

Chih-Chun “Dino” Hsu

Center for Interdisciplinary Exploration and Research in Astrophysics (CIERA), Northwestern University
1800 Sherman Ave, 7th Floor, Room 7403, Evanston, IL 60201, USA
chsu [at] northwestern [dot] edu <https://chihchunhsu.github.io/>

CURRENT POSITION **Postdoctoral Associate** September 2022–present
Center for Interdisciplinary Exploration and Research in Astrophysics,
Northwestern University, Evanston, IL
Supervisor: Jason Jinfei Wang

EDUCATION **University of California, San Diego**, La Jolla, CA, USA
Doctor of Philosophy (Ph.D.) in Physics September 2022
Thesis: “Kinematics, Multiplicity, Rotational Dynamics, and Population Properties of Ultracool Dwarfs Inferred from High-Resolution Near-Infrared Spectroscopy”
Advisor: Adam J. Burgasser

National Tsing Hua University, Hsinchu, Taiwan
Bachelor of Science (B.S) in Physics June 2014
GPA: 4.22/4.3; ranked 1st out of the graduating class

RESEARCH INTERESTS lowest-mass stars; brown dwarfs; exoplanets; medium-/high-resolution spectroscopy;
very low-mass binaries; stellar populations; stellar kinematics; stellar rotation; stellar
and exoplanet atmosphere and abundance

RESEARCH EXPERIENCE **Postdoctoral Associate** 2022–present
Center for Interdisciplinary Exploration and Research in Astrophysics,
Northwestern University, Evanston, IL
Supervisor: Jason Jinfei Wang

Graduate Research Student 2016–2022
Center for Astrophysics and Space Sciences, UC San Diego, La Jolla, CA
Advisor: Adam J. Burgasser

Research Assistant 2015–2016
Institute of Astronomy, National Tsing Hua University, Hsinchu, Taiwan
Supervisor: Huei-Ru “Vivien” Chen

Undergraduate Research Student 2013–2014
Physics Department, National Tsing Hua University, Hsinchu, Taiwan
Advisor: Kingman Cheung

ACADEMIC HONORS & AWARDS **Cool Stars 21 Travel Grant** July 2022
Cool Stars 21st Meeting, Toulouse, France

Rodger Doxsey Travel Prize June 2022
AAS 240th Meeting, Pasadena, CA
Awarded for the top 10 (out of 116 entries) graduate students within one year of receiving or receipt of their PhD a monetary prize to enable the oral presentation of their dissertation research (transferred from the winter AAS 239th Meeting).

	<p>Friends of the International Center fellowship 2020 UC San Diego, La Jolla, CA Awarded for promoting international friendship, understanding, and cooperation.</p> <p>Carol and George Lattimer Award for Graduate Excellence 2019–2020 UC San Diego, La Jolla, CA Awarded to graduate students in the Divisions of Physical Sciences who seek interdisciplinary approaches to problem-solving and have a strong commitment to education, mentorship, and service.</p> <p>Physics Chair’s Challenge Award * 3 2017, 2018, 2022 UC San Diego, La Jolla, CA Awarded for supporting educational excellence and training for physics students.</p> <p>Physics Excellence Award 2016 UC San Diego, La Jolla, CA Awarded to highly qualified students admitted to the Physics PhD program.</p> <p>College of Science Elite Student Award * 3 2012–2014 National Tsing Hua University, Hsinchu, Taiwan Awarded to the top student of class based on academic achievements.</p> <p>Academic Achievement Award * 5 2011–2014 National Tsing Hua University, Hsinchu, Taiwan Awarded to top 5 % of class.</p> <p>College of Science Scholarship 2013 National Tsing Hua University, Hsinchu, Taiwan Awarded to one student in College of Science based on academic achievements.</p>
RESEARCH COLLABORATION	<p>Member of Keck Planet Imager and Characterizer (KPIC)</p> <p>Member of Backyard Worlds: Planet 9</p> <p>Member of Sloan Digital Sky Survey (SDSS) IV</p>
PUBLICATION SUMMARY	<p>37 peer-reviewed publications, 4 first-author publications, 2 second-author publications, and 10 non-refereed-publications; h-index 13 (490+ total citations)</p>
FIRST AUTHOR PUBLICATIONS	<p>[4] Hsu, C.; Burgasser, A. J.; Theissen, C. A.; Birky, J. L.; Aganze, C.; Gerasimov, R.; Schmidt, S. J.; Blake, C. H.; Covey, K. R.; Moreno-Hilario, E.; Gelino, C. R.; Serna J.; Brownstein, J. R.; Cunha K., “<i>The Brown Dwarf Kinematics Project (BDKP). VI. Ultracool Dwarf Radial and Rotational Velocities from SDSS/APOGEE High-resolution Spectroscopy</i>”, accepted to ApJS, July 2024, arXiv:2403.13760.</p> <p>[3] Hsu, C.; Wang, J. J.; Xuan, J. W.; Ruffio, J.-B.; Morris, E.; Echeverri, D.; Xin, Y.; Liberman, J.; Finnerty, L.; Hortsman, K.; Sappey B.; Doppmann G.; Mawet, D.; Jovanovic, N.; Fitzgerald, M. P.; Delorme, J.-R.; Wallace, J. K.; Baker, A.; Bartos, R.; Blake, G. A.; Calvin, B.; Cetre, S.; Lopez, R. A.; Pezzato, J.; Schofield, T.; Skemer, A.; Wang, Ji, “Rotation and Abundances of the Benchmark Brown Dwarf HD 33632 Ab from Keck/KPIC High-resolution Spectroscopy”, ApJ, 971, 9, August 2024.</p> <p>[2] Hsu, C.; Burgasser, A. J.; Theissen, C. A., “<i>Discovery of the Exceptionally</i></p>

Short Period Ultracool Dwarf Binary LP 413-53AB, ApJL, 945, L6, March 2023

- [1] **Hsu, C.**; Burgasser, A. J.; Theissen, C. A.; Gelino, C. R.; Birky, J. L.; Diamant, S. J. M.; Bardalez Gagliuffi, D. C.; Aganze, C.; Blake, C. H.; Faherty, J. K., “The Brown Dwarf Kinematics Project (BDKP). V. Radial and Rotational Velocities of T Dwarfs From Keck/NIRSPEC High-Resolution Spectroscopy”, ApJS 257, 45, December 2021.

**CONTRIBUTING
AUTHOR
PUBLICATIONS**

- [33] Yapeng Zhang, Jerry W. Xuan, Dimitri Mawet, Jason J. Wang, **Chih-Chun Hsu**, Jean-Baptiste Ruffio, Heather A. Knutson, Julie Inglis, Geoffrey A. Blake, Yayaati Chachan, Katelyn Horstman, Ashley Baker, Randall Bartos, Benjamin Calvin, Sylvain Cetre, Jacques-Robert Delorme, Greg Doppmann, Daniel Echeverri, Luke Finnerty, Michael P. Fitzgerald, Nemanja Jovanovic, Joshua Liberman, Ronald A. López, Evan Morris, Jacklyn Pezzato, Ben Sappey, Tobias Schofield, Andrew Skemer, J. Kent Wallace, Ji Wang, Clarissa R. Do Ó, “Atmospheric characterization of the super-Jupiter HIP 99770 b with KPIC”, accepted to AJ, May 2024
- [32] Jerry W. Xuan, **Chih-Chun Hsu**, Luke Finnerty, Jason J. Wang, Jean-Baptiste Ruffio, Yapeng Zhang, Heather A. Knutson, Dimitri Mawet, Eric E. Mamajek, Julie Inglis, Nicole L. Wallack, Marta L. Bryan, Geoffrey A. Blake, Paul Molliere, Neda Hejazi, Ashley Baker, Randall Bartos, Benjamin Calvin, Sylvain Cetre, Jacques-Robert Delorme, Greg Doppmann, Daniel Echeverri, Michael P. Fitzgerald, Nemanja Jovanovic, Joshua Liberman, Ronald A. Lopez, Evan Morris, Jacklyn Pezzato, Ben Sappey, Tobias Schofield, Andrew Skemer, James K. Wallace, Ji Wang, Shubh Agrawal, Katelyn Horstman, “Are these planets or brown dwarfs? Broadly solar compositions from high-resolution atmospheric retrievals of $\sim 10\text{--}30\text{ M}_{\text{Jup}}$ companions”, ApJ, 970, 71, July 2024
- [31] Evan C. Morris, Jason J. Wang, **Chih-Chun Hsu**, Jean-Baptiste Ruffio, Jerry W. Xuan, Jacques-Robert Delorme, Callie Hood, Marta L. Bryan, Emily C. Martin, Jacklyn Pezzato, Dimitri Mawet, Andrew Skemer, Ashley Baker, Randall Bartos, Benjamin Calvin, Sylvain Cetre, Greg Doppmann, Daniel Echeverri, Luke Finnerty, Michael P. Fitzgerald, Nemanja Jovanovic, Joshua Liberman, Ronald Lopez, Ben Sappey, Tobias Schofield, J. Kent Wallace, Ji Wang, “kappa And b is a fast rotator from KPIC High Resolution Spectroscopy”, accepted to AJ, May 2024
- [30] Federico Marocco, J. Davy Kirkpatrick, Adam C. Schneider, Aaron M. Meisner, Mark Popinchalk, Christopher R. Gelino, Jacqueline K. Faherty, Adam J. Burgasser, Dan Caselden, Jonathan Gagne, Christian Aganze, Daniella C. Bardalez-Gagliuffi, Sarah L. Casewell, **Chih-Chun Hsu**, Rocio Kiman, Peter R. M. Eisenhardt, Marc J. Kuchner, Daniel Stern, Leopold Gramaize, Arttu Sainio, Thomas P. Bickle, Austin Rothermich, William Pendrill, Melina Thevenot, Martin Kabatnik, Giovanni Colombo, Hiro Higashimura, Frank Kiwy, Elijah J. Marchese, Nikolaj Stevnbak Andersen, Christopher Tanner, Jim Walla, Zbigniew Wedraski, The Backyard Worlds Collaboration, “Thirteen New M Dwarf + T Dwarf Pairs Identified with WISE/NEOWISE”, ApJ, 967, 147, June 2024
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hot brown dwarf HD 984 B through high-resolution spectroscopy”, *A&A*, 686, 294, June 2024

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- [27] Daniel Echeverri, Jerry W. Xuan, John D. Monnier, Jacques-Robert Delorme, Jason J. Wang, Nemanja Jovanovic, Katelyn Horstman, Garreth Ruane, Bertrand Mennesson, Eugene Serabyn, Dimitri Mawet, J. Kent Wallace, Sofia Hillman, Ashley Baker, Randall Bartos, Benjamin Calvin, Sylvain Cetre, Greg Doppmann, Luke Finnerty, Michael P. Fitzgerald, **Chih-Chun Hsu**, Joshua Liberman, Ronald Lopez, Maxwell Millar-Blanchaer, Evan Morris, Jacklyn Pezzato, Jean-Baptiste Ruffio, Ben Sappey, Tobias Schofield, Andrew J. Skemer, Ji Wang, Yinzi Xin, Narsireddy Anugu, Sorabh Chhabra, Noura Ibrahim, Stefan Kraus, Gail H. Schaefer, Cyprien Lanthermann, “Vortex Fiber Nulling for Exoplanet Observations: First Direct Detection of M Dwarf Companions around HIP 21543, HIP 94666, and HIP 50319”, *ApJL*, 965, 15, April 2024
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- [25] J. Davy Kirkpatrick, Federico Marocco, Christopher R. Gelino, Yadukrishna Raghu, Jacqueline K. Faherty, Daniella C. Bardalez Gagliuffi, Steven D. Schurr, Kevin Apps, Adam C. Schneider, Aaron M. Meisner, Marc J. Kuchner, Dan Caselden, R. L. Smart, S. L. Casewell, Roberto Raddi, Aurora Kesseli, Nikolaj Stevnbak Andersen, Edoardo Antonini, Paul Beaulieu, Thomas P. Bickle, Martin Bilsing, Raymond Chieng, Guillaume Colin, Sam Deen, Alexandru Dereveanco, Katharina Doll, Hugo A. Durantini Luca, Anya Frazer, Jean Marc Gantier, Léopold Gramaize, Kristin Grant, Leslie K. Hamlet, Hiro Higashimura, Michiharu Hyogo, Peter A. Jalowiczor, Alexander Jonkeren, Martin Kabatnik, Frank Kiwy, David W. Martin, Marianne N. Michaels, William Pendrill, Celso Pessanha Machado, Benjamin Pumphrey, Austin Rothermich, Rebekah Russwurm, Arttu Sainio, John Sanchez, Fyodor Theo Sapelkin-Tambling, Jörg Schumann, Karl Selg-Mann, Harshdeep Singh, Andres Stenner, Guoyou Sun, Christopher Tanner, Melina Thévenot, Maurizio Ventura, Nikita V. Voloshin, Jim Walla, Zbigniew Wedracki, Jose I. Adorno, Christian Aganze, Katelyn

- N. Allers, Hunter Brooks, Adam J. Burgasser, Emily Calamari, Thomas Connor, Edgardo Costa, Peter R. Eisenhardt, Jonathan Gagné, Roman Gerasimov, Eileen C. Gonzales, **Chih-Chun Hsu**, Rocio Kiman, Guodong Li, Ryan Low, Eric Mamajek, Blake M. Pantoja, Mark Popinchalk, Jon M. Rees, Daniel Stern, Genaro Suárez, Christopher Theissen, Chao-Wei Tsai, Johanna M. Vos, David Zurek, The Backyard Worlds: Planet 9 Collaboration, “The Initial Mass Function Based on the Full-sky 20-pc Census of $\sim 3,600$ Stars and Brown Dwarfs”, *ApJS*, 271, 55, April 2024
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- [22] Jerry W. Xuan, Jason J. Wang, Luke Finnerty, Katelyn Horstman, Simon Grimm, Anne Peck, Eric L. Nielsen, Heather A. Knutson, Dimitri Mawet, Howard Isaacson, Andrew W. Howard, Michael C. Liu, Sam Walker, Mark Phillips, Geoffrey Blake, Jean-Baptiste Ruffio, Yapeng Zhang, Julie Inglis, Nicole L. Wallack, Aniket Sanghi, Erica Gonzales, Fei Dai, Ashley Baker, Randall Bartos, Charlotte Bond, Marta L. Bryan, Benjamin Calvin, Sylvain Cetre, Jacques-Robert Delorme, Greg Doppmann, Daniel Echeverri, Michael P. Fitzgerald, Nemanja Jovanovic, Joshua Liberman, Ronald A. López, Emily C. Martin, Evan Morris, Jacklyn Pezzato, Garreth Ruane, Ben Sapprey, Tobias Schofield, Andrew Skemer, Taylor Venenciano, James K. Wallace, Ji Wang, Peter Wizinowich, Yinzi Xin, Shubh Agrawal, Clarissa R. Do Ó, **Chih-Chun Hsu**, Caprice Phillips, “Validation of elemental and isotopic abundances in late-M spectral types with the benchmark HIP 55507 AB system”, *ApJ*, 962, 10, February 2024
- [21] Luke Finnerty, Jerry W. Xuan, Yinzi Xin, Joshua Liberman, Tobias Schofield, Michael P. Fitzgerald, Shubh Agrawal, Ashley Baker, Randall Bartos, Geoffrey A. Blake, Benjamin Calvin, Sylvain Cetre, Jacques-Robert Delorme, Greg Doppman, Daniel Echeverri, **Chih-Chun Hsu**, Nemanja Jovanovic, Ronald A. López, Emily C. Martin, Dimitri Mawet, Evan Morris, Jacklyn Pezzato, Jean-Baptiste Ruffio, Ben Sapprey, Andrew Skemer, Taylor Venenciano, J. Kent Wallace, Nicole L. Wallack, Jason J. Wang, Ji Wang, “Atmospheric metallicity and C/O of HD 189733 b from high-resolution spectroscopy”, *AJ*, 167, 43, January 2024
- [20] Grady Robbins, Aaron M. Meisner, Adam C. Schneider, Adam J. Burgasser, J. Davy Kirkpatrick, Jonathan Gagne, **Chih-Chun Hsu**, Leslie Moranta, Sarah Casewell, Federico Marocco, Roman Gerasimov, Jacqueline K. Faherty, Marc J. Kuchner, Dan Caselden, Michael C. Cushing, Sherelyn Alejandro, The Backyard Worlds: Planet 9 Collaboration, The Backyard Worlds: Cool Neighbors Collaboration, “CWISE J105512.11+544328.3: A Nearby Y Dwarf Spectroscopically Confirmed with Keck/NIRES”, *ApJ*, 958, 94, November 2023
- [19] M. Ghachoui; A. Soubkiou; R. D. Wells; B. V. Rackham; A. H. M. J. Triaud; D. Sebastian; S. Giacalone; K. G. Stassun; D. R. Ciardi; K. A. Collins; A.

- Liu; Y. Gómez Maqueo Chew; M. Gillon; Z. Benkhaldoun; L. Delrez; J. D. Eastman; O. Demangeon; K. Barkaoui; A. Burdanov; B.-O. Demory; J. de Wit; G. Dransfield; E. Ducrot; L. Garcia; Y. Gómez Maqueo Chew; M. A. Gómez-Muñoz; M. J. Hooton; E. Jehin; C. A. Murray; P. P. Pedersen; F.J. Pozuelos; D. Queloz; L. Sabin; N. Schanche; M. Timmermans; E.J. Gonzales; C. D. Dressing; C. Aganze; A. J. Burgasser; R. Gerasimov; **C. Hsu**; C. A. Theissen; D. Charbonneau; J. M. Jenkins; D. W. Latham; G. Ricker; S. Seager; A. Shporer; J. D. Twicken; R. Vanderspek; J. N. Winn; K. I. Collins; A. Fukui; T. Gan; N. Narita; R. P. Schwarz, “TESS discovers a super-Earth orbiting the M dwarf star TOI-1680”, *A&A*, 677, 31, September 2023
- [18] Daniel Echeverri; Jerry Xuan; Nemanja Jovanovic; Garreth Ruane; Jacques-Robert Delorme; Dimitri Mawet; Bertrand Mennesson; Eugene Serabyn; J. Kent Wallace; Jason Wang; Jean-Baptiste Ruffio; Luke Finnerty; Yinzi Xin; Maxwell Millar-Blanchaer; Ashley Baker; Randall Bartos; Benjamin Calvin; Sylvain Cetre; Greg Doppmann; Michael P. Fitzgerald; Sofia Hillman; Katelyn Horstman; **Chih-Chun Hsu**; Joshua Liberman; Ronald Lopez; Evan Morris; Jacklyn Pezzato; Caprice L. Phillips; Bin B. Ren; Ben Sapprey; Tobias Schofield; Andrew J. Skemer; Connor Vancil; Ji Wang, “Vortex fiber nulling for exoplanet observations: implementation and first light”, *JATIS*, 23063G, September 2023
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- [16] F. J. Pozuelos; M. Timmermans; B. V. Rackham; L. J. Garcia; A. J. Burgasser; S. R. Kane; M. N. Günther; K. G. Stassun; V. Van Grootel; M. Dévora-Pajares; R. Luque; B. Edwards; P. Niraula; N. Schanche; R. D. Wells; E. Ducrot; S. Howell; D. Sebastian; K. Barkaoui; W. Waalkes; C. Cadieux; R. Doyon; R. P. Boyle; J. Dietrich; A. Burdanov; L. Delrez; B.-O. Demory; J. de Wit; G. Dransfield; M. Gillon; Y. Gómez Maqueo Chew; M. J. Hooton; E. Jehin; C. A. Murray; P. P. Pedersen; D. Queloz; S. J. Thompson; A. H. M. J. Triaud; S. Zúñiga-Fernández; K. A. Collins; M. M. Fausnaugh; C. Hedges; K. M. Hesse; J. M. Jenkins; M. Kunimoto; D. W. Latham; A. Shporer; E. B. Ting; G. Torres; P. Amado; J. R. Rodón; C. Rodríguez-López; J. C. Suárez; R. Alonso; Z. Benkhaldoun; Z. K. Berta-Thompson; P. Chinchilla; M. Ghachoui; M. A. Gómez-Muñoz; R. Rebolo; L. Sabin; U. Schroffenegger; E. Furlan; C. Gnilka; K. Lester; N. Scott; C. Aganze; R. Gerasimov; **C. Hsu**; C. Theissen; D. Apai; W. P. Chen; P. Gabor; T. Henning; L. Mancini, “A super-Earth and a mini-Neptune near the 2:1 MMR straddling the radius valley around the nearby mid-M dwarf TOI-2096”, *A&A*, 672, 70, April 2023
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Cold Companion Discovered via the Backyard Worlds: Planet 9 Citizen Science Project”, *ApJ*, 921, 150, November 2021

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- [5] J. Davy Kirkpatrick; Christopher R. Gelino; Jacqueline K. Faherty; Aaron M. Meisner; Dan Caselden; Adam C. Schneider; Federico Marocco; Alfred J. Cayago; R. L. Smart; Peter R. Eisenhardt; Marc J. Kuchner; Edward L. Wright; Michael C. Cushing; Katelyn N. Allers; Daniella C. Bardalez Gagliuffi; Adam J. Burgasser; Jonathan Gagne; Sarah E. Logsdon; Emily C. Martin; James G. Ingalls; Patrick J. Lowrance; Ellianna S. Abrahams; Christian Aganze; Roman Gerasimov; Eileen C. Gonzales; **Chih-Chun Hsu**; Nikita Kamraj; Rocio Kiman; Jon Rees; Christopher Theissen; Kareem Ammar; Nikolaj Stevnbak Andersen; Paul Beaulieu; Guillaume Colin; Charles A. Elachi; Samuel J. Goodman; Leopold Gramaize; Leslie K. Hamlet; Justin Hong; Alexander Jonkeren; Mohammed Khalil; David W. Martin; William Pendrill; Benjamin Pumphrey; Austin Rothermich; Arttu Sainio; Andres Stenner; Christopher Tanner; Melina Thevenot; Nikita V. Voloshin; Jim Walla; Zbigniew Wedrcki; “The Field Substellar Mass Function Based on the Full-sky 20-pc Census of 525 L, T, and Y Dwarfs”, *ApJS*, 253, 7, March 2021
- [4] Sahlmann, Johannes; Dupuy, Trent J.; Burgasser, Adam J.; Filippazzo, Joseph C.; Martín, Eduardo L.; Bardalez Gagliuffi, Daniella C.; **Hsu, Chih-Chun**; Lazorenko, Petro F.; Liu, Michael C., “Individual Dynamical Masses of DENIS J063001.4–184014AB Reveal A Likely Young Brown Dwarf Triple”, *MNRAS*, 500, 5453, January 2021
- [3] Meisner, Aaron M.; Faherty, Jacqueline K.; Kirkpatrick, J. Davy; Schneider, Adam C.; Caselden, Dan; Gagné, Jonathan; Kuchner, Marc J.; Burgasser, Adam J.; Casewell, Sarah L.; Debes, John H.; Artigau, Étienne; Bardalez Gagliuffi, Daniella C.; Logsdon, Sarah E.; Kiman, Rocio; Allers, Katelyn; **Hsu, Chih-Chun**; Wisniewski, John P.; Allen, Michaela B.; Beaulieu, Paul; Colin, Guillaume Durantini Luca, Hugo A.; Goodman, Sam; Gramaize, Léopold; Hamlet, Leslie K.; Hinckley, Ken; Kiwy, Frank; Martin, David W.; Pendrill, William; Rothermich, Austin; Sainio, Arttu; Schümann, Jörg; Andersen, Nikolaj Stevnbak; Tanner, Christopher; Thakur, Vinod; Thévenot, Melina; Walla, Jim; Wędrcki, Zbigniew; Aganze, Christian; Gerasimov, Roman; Theissen, Christopher; The Backyard Worlds: Planet 9 Collaboration, “Spitzer Follow-up of Extremely Cold Brown Dwarfs Discovered by the Backyard Worlds: Planet 9 Citizen Science Project”, *ApJ*, 889, 123, August 2020
- [2] Schneider, Adam C.; Burgasser, Adam J.; Gerasimov, Roman; Marocco, Federico; Gagné, Jonathan; Goodman, Sam; Beaulieu, Paul; Pendrill, William; Rothermich, Austin; Sainio, Arttu; Kuchner, Marc J.; Caselden, Dan; Meisner, Aaron M.; Faherty, Jacqueline K.; Mamajek, Eric E.; **Hsu, Chih-Chun**; Greco, Jennifer J.; Cushing, Michael C.; Kirkpatrick, J. Davy; Bardalez-Gagliuffi, Daniella Logsdon, Sarah E.; Allers, Katelyn; Debes, John H.; Backyard Worlds: Planet 9 Collaboration, “WISEA J041451.67-585456.7 and WISEA J181006.18-101000.5: The First Extreme T-type Subdwarfs?”, *ApJ*, 989, 77, July 2020

- [1] Paudel, R. R., Gizis, J. E., Burgasser, A. J., **Hsu, C.**, “2MASS J10274572+0629104: the very short period young M6 dwarf binary system identified in K2 data”, MNRAS, 486, 4144, July 2019

CONFERENCE PRECEEDINGS

- [1] Wang, Jason J.; Mawet, Dimitri; Xuan, Jerry W.; **Hsu, Chih-Chun**; Ruffio, Jean-Baptiste; Horstman, Katelyn; Xin, Yinzi; Delorme, Jacques-Robert; Jovanovic, Nemanja; Zhang, Yapeng; Finnerty, Luke; Baker, Ashley; Bartos, Randall; Blake, Geoffrey A.; Calvin, Benjamin; Cetre, Sylvain; Doppmann, Gregory W.; Echeverri, Daniel; Fitzgerald, Michael P.; Liberman, Joshua; Lopez, Ronald; Morris, Evan; Pezzato-Rovner, Jacklyn; Sappey, Ben; Schofield, Tobias; Skemer, Andrew; Wallace, J. Kent; Wang, Ji, “The high-contrast performance of the Keck Planet Imager and Characterizer”, Proceedings of the SPIE, submitted, June 2024

NON- REFEREED PUBLICATIONS

*: Directly mentored students

- [9] Austin Humphreys, Aaron M. Meisner, Adam J. Burgasser, **Chih-Chun Hsu**, Adam C. Schneider, Christopher A. Theissen, Christian Aganze, Roman Gerasimov, Noah Schapera, J. Davy Kirkpatrick, Federico Marocco, Jacqueline K. Faherty, Dan Caselden, Marc J. Kuchner, Michael C. Cushing, and The Backyard Worlds: Planet 9 Collaboration and The Belle silicon vertex detector group, “Spectroscopic Confirmation of the Nearby, Wide-separation L Dwarf Pair CWISE J061741.79+194512.8AB”, RNAAS, 7, 184, August 2023
- [8] Holwerda, Benne; Pirzkal, Nor; Burgasser, Adam J.; **Hsu, Chih-Chun**, “Detection and characterization of M-L-T-Y dwarfs belonging to the Milky Way Disks and Stellar Halo with the Roman Space Telescope”, arXiv:2306.12363, June 2023
- [7] *Zhou, Tianxing; *Jacobsen, Delilah; *Vazquez-Segovia, Brigitte; **Hsu, Chih-Chun**; Theissen, Christopher A.; Burgasser, Adam J., “Resolved Binaries with Late-M and L Dwarf Companions Identified in Gaia eDR3”, RNAAS, 7, 50, March 2023
- [6] Valencia, Julissa Villalobos; Burgasser, Adam J.; **Hsu, Chih-Chun**; Aganze, Christian, “Spectral Characterization of the Low-mass Companion μ Virgenes B”, RNAAS, 6, 670, December 2022
- [5] Schapera, Noah; Caselden, Dan; Meisner, Aaron M.; Burgasser, Adam J.; Schneider, Adam C.; Humphreys, Austin; **Hsu, Chih-Chun**; Softich, Emma; Smith, Leigh C.; Lucas, Philip W.; Kirkpatrick, J. Davy; Marocco, Federico; Faherty, Jacqueline K.; Kuchner, Marc J.; Cushing, Michael C.; Backyard Worlds: Cool Neighbors Collaboration, “VVV J165507.19-421755.5: A Nearby T Dwarf Hidden in the Galactic Plane”, RNAAS, 6, 189, September 2022
- [4] Theissen, Christopher A.; Burgasser, Adam J.; Martin, Emily C.; Cushing, Michael C.; Konopacky, Quinn M.; McLean, Ian S.; **Hsu, Chih-Chun**; Bardalez Gagliuffi, Daniella C.; Schneider, Adam C.; Kuchner, Marc J.; Faherty, Jacqueline K.; Beichman, Charles A.; Miles, Brittany; Skemer, Andy; Logsdon, Sarah E.; Meisner, Aaron M.; Kirkpatrick, J. Davy, “Keck NIRES Spectral Standards for L, T, and Y Dwarfs”, RNAAS, 6, 151, July 2022
- [3] Low, Ryan; Burgasser, Adam J.; Reylé, Céline; Gerasimov, Roman; **Hsu, Chih-Chun**; Theissen, Christopher A, “Spectroscopic Confirmation of an M6 Dwarf Companion to the Nearby Star BD-08 2582”, RNAAS, 5, 26, February 2021

- [2] Dimitriadis, G.; Foley, R. J.; Aganze, C.; Burgasser, A.; Gerasimov, R.; **Hsu, C.**; Low, R.; Theissen, C., “UCSC Transient Classification Report for 2020-03-04”, TNSCR, 716, 1, March 2020
- [1] Dimitriadis, G.; Foley, R. J.; Aganze, C.; Burgasser, A.; Gerasimov, R.; **Hsu, C.**; Low, R.; Theissen, C., “Spectroscopic Classifications of AT 2020dvr with the Lick Shane telescope”, ATel, 13542, 1, March 2020

TALKS

- “Rotation and Abundances of Low-mass Stars, Brown Dwarfs, and Exoplanets from Keck/KPIC High-resolution Spectroscopy” July 10, 2024
Emerging Researchers in Exoplanet Science Symposium IX, Cornell University, Ithaca, NY
- “Rotation and Abundances of Low-mass Stars, Brown Dwarfs, and Exoplanets from Keck/KPIC High-resolution Spectroscopy” June 25, 2024
Cool Stars 22, University of California San Diego, San Diego, CA
- “Probing Formation and Evolution of Low-mass Stars, Brown Dwarfs, and Giant Exoplanets using High-resolution Spectroscopy” (**invited**) May 20, 2024
Monday Science Seminar, Department of Astronomy, University of Wisconsin-Madison, WI
- “The Brown Dwarf Kinematics Project (BDKP). VI. Ultracool Dwarf Radial and Rotational Velocities from SDSS/APOGEE High-Resolution Spectroscopy ” January 10, 2024
AAS 243 Meeting, Ernest N. Morial Convention Center, New Orleans, LA
- “Rotation of Directly-Imaged Brown Dwarfs and Gas Giant Exoplanets with KPIC” October 27, 2023
Great Lakes Exoplanets Area Meeting, Indiana University, Bloomington, IN
- “Discovery of the Shortest-Period Ultracool Dwarf Binary” January 11, 2023
AAS 241 Meeting, Seattle Convention Center, Seattle, WA
- “Discovery of the Shortest-Period Ultracool Dwarf Binary” (**press conference**) January 10, 2023
AAS 241 Meeting Press Conference, Seattle Convention Center, Seattle, WA
- “Kinematics, Rotation, and Multiplicity of Ultracool Dwarfs with High-Resolution Near-Infrared Spectroscopy” (**dissertation talk; Rodger Doxsey Prize**) June 14, 2022
AAS 240 Meeting, Pasadena Convention Center, Pasadena, CA
- “Forward-Modeling High-Resolution Spectroscopic Data of Ultracool Dwarfs with Large Public Archives” June 3, 2022
HDSI Internal Talk, Halicioglu Data Science Institute, UC San Diego, Virtual
- “Kinematics, Rotation, and Multiplicity of Ultracool Dwarfs with High-Resolution Near-Infrared Spectroscopy” (**invited**) May 25, 2022
IPAC Seminar Series, Infrared Processing and Analysis Center, Virtual
- “Radial and Rotational Velocities of T Dwarfs from Keck/NIRSPEC High-Resolution Spectroscopy” September 9, 2021
Keck Science Meeting, UC San Diego

“Precise Radial and Rotational Velocities of Ultracool Dwarfs with the APOGEE High-Resolution Spectrometer” August 11, 2021
2021 SDSS Collaboration Meeting, Virtual

“Radial Velocities and Kinematic Ages of Nearby T Dwarfs from Keck/NIRSPEC High-Resolution Spectroscopy” January 15, 2021
AAS 237 Meeting, Virtual

“Precise Radial and Rotational Velocities of Ultracool Dwarfs Using a Forward-Modeling Method with High-Resolution Spectroscopy” February 4, 2020
High-Resolution Infrared Spectroscopy for Exoplanet Characterization Hackathon, Caltech, Pasadena, CA

“Radial and Rotational Velocities of Ultracool Dwarfs From High-Resolution Spectroscopy” (invited) March 5, 2019
AMNH Astrophysics seminar, American Museum of Natural History, New York, NY

“Radial and Rotational Velocities of Ultracool Dwarfs From High-Resolution Spectroscopy” February 15, 2019
CASS Journal Club, UC San Diego, La Jolla, CA

POSTERS

“Rotation and Abundances of HD 33632 Ab with KPIC” July 2023
2023 Sagan Summer Workshop, Caltech, Pasadena, CA

“Kinematics, Rotation, and Multiplicity of Ultracool Dwarfs with High-Resolution Near-Infrared Spectroscopy” July 2022
The 21 Cambridge Workshops of Cool Stars, Stellar Systems and the Sun, Toulouse, France

“Radial Velocities and Kinematic Ages of Nearby T Dwarfs from Keck/NIRSPEC High-Resolution Spectroscopy” March 2021
The 20.5 Cambridge Workshops of Cool Stars, Stellar Systems and the Sun, Virtual

“Precise Radial and Rotational Velocities for over 440 Ultracool Dwarfs Observed with NIRSPEC” September 2020
Keck Science Meeting 2020, Virtual

“Precise Radial and Rotational Velocities for T Dwarfs Using NIRSPEC High-Resolution Spectrometer” September 2019
Keck Science Meeting 2019, UCLA, Los Angeles, CA

“Precise Radial and Rotational Velocities of Ultracool Dwarfs with APOGEE High-Resolution Spectra” June 2019
SDSS-IV/V Collaboration Meeting 2019, Ensenada, Mexico

“Radial and Rotational Velocities for 300+ Ultracool Dwarfs from NIRSPEC High-Resolution Spectroscopy” January 2019
AAS 233 Meeting, Seattle, WA

“Toward Measurements of Radial and Rotational Velocities of 300+ Ultracool Dwarfs from NIRSPEC High-Resolution Spectroscopy” September 2018
Keck Science Meeting 2018, Caltech, Pasadena, CA

“Precise Radial Velocities to Detect Exoplanets around Ultracool Dwarfs Using the NIRSPEC High-Resolution Spectrograph”
September 2018
ExSoCal 2018, Caltech, Pasadena, CA

“Refined Measurements of Radial and Rotational Velocities of 300+ Ultracool Dwarfs from NIRSPEC High-Resolution Spectroscopy”
July 2018
Cool Stars 20, Boston University, Cambridge, MA

SELECTED PRESS COVERAGE

Observations investigate properties of nearby brown dwarf HD 33632 Ab”,
Phys.org, May 2024

“Record breakers! Super-close dwarf stars orbit each other in less than a day ”,
Space.com, March 2023

“Ces deux naines ultrafroides présentent la plus courte période orbitale jamais enregistrée”,
Science & Vie (in French), April 2023

“Ultracool Dwarf Binary Stars Break Records ”,
W. M. Keck Observatory, February 2023

“Astronomers Spot A Tiny Binary System”,
Sky & Telescope, January 2023

“Ultracool dwarf binary stars break records”,
Earth Sky, January 2023

“This Record-Breaking Star System’s Year Is Shorter Than One Earth Day”,
CNET, January 2023

“Ultracool dwarf binary stars break records ”,
Northwestern News, January 2023

“Here’s how cool a star can be and still achieve lasting success”,
Science News, August 2021

“Citizen scientists help discover 95 brown dwarfs that are neighbors of our sun”,
CNN, August 2020

WORKSHOPS

Research Communication Training Program
Northwestern University, Evanston, IL
March 26– May 29 2024

2023 Sagan Summer Workshop
Caltech, Pasadena, CA
July 24–28 2023

Future Keck IR Spectroscopy Workshop
Virtual
January 27 2021

High-Resolution Infrared Spectroscopy for Exoplanet Characterization Hackathon
Caltech, Pasadena, CA
February 4–6 2020

Telluric Line Hack Week Workshop
February 25–28 2019

Flatiron Institute, New York, NY

2017 Kraft Observational Astronomy Workshop
Lick Observatory, Mount Hamilton, CA

October 12–16 2017

SciCoder Workshop
Vanderbilt University, Nashville, TN

July 31–August 4 2017

GRANTS & FUNDINGS

Characterizing the Lowest-mass Planet Hosts and Investigating the Potential Link
2024–2026 between Stellar Surface Gravity and Planet Occurrence
Co-I, NASA XRP (PI: Christopher Theissen), \$618k 2024–2026

Infrared Gold: A Student-Centered Program to Extract, Analyze, and Disseminate
20 Years of IRTF/SpeX Point-Source Spectroscopy
Co-I, NASA ADAP (PI: Adam Burgasser), \$666,511 2022–2025

TELESCOPE TIME AWARDED

James Webb Space Telescope
Co-I: **Cycle 3**: “Arcana of the Ancients: A Spectral Metallicity Survey of the Lowest-Mass Stars and Brown Dwarfs”, (PI: Adam Burgasser), 58.2 Primary Spacecraft Hours awarded

Co-I: **Cycle 3**: “Is CWISE 1055+5443 the first young Y-type brown dwarf?”, (PI: Aaron Meisner), 4.09 Primary Spacecraft Hours awarded

Hubble Space Telescope
Co-I: **Cycle 32**: “It Takes Two Planets to Tango: Constraining the Orbit of a Planetary-Mass Binary”, (PI: Christopher Theissen), 10 Primary Spacecraft Orbits in Cycles 32 and 33 awarded

W. M. Keck Telescopes, Keck II 10-meter
PI: 2024B: “Precise Abundances of Ultracool Dwarfs using FGK Wide Binaries”, 2.5 nights awarded; 0.5 night awarded through Northwestern and 2.0 additional nights awarded as Co-I through Theissen’s UC access (NIRSPEC)

PI: 2023B–2024A: “Precise Characterization of M Dwarf Exoplanet Host Abundances for KPIC”, 1.0 night awarded (NIRSPEC)

Co-I: **2022B–2024B**: “Abundances and Kinematics of Ultracool Dwarf Planet Host Twin Stars”, 4.5 nights awarded (NIRSPEC)

Co-I: **2024A**: “Keck/NIRSPEC Cadence Program: NIRSPEC Observations of Ultra-short Period Ultracool Binaries”, 0.8 nights awarded (NIRSPEC; Hsu science lead)

Co-I: **2021B–2022B**: “Galactic Archaeology with Ultracool Dwarfs: Kinematic Structure Among L Dwarfs”, 5.25 nights awarded (NIRSPEC; Hsu thesis project)

Co-I: **2021B–2022B**: “The Old and the Quick: A Search for Halo Brown Dwarfs with Backyard Worlds”, 5.5 nights awarded (NIRSPEC)

Co-I: **2019B–2020B**: “Completing the Kinematic Census of Local T Dwarfs”, 5.75 nights awarded (NIRSPEC; Hsu thesis project)

Co-I: **2018B–2021A**: “NIRSPEC Follow-up of Young T Dwarfs from Backyard Worlds”,

9 nights awarded (NIRES)

Gemini South Telescope

Co-I: **2024A**: “High-resolution Near-infrared Observations of a Planetary-mass Binary”, 8 hours (IGRINS)

Co-I: **2023B**: “Is the First T Dwarf Companion a Brown Dwarf Binary?”, 16.9 hours (IGRINS)

Co-I: **2023A**: “Abundances and Kinematics of Ultracool Dwarf Planet Host Twin Stars”, 10.7 hours (IGRINS)

Co-I: **2022B**: “Discovery of an Exceptionally Short-Period Very Low Mass Binary”, 6.4 hours (IGRINS)

MMT Observatory

PI: 2023B-2024B: “Abundance Calibration of Ultracool Dwarfs Using FGK Wide-Binaries with MMT Hectochelle”, 2.5 night awarded (Hectochelle)

Lick Observatory

PI: 2022B: “Calibrations of Chemical Abundances of Ultracool Dwarfs in Wide Binary Systems with Optical High-Resolution Spectroscopy of G-Type Primaries”, 1 night awarded (APF)

Co-I **2023B-2024B**: “Optical Spectroscopy of New and Benchmark M & L Dwarfs from Gaia and Backyard Worlds, and Potential Exoplanet Hosts from TESS and SPECULOOS”, 15 night awarded (Shane/Kast)

Co-I **2021A**: “Optical Spectroscopy of New Nearby M & L Dwarfs from Gaia & LaTE-MoVeRS”, 4 night awarded (Shane/Kast)

Co-I: **2021A**: “Radial Velocity Monitoring of WISE J1624-3212: A Potential Low-mass Binary Hiding at 18 pc”, 1 night awarded (APF)

NASA InfraRed Telescope Facility (IRTF)

PI: 2024B: “Characterization of Benchmark Ultracool M Dwarfs with FGK Wide Binaries”, 14 hours awarded (SpeX)

PI: 2022B, 2023B: “Discovery of an Exceptionally Short-Period Very Low Mass Binary”, 6 nights awarded (iSHELL)

Co-I: **2018A-2019B**: “Training the Cannon: Calibrating APOGEE Observations of Ultracool Dwarfs”, 6 nights awarded (iSHELL)

Canada France Hawaii Telescope (CFHT)

Co-I: **2021A**: “Precision NIR RVs for WISE J1624-3212”, 2.4 hours awarded (SPIRou)

**ADDITIONAL
OBSERVING
EXPERIENCE**

Keck II 10-meter/NIRSPEC 7 nights 2017–2018

Keck I 10-meter/HIRES 0.5 nights 2018

Shane Telescope 3-meter

• Kast Double Spectrograph: 22 nights 2018–2021

	<ul style="list-style-type: none"> • ShaneAO/ShARCS: 1 night 	2019
	<i>NASA InfraRed Telescope Facility (IRTF)/SpeX 2 nights</i>	2021–2022
MENTORSHIP	Julianne Cronin, graduate student at Northwestern University Allie Salyga, undergraduate student at Northwestern University Brigitte Vazquez, undergraduate student at UC San Diego (now graduate student at the University of Michigan) Delilah Jacobsen, undergraduate student at UC San Diego Tianxing “Sky” Zhou, undergraduate student at UC San Diego	2023–present 2023–present 2021–2022 2021–2022 2021–2022
TEACHING	<p>Summary: 3 guest lectures at Northwestern University; 1-time teaching assistant at AAS Meeting workshop; 15 quarters as a teaching assistant for 6 different classes at UC San Diego; 1-time teaching assistant for Physics GRE Bootcamp at UC San Diego</p> <p><i>Teaching assistant for Workshop “How to Read Papers Efficiently and Effectively: A Workshop on Critical Reading for Students and Instructors”</i> January 7, 2024 AAS 243 Meeting, Ernest N. Morial Convention Center, New Orleans, LA</p> <ul style="list-style-type: none"> • Introductory lecture of brown dwarf astrophysics for undergraduate and graduate physics/astronomy students <p><i>Guest lecture for ASTRON 314/414</i> May 11, 2023 Northwestern University, Evanston, IL</p> <ul style="list-style-type: none"> • Introductory lecture of brown dwarf astrophysics for undergraduate and graduate physics/astronomy students <p><i>Guest lectures for ASTRON 441</i> October 25 and 27, 2022 Northwestern University, Evanston, IL</p> <ul style="list-style-type: none"> • workshops on Overleaf and reading academic papers for first- and second-year astronomy Ph.D. students <p><i>Teaching assistant for PHYS 2D</i> Spring 2021 UC San Diego, La Jolla, CA</p> <ul style="list-style-type: none"> • lower-division modern physics lecture for engineering/physical science majors <p><i>Teaching assistant for PHYS 5</i> Fall 2020 UC San Diego, La Jolla, CA</p> <ul style="list-style-type: none"> • lower-division introductory stellar astrophysics lecture for non-physics major <p><i>Teaching assistant for PHYS 2DL</i> Spring & Fall 2017, 2019, Spring 2020, Fall 2021 UC San Diego, La Jolla, CA</p> <ul style="list-style-type: none"> • lower-division modern physics lab for engineering/physical science majors <p><i>Teaching assistant for PHYS 1A</i> Spring 2018 UC San Diego, La Jolla, CA</p> <ul style="list-style-type: none"> • lower-division mechanics lab for life-science majors <p><i>Teaching assistant for PHYS 160</i> Winter 2018, Fall 2018 UC San Diego, La Jolla, CA</p> <ul style="list-style-type: none"> • upper-division introductory stellar astrophysics lecture for physics major 	

	Teaching assistant for <i>PHYS 2BL</i> UC San Diego, La Jolla, CA	Fall 2016, Winter 2017
	<ul style="list-style-type: none"> • lower-division electricity & magnetism lab for engineering/physics major 	
	California Professoriate for Access to Physics Careers (CPAPC) Southern California Physics GRE Bootcamp	August 2017
	<ul style="list-style-type: none"> • UC San Diego, La Jolla, CA 	
PUBLIC OUTREACH	Astronomy on Tap Chicago (invited) Begyle Brewing, Chicago, IL	February 9 th , 2023
	<ul style="list-style-type: none"> • Famous astronomy outreach program to general public • “Discovery of the Closest-Separated, Fastest-Orbiting Ultracool Dwarf Couple” 	
	Python Workshop for Physics Undergraduate Students UC San Diego, La Jolla, CA	2019–2021 November
	<ul style="list-style-type: none"> • Python-programming bridge program for transferred students to UC San Diego 	
	2019 Institute for Scientist & Engineer Educators (ISEE) Professional Development Program (PDP) UC Santa Cruz/UC Los Angeles, CA	March–September 2019
	<ul style="list-style-type: none"> • Professional development team focused on effective and inclusive teaching, including mentoring, and also includes training in professional skills such as communication, teamwork, collaboration, and leadership. 	
	Institute of the Americas (IOA) Science Innovation Camp UC San Diego, La Jolla, CA	July 20 2017
	<ul style="list-style-type: none"> • Physics outreach for Latin American high school students (14–18 year old) 	
	The Barrio Logan Science & Art Expo Mercado del Barrio, San Diego, CA	March 16 2019
	<ul style="list-style-type: none"> • Physics outreach for Mexican families from around southern San Diego 	
REFEREE	The AAS Journals, MNRAS Gemini observing proposal (2023A)	2023-present 2022
SERVICE	Co-organizer of the CIERA Observers Group Meetings	2023 Fall–present
PROFESSIONAL AFFILIATIONS	American Astronomical Society (AAS)	2018–Present
SKILLS	Python, L ^A T _E X, Github, HTML; Languages: Mandarin (native), English (fluent)	
REFERENCES	Prof. Adam Burgasser Professor of Astronomy & Astrophysics University of California San Diego 9500 Gilman Drive 0424, La Jolla, California 92093-0424, USA aburgasser at ucsd.edu Prof. Quinn Konopacky Associate Professor of Astronomy & Astrophysics	

University of California San Diego
9500 Gilman Drive 0424, La Jolla, California 92093-0424, USA
qkonopacky at ucsd.edu

Prof. Christopher Theissen

Assistant Professor of Astronomy & Astrophysics
University of California San Diego
9500 Gilman Drive 0424, La Jolla, California 92093-0424, USA
ctheissen at ucsd.edu

Prof. Jason Wang

Assistant Professor of Physics and Astronomy
Northwestern University
2145 Sheridan Road, Evanston, IL 60208-3112, USA
jason.wang at northwestern.edu

[CV compiled on 2024/08/02]