

Lily L. Zhao

CONTACT INFORMATION

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EDUCATION

Yale University Aug. 2016 - Jun. 2021
M.S., M.Phil., Astronomy May 2018
Ph.D., Astronomy Jun. 2021
Dissertation Title: *The Path to Extreme Precision Radial Velocity With EXPRES*

University of Chicago Jun. 2016
B.S. Mathematics
B.A. Physics
B.A. Biological Sciences

RESEARCH POSITIONS

Center for Computational Astrophysics, Flatiron Institute New York, NY
Flatiron Research Fellow Sep. 2021 -
Research Analyst, Pre-Doctoral Fellow Sep. 2019 - Jan. 2020

Yale Exoplanet Group New Haven, CT
EXPRES Science Lead Sep. 2016 -

Bean Exoplanet Group Chicago, IL
Hubble STIS Transit Spectroscopy Jun. 2015 - Jun. 2016

NASA Goddard Space Flight Center Greenbelt, MD
Joint Polar Satellite System 2 Tracking Jun. 2014 - Aug. 2014

Argonne National Laboratory Lemont, IL
South Pole Telescope Polarization Calibration Jun. 2013 - Jun. 2015

AWARDS

Third Place, Three Minute Thesis Competition, Yale University (2020)
Sheldon Wise Pre-Doctoral Fellowship, Yale University (2018)
Graduate Research Fellow, National Science Foundation (2016)
Google Earth Engine Scholarship, Google (2015)

PUBLICATIONS

14. **Zhao, L.L.**, Fischer, D.A., Henry, G.W., et al. "The *EXPRES* Stellar-Signals Project II. State of the Field of Disentangling Photospheric Velocities" 2022, arXiv:2201.10639
13. Rottenbacher, R.M., Cabot, S.H.C., Fischer, D.A., et al. [incl. **Zhao, L.L.**] "*EXPRES*. III. Revealing the Stellar Activity Radial Velocity Signature of ϵ Eridani with Photometry and Interferometry" 2021, AJ, 163, 19
12. Luger, R., Bedell, M., Foreman-Mackey, D., et al. [incl. **Zhao, L.L.**] "Mapping Stellar Surfaces III: An Efficient, Scalable, and Open-Source Doppler Imaging Model" 2021, arXiv:2110.06271
11. **Zhao, L.L.**, Hogg, D.W., Bedell, M., Fischer, D.A. "*Excalibur*: A Non-Parametric, Hierarchical Wavelength-Calibration Method for a Precision Spectrograph" 2021, AJ, 161, 80
10. Holzer, P., Cisewski-Keke, J., Fischer, D.A., **Zhao, L.L.** "A Hermite-Gaussian Based Radial Velocity Estimation Method" 2021, AnApS, 15, 527

9. Holzer, P.H., Cisewski-Kehe, J., **Zhao, L.L.**, Fischer, D.A., Ford, E.B. "A Stellar Activity F-statistic for Exoplanet Surveys (SAFE)" 2021, AJ, 161, 272
8. Cabot, S.H.C., Roettenbacher, R.M., Henry, G.W., **Zhao, L.L.**, et al. "EXPRES. II. Searching for Planets Around Active Stars: A Case Study of HD 101501" 2020, AJ, 161, 26
7. **Zhao, L.L.**, Fischer, D.A., Ford, E., Henry, G.W., Rottenbacher, R.M., Brewer, J.M. "The EXPRES Stellar-Signals Project I. Description of Data" 2020, RNAAS, 4, 156
6. Hoeijmakers, H.J., Cabot, S.H.C., **Zhao, L.L.**, et al. "High-Resolution Transmission Spectroscopy of MASCARA-2 b with EXPRES" 2020, A&A, 641, A120
5. Brewer, J.M., Fischer, D.A., Blackman, R.T., et al. [incl. **Zhao, L.L.**] "EXPRES. I. HD 3651 an Ideal RV Benchmark" 2020, AJ, 160, 67
4. Blackman, R.T., Fischer, D.A., Jurgenson, C.A., et al. [incl. **Zhao, L.L.**] "Performance Verification of the EXtreme PREcision Spectrograph" 2020, AJ, 159, 238
3. Petersburg, R.R., Ong, J.M.J., **Zhao, L.L.**, et al. "An Extreme-Precision Radial-Velocity Pipeline: First Radial Velocities from EXPRES" 2020, AJ, 159, 187
2. Gaudi, S., Blackwood, G., Howard, A., et al. [incl. **Zhao, L.L.**] "Extreme Precision Radial Velocity Working Group" 2019, BAAS 51, 232
1. **Zhao, L.L.**, Fischer, D., Brewer, J., Giguere, M., & Rojas-Ayala, B. "Planet Detectability in the Alpha Centauri System." 2018, AJ, 155, 24

SELECT SEMINARS

7. *Exo-Cam Seminar*, University of Cambridge (Nov. 2021)
6. *Summer Seminar*, the Ohio State University (Jun. 2021)
5. *Fall Seminar*, Columbia University (Nov. 2020)
4. *Center for Exoplanets and Habitable Worlds Seminar*, Pennsylvania State University (Nov. 2020)
3. *Galaxies, Cosmology, Stars & Planets Seminar*, Harvard University (Oct. 2020)
2. *ORIGINS Seminar*, University of Arizona (Sep. 2020)
1. *Tuesday Seminar*, University of Delaware (Apr. 2020)

SELECT CONFERENCES

7. "The EXPRES Stellar Signals Project (ESSP): Establishing the State of the Field in Disentangling Photospheric Velocities" *The Star-Planet Connection*. (Oct. 2021)
6. "Machine Learning for Extreme Precision Spectrographs" (**Invited talk**) AAS 238; *Machine Learning in Astronomy (MiM)*. (Jun. 2021)
5. "Planet Detectability with Next-Generation Spectrographs" *Exoplanets III*. (Jul. 2020)
4. "EXPRES" (**Invited talk**) *Extreme Precision Radial Velocity IV*. (Mar. 2019)
3. "EXPRES, the Extreme Precision Spectrograph." *HoRSE: High Resolution Spectroscopy for Exoplanet atmospheres*. (Oct. 2018)
2. "EXPRES Precision and First Light Results" *Exoplanets II*. (Jul. 2018)
1. "Planet Detectability in the Alpha Centauri System" *European Week of Astronomy and Space Science (EWASS)*. (Apr. 2018)

TEACHING & SERVICE

<i>Reviewer:</i> MNRAS	
<i>Research Project Lead:</i> Warrior Scholars Project	Summer 2021
<i>Executive Board:</i> Yale Astronomy Climate and Diversity Committee	2020 - 2021
<i>Fellow:</i> Yale Office of Graduate Student Diversity and Development	2018 - 2021
<i>Founding Member:</i> Yale Astronomy Student Council	2018 - 2021
<i>Guest Author:</i> Scientific American, Observations	2017
<i>Co-Instructor:</i> "Origins and the Search for Life in the Universe"	Fall 2017
<i>Demonstrations, Group Leader:</i> Girls Science Investigation	2017 - 2019
<i>Invited Speaker, Public Relations Committee:</i> Open Labs	2016 - 2020