



# Chenliang Huang (黄辰亮)

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## OVERVIEW

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I am a theoretical astrophysicist who applies physical laws to understand astronomical phenomena. My primary research interest is studying the physics and chemistry of the middle and upper atmosphere of gas giant exoplanets, as well as their escape, through both the analysis of observations and theoretical modeling. Additionally, I have constructed an interior structure model of terrestrial exoplanets to constrain their compositions, and a radiative transfer model to study the physics of interacting supernova remnants.

## EMPLOYMENT

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Associate Research Professor Shanghai Astronomical Observatory, CAS	2023-
<ul style="list-style-type: none"><li>• Atmosphere of gas giant exoplanets and their escape.</li><li>• Characterize the interior structure of terrestrial exoplanets.</li></ul>	
Postdoctoral Research Associate University of Arizona	2019-2022
<ul style="list-style-type: none"><li>• Characterize exoplanet upper atmosphere using its atomic absorption features.</li></ul>	
Postdoctoral Scholar University of Nevada, Las Vegas	2017-2019
<ul style="list-style-type: none"><li>• Model the interior structure of terrestrial super-earth planets.</li></ul>	

## EDUCATION

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Ph.D. in Astronomy University of Virginia, Charlottesville, VA “Spectral Line Formation in Hot Jupiter Atmospheres and in Interacting Supernovae” Thesis advisor: Arras, Philip / Chevalier, Roger	2011-2017
B.S. in Physics Peking University, Beijing, China	2007-2011

## PEER-REVIEWED JOURNAL PAPERS [\[ADS publication list\]](#)

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15. Sreejith, A. G., France, K., Fossati, L., [and twelve others, including Huang, C.], “CUTE Reveals Escaping Metals in the Upper Atmosphere of the Ultrahot Jupiter WASP-189b”, *ApJL* 954, 23 (2023).
14. ★ Huang, C., Koskinen, T., Lavvas, P., Fossati, L., “A hydrodynamic study of the escape of metal species and excited hydrogen in the atmosphere of the hot Jupiter WASP-121b”, *ApJ* 951, 123 (2023).
13. Cubillos, P. E., Fossati, L., Koskinen, T., Huang, C., et al., “The Hubble/STIS near-ultraviolet transmission spectrum of HD 189733 b”, *A&A* 671, A170 (2013).
12. ★ Huang, C., Rice, D. and Steffen, J. H., “MAGRATHEA: an open-source spherical symmetric planet interior structure code”, *MNRAS* 513, 5256 (2022).

11. Koskinen, T. T., Lavvas, P., [Huang, C.](#), et al., “[Mass Loss by Atmospheric Escape from Extremely Close-in Planets](#)”, *ApJ* 929, 52 (2022).
10. Grande, Z., Pham, C.H., Smith, D., [and eight others, including [Huang, C.](#)], “[Pressure Driven Symmetry Transitions in Dense H<sub>2</sub>O](#)”, *PRB* 105, 10 (2022).
9. Fossati, L., Young, M.E., Shulyak, D., [and five others, including [Huang, C.](#)], “[Non-local thermodynamic equilibrium effects determine the temperature structure of the ultra-hot Jupiter KELT-9b](#)”, *A&A* 653, 52 (2021).
8. [Huang, C.](#), Rice, D. R., Grande, Z. M., et al., “[Implications of an improved water equation of state for water-rich planets](#)”, *MNRAS* 503, 2825 (2021).
7. Yan, D., Guo, J., [Huang, C.](#), and Xing, L., “[Atmosphere Escape Inferred from Modeling the H \$\alpha\$  Transmission Spectrum of WASP-121b](#)”, *ApJ* 907, L47 (2021).
6. Yan, F., Wyttenbach, A., [and 25 others, including [Huang, C.](#)], “[Detection of the hydrogen Balmer lines in the ultra-hot Jupiter WASP-33b](#)”, *A&A* 645, A22 (2021).
5. Oza, A. V., Johnson, R., [and 13 others, including [Huang, C.](#)], “[Sodium and Potassium Signatures of Volcanic Satellites Orbiting Close-in Gas Giant Exoplanets](#)”, *ApJ* 855, 168 (2019).
4. ★ [Huang, C.](#) and Chevalier, R. A., “[Electron Scattering Wings on Lines in Interacting Supernovae](#)”, *MNRAS* 475, 1261 (2018).
3. ★ [Huang, C.](#), Arras, P., Christie, D. and Li, Z.-Y., “[A Model of the H \$\alpha\$  and Na Transmission Spectrum of HD 189733b](#)”, *ApJ* 851, 150 (2017).
2. Borish, H. J., [Huang, C.](#), Chevalier, R. A., et al., “[Near-infrared Spectroscopy of the Type II<sub>n</sub> SN 2010jl: Evidence for High Velocity Ejecta](#)”, *ApJ* 801, 7 (2015).
1. Liao, J., Zhou, Y., [Huang, C.](#), Wang, Y., Peng, L., “[Fabrication, Transfer, and Transport Properties of Monolayered Freestanding Nanoparticle Sheets](#)”, *Small* 7, 583 (2011).

## NON PEER-REVIEWED

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- Schlawin, E., Ilyin, I., Feinstein, A. D. [and 5 others, including [Huang, C.](#)], “[H- \$\alpha\$  Variability of V1298 Tau c](#)”, *RNAAS* 5, 195 (2021).

## INVITED TALKS

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- “A hydrodynamic study of the escape of metal species and excited hydrogen in the atmosphere of the hot Jupiter WASP-121b”  
2023 International Conference of Deep Space Sciences, Hefei April 2023
- “MAGRATHEA: An Open-Source Planet Interior Structure Code”  
5th Young Scientist Forum of Planetary Science, Sanya March 2023
- “A hydrodynamic study of the atmospheric escape of the hot Jupiter WASP-121b”  
CIERA, Northwestern University, Chicago, IL Dec 2022
- “A hydrodynamic study of the hot Jupiter WASP-121b and an open-source planet interior structure solver MAGRATHEA”  
Shanghai Astronomical Observatory, virtual May 2022
- “A hydrodynamic study of the escape of metal species and excited hydrogen in the atmosphere of the hot Jupiter WASP-121b”  
National Astronomical Observatory of China, virtual May 2022
- “Theoretical Landscape of Atmospheric Escape”  
Exoplanet IV, Las Vegas May 2022
- “A hydrodynamic study of the escape of metal species and excited hydrogen in the atmosphere of the hot Jupiter WASP-121b”  
Origins Seminar, Steward Observatory March 2022
- “A hydrodynamic study of radiative cooling and escape of metal species in WASP-121b atmosphere”  
Steward Early career scientist talk, virtual March 2021

- “A hydrodynamic study of WASP-121b atmosphere”  
CUTE science team meeting, virtual December 2020
- “Model of the interior structure of terrestrial planets”  
Steward Symposium, UofA, Tucson, AZ November 2019
- “A Model of the H $\alpha$  and Na Transmission Spectrum of HD 189733b”  
UW Madison, Madison, WI September 2019
- “Electron Scattering Wings on Lines in Interacting Supernovae”  
Peking University, Beijing, China July 2018
- “Introduction to the Study of Exoplanet Atmospheres”  
Theoretical Physics Division, IHEP, CAS, Beijing, China February 2016
- “Modeling of Hot Jupiter HD 189733b H $\alpha$  Transmission Spectral Line”  
Peking University, Beijing, China February 2016