

Samuel H. C. Cabot
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RESEARCH INTERESTS:

Planetary Science: impact cratering; orbital dynamics; interstellar objects; lunar exploration.
Exoplanets: high-resolution atmospheric spectroscopy; probabilistic methods for radial velocity surveys.

EDUCATION

Yale University , New Haven, CT	2018-Present
PhD candidate in department of Astronomy (expected 2023)	
Advisors: Professor Debra Fischer, Professor Greg Laughlin	
University of Cambridge , Cambridge, UK	2017-2018
MASt Astrophysics, <i>pass with merit</i>	
Advisor: Professor Nikku Madhusudhan	
Princeton University , Princeton, NJ	2013-2017
A.B. Astrophysical Sciences, <i>magna cum laude</i> ; Certificate in Applications of Computing	
Advisor: Professor Neta Bahcall	

FELLOWSHIPS & AWARDS

- Yale University Astronomy Department, Tinsley Award for Best Graduate Student Paper 2021
 - Yale University, Nathan Hale Associates Fellow 2019
 - University of Cambridge Institute of Astronomy, Summer Studentship 2018
 - Elected to Sigma Xi Society 2017
 - Princeton University, Summer USRP 2014, 2015, 2016
 - University of Massachusetts Amherst, FCAD Summer REU 2011, 2012, 2013
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REFEREED PUBLICATIONS

First Author Publications

10. *X-rays Trace the Volatile Content of Interstellar Objects*
Cabot, S.; et al. (addressing comments from referee, [draft available here](#))
9. *Identifying Interstellar Object Impact Craters*
Cabot, S.; Laughlin; G. [2022 PSJ 3 172](#)
[Space.com Coverage](#)
8. *Stacked Periodograms as a Probe of Exoplanetary Populations*
Cabot, S.; Laughlin, G. [2022 AJ 163 206C](#)
7. *TOI-1518b: A Misaligned Ultra-hot Jupiter with Iron in its Atmosphere*
Cabot, S.; Bello-Arufe, A.; Mendonça, J.; Tronsgaard, R; et al. [2021 AJ 162 218C](#)
[Featured in NASA Article](#)
6. *EXPRES II. Searching for Planets around Active Stars*

- Cabot, S.**; Roettenbacher R.; Henry, G.; Zhao, L.; et al. [2021 AJ 161 26C](#)
5. *Lunar Exploration as a Probe of Ancient Venus*
Cabot, S.; Laughlin, G. [2020 PSJ 1 66C](#)
[BBC Coverage](#), [Yale University Press Release](#)
 4. *Detection of Neutral Atomic Species in the Ultra-hot Jupiter WASP-121b*
Cabot, S.; Madhusudhan, N.; Welbanks, L.; Piette, A.; Gandhi, S. [2020 MNRAS 494 1](#)
[WASP Collaboration Coverage](#)
 3. *Robustness of High-Resolution Exoplanet Spectroscopy*
Cabot, S.; Madhusudhan, N.; Hawker, G.; Gandhi, S. [2019 MNRAS 482 4](#)
 2. *C IV and He II Line Emission of Lyman α Blobs: Powered by Shock-Heated Gas*
Cabot, S.; Cen, R.; Zheng, Z. [2016 MNRAS 462 1](#)
 1. *XMM-Newton/RGS detection of the Missing Interstellar O VII K α Absorption Line*
Cabot, S.; Wang, Q.; Yao, Y. [2013 MNRAS 431 1](#)

Second and Third Author Publications

10. *The Volatile C/O Ratio as a Tracer for Formation Locations of Interstellar Comets*
Seligman, D.; et al. (3rd author, **Cabot, S.**) [2022 PSJ 3 150S](#)
9. *A Survey of Sodium Absorption in Ten Giant Exoplanets*
Langeveld, A.; et al. (3rd author, **Cabot, S.**) [2022 MNRAS 1544L](#)
8. *Mining the Ultra-Hot Skies of HAT-P-70b*
Bello-Arufe, A.; et al. (2nd author, **Cabot, S.**) [2022 AJ 163 96B](#)
7. *EXPRES. III. Revealing the Stellar Activity Radial Velocity Signature of ϵ Eridani*
Roettenbacher, R.; et al. (2nd author, **Cabot, S.**) [2022 AJ 163 19R](#)
[Heising-Simons Coverage](#), [Yale University Press Release](#)
6. *Constraints on the Occurrence of 'Oumuamua-Like Objects*
Levine, W.; et al. (2nd author, **Cabot, S.**) [2021 ApJ 922 39L](#)
5. *On the Spin Dynamics of Elongated Minor Bodies*
Seligman, D.; et al. (3rd author, **Cabot, S.**) [2021 ApJ 920 28S](#)
4. *Assessing telluric correction methods for Na detections*
Langeveld, A.; et al. (3rd author, **Cabot, S.**) [2021 MNRAS 502 4392L](#)
3. *Neutral Cr and V in the Atmosphere of Ultra-hot Jupiter WASP-121b*
Ben-Yami, M.; et al. (3rd author, **Cabot, S.**) [2020 ApJL, 897L, 5B](#)
[AAS Nova Coverage](#)
2. *High-resolution Transmission Spectroscopy of MASCARA-2b with EXPRES*
Hoeijmakers, H.; et al. (2nd author, **Cabot, S.**) [2020 A&A 641A 120H](#)
[Yale University Press Release](#)
1. *Evidence for Multiple Molecular Species in the Hot Jupiter HD 209458b*
Hawker, G.; et al. (3rd author **Cabot, S.**) [2018 ApJL 863 1](#)

Other Co-Author Publications

6. *The EXPRES Stellar-Signals Project II*
Zhao, L.; et al. (co-author: **Cabot, S.**) [2022AJ 163 171Z](#)
5. *TOI-1431b/MASCARA-5b: A Highly Irradiated Ultra-Hot Jupiter*
Addison, B.; et al. (co-author: **Cabot, S.**) [2021 AJ 162 292A](#)
4. *The obliquity and atmosphere of the ultra-hot Jupiter TOI-1431b*
Stangret, M.; et al. (co-author: **Cabot, S.**) [2021 A&A 654A 73S](#)
3. *EXPRES I. HD 3651 an Ideal RV Benchmark*
Brewer, J.; et al. (co-author: **Cabot, S.**) [2020 AJ, 160, 67B](#)
2. *A Pipeline for the Extreme PRecision Spectrograph*

- Petersburg, R.; et al. (co-author: **Cabot, S.**) [2020 AJ 159 197P](#)
 1. *Performance Verification of the Extreme Precision Spectrograph*
 Blackman, R.; et al. (co-author: **Cabot, S.**) [2020 AJ 159 238B](#)

MEDIA CONTRIBUTIONS & OTHER WORKS

4. *Ask Astro: The Ends of White Dwarfs, Neutron Stars, & Brown Dwarfs*
Cabot, S. (Contribution to June 2022 issue of [Astronomy Magazine](#))
 3. *Digital Media in the Blue-Chip Art Sector*
Cabot, S. (April 2022 contribution to [Metaculus](#))
 2. *Black Holes and Bright Ideas*
 Madjedi, K.; **Cabot, S.**; Gatinel, D. (July 2020 cover feature of [The Ophthalmologist](#))
 1. Undergraduate papers:
Where are the Missing Baryons? (senior thesis, 2017)
BPT Characterization of Star Forming Galaxies (junior paper, 2017)
Transverse Velocity Estimates of Q2237 + 0305: The Einstein Cross (junior paper, 2016)

SEMINARS, COLLOQUIA & CONFERENCE TALKS

Wesleyan University, CT Exoplanets Picnic: Extracting Data from Uncommunicative Worlds	2022
USRA/LPI, Ancient Venus Conference: Lunar Exploration as a Probe of Ancient Venus	2022
Harvard University, Exoplanet Lunch Speaker: Extracting Data from Uncommunicative Worlds	2022
STScI, Exoplanet Seminar Speaker: Extracting Data from Uncommunicative Worlds	2022
SwRI, Colloquium Speaker: The Ancient Solar System	2022
UCSC, Planetary Lunch Seminar Speaker: Extracting Data from Uncommunicative Worlds	2022
University of Arizona, Origins Seminar Speaker: Lunar Exploration and Impact Cratering	2022
Indiana University, Friday Lunch Seminar Speaker: Hidden Exoplanet Populations	2022
Bay Area Exoplanet Meeting #40 Speaker: Stacked Periodograms for Exoplanet Populations	2022
San Francisco State University Colloquium Speaker: Hidden Exoplanet Populations	2022
TESS Science Team Meeting #27 Speaker: Stacked Periodograms for Exoplanet Populations	2022
University of Chicago, Seminar Speaker: Lunar Exploration as a Probe of Ancient Venus	2021
TESS Science Team Meeting #24 Speaker: Detection of TOI-1518b and Fe in its Atmosphere	2021
University of Maryland, Seminar Speaker: Skies of a Scorching Planet	2020
Princeton University, Seminar Speaker: Lunar Exploration as a Probe of Ancient Venus	2020
Williams College, Guest Speaker: Where are the Missing Baryons?	2017

OBSERVING PROGRAMS

<i>The 100 Earths Project</i>	2018-Present
Member of radial velocity exoplanet survey team (P.I. Prof. Debra Fischer)	
Partnership with 4.3m Lowell Discovery Telescope (LDT)	
<i>Accounting for Stellar Activity with Interferometric Images</i>	2022A, 2022B
2.0 Nights Awarded on MIRC-X/CHARA Array, Co-I	
<i>A Comparative Study of the Atmospheres of Ultra-hot Jupiters</i>	2021B
1.8 Nights Awarded on CARMENES/Calar Alto Observatory, Co-I	
<i>Disentangling Stellar & Planet Signatures with First Interferometric Images of Sunlike Stars</i>	2021A

6.0 Nights Awarded on MIRC-X/CHARA Array, Co-I

⇒ Extensive observing experience including 26 nights on EXPRES/LDT

⇒ Trained observer for HARPS/ESO La Silla 3.6m telescope

ADVISING & TEACHING

Certificate of College Teaching Preparation (CCTP) Training 2022-Present
Offered by Yale's Poorvu Center for Teaching and Learning
Focus on Universal Learning Design and Equitable & Inclusive Teaching
Advised undergraduate senior research project (K. Azar, Yale University) 2022
Constraining Kepler-Multi Masses through N-body Simulation Stability Analyses
Yale University Teaching Fellow 2018-2020
ASTR 180 Introduction to Relativity and Black Holes
ASTR 130 Origins & Search for Life in the Universe
ASTR 160 Frontiers & Controversies in Astrophysics
ASTR 130 Origins & Search for Life in the Universe

PROFESSIONAL & DEPARTMENTAL SERVICE

NASA XRP Executive Secretary
Prospective graduate student admissions interviewer, Yale Astronomy Department 2022
Co-coordinator for Yale Exoplanet Seminar 2018-2019
Referee
MNRAS, MNRAS Letters, Astronomy and Computing, New Astronomy, Canadian Time Allocation Committee

OUTREACH

Presentation (Exoplanet Atmospheres) to Lexington High School, Lexington, MA
Presentation (Lunar Exploration as a Probe of Ancient Venus) to Lexington High School, Lexington, MA
Presentation, Tian Family Endowed Lecture Series at Berkshire School, Sheffield, MA
Live Webinar (Skies of a Scorching Planet), through Yale LFOP Planetarium, New Haven, CT
Telescope demo for Yale School of Management, through Yale LFOP Planetarium, New Haven, CT
Presentation (Gravity) to Pine Cobble middle school, Williamstown, MA
Presentation (Story of a Satellite) to Pine Cobble elementary school, Williamstown, MA
Telescope and planetarium presenter for public shows at Yale LFOP Planetarium, New Haven, CT
Presentation (The Universe) to senior citizens center, Sheffield, MA
Presentation (The Universe) to elementary school, Washington, D.C.
Presentations with supernova search team at various high schools, MA
