares in the CSTAR Field. Results from the 2008 Data Set*
En-Si Liang, **Songhu Wang**, Ji-Lin Zhou et al. 2016, **The Astronomical Journal**, 152, 168
- ◻ *On the Detection of Non-transiting Hot Jupiters in Multiple-Planet System*
Sarah Millholland, **Songhu Wang**, Gregory Laughlin 2016, **The Astrophysical Journal Letters**, 823, 7
- ◻ *Forever Alone? Testing Single Eccentric Planetary Systems for Multiple Companions*

Robert A. Wittenmyer, **Songhu Wang**, Jonathan Horner et al. 2013, **The Astrophysical Journal Supplement**, 208, 2

Contributing Author:

- *A Super-Earth and two sub-Neptunes transiting the bright, nearby, and quiet M-dwarf TOI-27*
Maximilian N. Gunther, Francisco J. Pozuelos, Jason A. Dittmann, and 57 coauthors including **Songhu Wang**, 2019, **Nature Astronomy**, Under Review
- *TOI-150: A Subgiant Star hosting an eccentric, transiting Hot Jupiter in the TESS Southern CVZ*
Caleb I. Canas, Stefansson Gudmundur, Andrew J. Monson, and 9 coauthors including **Songhu Wang**, 2019, **The Astrophysical Journal Letters**, Under Review
- *A Hot-Jupiter around HD 2685 detected by the TESS space mission*
M. I. Jones, R. Brahm, N.Espinon, **Songhu Wang**, et al. 2018, **The Astronomical Journal**, Under Review.
- *True Eccentric. I. Revisiting eight single-eccentric planetary systems*
R. A. Wittenmyer, Jake Clark, Jinglin Zhao, and 3 coauthors including **Songhu Wang**, et al. 2019, **The Astronomical Journal**, 870, 17.
- *Exoplanets in the Antarctic sky. I. New Variables found by AST3-II within the Southern CVZ of TESS*
Hui Zhang, Zhou-Yi Yu, En-Si Liang, and 37 coauthors including **Songhu Wang**, 2019, **The Astrophysical Journal Supplement**, 240, 16
- *Exoplanets in the Antarctic sky. II. 116 Transiting Exoplanet Candidates found by AST3-II (CHESPA) within the Southern CVZ of TESS*
Hui Zhang, Zhou-Yi Yu, En-Si Liang, and 37 coauthors including **Songhu Wang**, 2019, **The Astrophysical Journal Supplement**, 240, 17
- *HD76920 b Pinned Down: Precise Orbital Elements for the Most Eccentric Planet Orbiting an Evolved Star*
Christoph Bergmann, Jinglin Zhao, Matias Jones, and 8 coauthors including **Songhu Wang**, 2019, **The Monthly Notices of the Royal Astronomical Society**, Under Review
- *Detecting Habitable Planets in Multi-planet Systems via High Precision Astrometry*
Zhou-Yi Yu, Hui-Gen Liu, Dong-Hong Wu, **Songhu Wang**, et al. 2017, **Research in Astronomy and Astrophysics**, 19, 4
- *The First Release of the AST3-1 Point Source Catalogue from Dome A, Antarctica*
Bin Ma, Zhaohui Shang, Yi Hu, and 35 coauthors including **Songhu Wang**, 2018, **The Monthly Notices of the Royal Astronomical Society**, 479, 111
- *The Study of Galactic Disk Kinematics with SCUSS and SDSS Data*
Xiyan Peng, Zhenyu Wu, Zhaoxiang Qi, and 5 coauthors including **Songhu Wang**, 2018, **The Publications of the Astronomical Society of the Pacific**, 130, 4102
- *The Lick-Carnegie Exoplanet Survey: HD32963 - A New Jupiter Analog Orbiting A Sun-Like Star*
Dominick Rowan, Stefano Meschiari, Gregory Laughling, and 9 coauthors including **Songhu Wang**, 2016, **The Astrophysical Journal**, 817, 104
- *A Six-Planet System Orbiting HD 219134*
Steven S. Vogt, Jennifer Burt, Stefano Meschiari, and 10 coauthors including **Songhu Wang**, 2015, **The Astrophysical Journal**, 814, 12
- *Eclipsing Binaries From the CSTAR Project at Dome A, Antarctica*
Ming Yang, Hui Zhang, **Songhu Wang** et al. 2015, **The Astrophysical Journal Supplement**, 217, 28
- *An Investigation of the Absolute Proper Motions of the SCUSS Catalog*
Xiyan Peng, Zhaoxiang Qi, Zhenyu Wu, and 21 coauthors including **Songhu Wang**, 2015, **The Publications of the Astronomical Society of the Pacific**, 127, 250
- *Ghost Image Correction in CSTAR Photometry*
Zeyang Meng, Xu Zhou, Hui Zhang, and 6 coauthors including **Songhu Wang**, 2013, **The Publications of the Astronomical Society of the Pacific**, 125, 1105

SELECTED TALKS AND CONFERENCES

- Invited Lecture, Williams Collage, Massachusetts, Jan. 2019
Setting Solar System into its Larger Cosmic Context.
- Invited Seminar, UCLA, LA, Jan. 2019
Quiescent or dramatic? the Origin of Hot Jupiters
- Invited Talk, AAS, Seattle, WA, Jan. 2019

- HD202772A b: the first confirmation of a hot Jupiter discovered by TESS*
- Invited Seminar, Yale, New Haven, Nov. 2018
Exoplanetary Diversity and Uniformity
 - Invited talk, Caltech, CA, Nov. 2018
HD202772A b: the first confirmation of a hot Jupiter discovered by TESS
 - Contribute Talk, MIT, Cambridge, Oct. 2018
Lifting the Confusion ---
A case study in using Ground-Based Follow up to determine the parent star of HD 202772A b
 - Invited Exoplanet Seminar, Princeton, New Jersey, Sep. 2018
From Antarctica to TESS
 - Symposium talk, Heising-Simons Foundation, San Francisco, Aug. 2018
51 Pegasi b and Beyond
 - Invited Colloquium, Xinjiang Observatory, China, Aug. 2018
From K2 to K2
 - Invited Conference talk, Caltech, CA, Jul. 2018
Trappist-1: Planets know about each other
 - Poster, Exoplanet II, Cambridge, Jul. 2018
Drama or Quiescence? Measuring the Spin-orbit Alignment of Kepler-9.
 - Pop talk, ERES, Penn State, Pennsylvania, Jun. 2018
Are Multiple-Planetary System Generally Co-planar?
 - Invited Colloquium, AMNH, New York, Jun. 2018
From Hot Jupiters to Small Planets
 - Pop talk in Tri-State Postdoc Retreat, CCA, New York, May. 2017
Peas in a Pod
 - Conference talk, Harvard, Massachusetts, Mar. 2018
Kepler-9: Connecting hot Jupiters with Small Planets
 - Invited Seminar, Williams Collage, Massachusetts, Jan. 2018
The Solar system in context of Exoplanetary systems
 - Invited Seminar, Nanjing University, Nanjing, China, Dec. 2017
Origin of Exoplanetes
 - Invited Colloquium, Purple Mountain Observatory, Nanjing, China, Dec. 2017
Placing Solar System into Galactic Planetary Census
 - Invited Colloquium, National Astronomical Observatories of China (NAOC), Beijing, China, Dec. 2017
Understanding Planet Formation with Telescopes sized from 10cm to 10m
 - Invited talk, Tsing Hua University, Beijing, China, Dec. 2017
Planets Know about Each other
 - Lunch talk, The Kavli Institute for Astronomy and Astrophysics (KIAA), Beijing, China, Dec. 2017
Probing the Copernican Principle: Are We Special?
 - Conference talk, T.D.Lee institute (TDLI), Shanghai, China, Dec. 2017
A New Look at an Old Classic: Kepler-9's Obliquity, Masses, and Resonant Properties
 - Invited talk in WIRC+Pol/Spec progress meeting, Caltech, Pasadena, Aug. 2017
Transit Timing Variations
 - Invited talk for ELS Community, New Haven, Aug. 2017
The Search for Alien Life
 - Symposium talk, Heising-Simons Foundation, Los Altos, Aug. 2017
The Search for New Worlds
 - Invited talk in Yale Society of Physics Students, Yale, New Haven, Jul. 2017
Solar System and Beyond
 - Invited talk in Hartness Workshop, Hartness House Inn, Vermont, Jul. 2017
Finding Exoplanets with Small Telescopes
 - Kepler Conference talk, NASA Ames, Pasadena, Jun. 2017
Updated Masses for Trappist-1 Planets with K2
 - ERES Conference talk, Yale, New Haven, Jun. 2017
From K2 to K2
 - Invited talk in Connecticut Exoplanet Picnic, Wesleyan University, May. 2017

Transit and Transit Timing Variations

- Pop talk in Northeast Astronomy Postdoc Retreat, Columbia University, New York, Mar. 2017
Mass vs Period
- Symposium talk, University of Bern, Switzerland, Feb. 2016
Multifaceted Exoplanet Detection
- 3 Seminar talks, ETH Zurich, University of Zurich, Geneva Observatory, Switzerland, Feb. 2016
Multifaceted Exoplanet Detection
- 1 Pops talk and 2 Posters, Sagan Exoplanet workshop, Caltech, Jul. 2015
Time-domain Astronomy with the Chinese Small Telescope ARray
Photometric Follow-up Observations of Transiting Hot Jupiter HAT-P-29
- Seminar talk, Xinjiang Observatory, China, Jan. 2014
Detection and Study of Exoplanets
- Seminar talk, Three Dimensional Structure of the Milky Way Group, NAOC, China, Dec. 2013
Search for Stellar Flares in the Kepler Light Curves
- Seminar talk, BATC group, NAOC, China, Dec. 2013
Detection and Characterization of Exoplanets
- Conference talk, Nanjing University, China, Oct. 2013
Exoplanet Candidates in the CSTAR Field
- Conference talk, Tsinghua University, China, Sep. 2013
Exoplanet Detection with CSTAR
- Workshop talk, NAOC, China, Nov. 2012
AST3 Transit Survey Pipeline
- Poster, ASA Annual Scientific Meeting, UNSW, Australia, Jun. 2012
The Inhomogeneous Effect of Cloud on CSTAR Photometry
- Workshop talk, Observational Astronomy Summer School, KIAA, China, Oct. 2011
High Precision Differential Photometry of the WASP-33b Using the BATC Telescope

STUDENTS AND POSTDOC MENTORING

Undergraduate:

- Trustin Henderson, 2nd year undergraduate student, Yale, 2017-Present
- Keduse Worku, 2nd year undergraduate student, Yale, 2018-Present
- Xian-Yu Wang, 4th year undergraduate student, Shandong University, China, 2016 – 2018
- Rebekah and Jennifer Kahn, 4th year undergraduate students, Smith Collage, 2018

Graduate:

- Yong-Hao Wang, 6th year graduate student, National Astronomical Observatory of China, 2014-Present
- Pia Cortes-Zuleta, Master student, University of Chile, 2018
- Dong-Hong Wu, 6th year graduate student, Nanjing University, China, 2016-2018
- En-Si Liang, 6th year graduate student, Nanjing University, China, 2014-2016

Postdoc:

- Brett Addison, Postdoctoral Researcher, University of South Queensland, 2017-2018