

# Chih-Chun “Dino” Hsu

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**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 1<sup>st</sup> 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

**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 21<sup>st</sup> Meeting, Toulouse, France

**Rodger Doxsey Travel Prize**      June 2022  
AAS 240<sup>th</sup> Meeting, Pasadena, CA  
Awarded for providing graduate students/postdocs 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 AAS 239<sup>th</sup> Meeting).

- Friends of the International Center fellowship** 2020  
UC San Diego, La Jolla, CA  
Awarded for promoting international friendship, understanding, and cooperation.
- 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.
- 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.
- Physics Excellence Award** 2016  
UC San Diego, La Jolla, CA  
Awarded to highly qualified students admitted to the Physics PhD program.
- 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.
- Academic Achievement Award \* 5** 2011–2014  
National Tsing Hua University, Hsinchu, Taiwan  
Awarded to top 5 % of class.
- College of Science Scholarship** 2013  
National Tsing Hua University, Hsinchu, Taiwan  
Awarded to one student in College of Science based on academic achievements.

**RESEARCH COLLABORATION**      **Member of Keck Planet Imager and Characterizer (KPIC)**  
**Member of Backyard Worlds: Planet 9**  
**Member of Sloan Digital Sky Survey (SDSS) IV**

**PUBLICATION SUMMARY**      34 peer-reviewed publications, 4 first-author publications (2 under review), and 9 non-refereed-publications; h-index 11 (400+ total citations)

- FIRST AUTHOR PUBLICATIONS**
- [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., “*The Brown Dwarf Kinematics Project (BDKP). VI. Ultracool Dwarf Radial and Rotational Velocities from SDSS/APOGEE High-resolution Spectroscopy*”, submitted to AAS Journals, arXiv:2403.13760.
  - [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., “*Rotation and Abundances of the Benchmark Brown Dwarf HD 33632 Ab from Keck/KPIC High-resolution Spectroscopy*”, submitted to AAS Journals, arXiv:2405.08312.
  - [2] **Hsu, C.**; Burgasser, A. J.; Theissen, C. A., “*Discovery of the Exceptionally*

*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**

- [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 Mollere, 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”, accepted to ApJ, May 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”, accepted to ApJ, April 2024
- [29] J. C. Costes, J. W. Xuan, A. Vigan, J. Wang, V. D’Orazi, P. Mollière, A. Baker, R. Bartos, G. A. Blake, B. Calvin, S. Cetre, J. Delorme, G. Doppmann, D. Echeverri, L. Finnerty, M. P. Fitzgerald, **C. Hsu**, N. Jovanovic, R. Lopez, D. Mawet, E. Morris, J. Pezzato, C. L. Phillips, J. Ruffio, B. Sappey, A. Schneeberger, T. Schofield, A. J. Skemer, J. K. Wallace, J. Wang, “Fresh view of the hot brown dwarf HD 984 B through high-resolution spectroscopy”, accepted to A&A, April 2024
- [28] Clarissa R. Do Ó, Ben Sappey, Quinn M. Konopacky, Jean-Baptiste Ruffio, Kelly K. O’Neil, Tuan Do, Gregory Martinez, Travis S. Barman, Jayke S. Nguyen, Jerry W. Xuan, Christopher A. Theissen, Sarah Blunt, William Thompson, **Chih-Chun Hsu**, Ashley Baker, Randall Bartos, Geoffrey A. Blake, Benjamin Calvin, Sylvain Cetre, Jacques-Robert Delorme, Greg Doppmann, Daniel Echeverri, Luke Finnerty, Michael P. Fitzgerald, Julie Inglis, Nemanja Jovanovic, Ronald A. López, Dimitri Mawet, Evan Morris, Jacklyn Pezzato, Tobias Schofield, Andrew Skemer, J. Kent Wallace, Jason J. Wang, Ji Wang,

- Joshua Liberman, “Orbital and Atmospheric Characterization of the 1RXS J034231.8+121622 System Using High-Resolution Spectroscopy Confirms That The Companion is a Low-Mass Star”, accepted to AJ, April 2024
- [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
- [26] Austin Rothermich; Jacqueline K. Faherty; Daniella Bardalez-Gagliuffi; Adam C. Schneider; J. Davy Kirkpatrick; Aaron M. Meisner; Adam J. Burgasser; Mark Kuchner; Katelyn Allers; Jonathan Gagné; Dan Caselden; Emily Calamari; Mark Popinchalk; Roman Gerasimov; Christian Aganze; Emma Softich; **Chin-Chun Hsu**; Preethi Karpoor; Christopher A. Theissen; Jon Rees; Rosario Cecilio-Flores-Elie; Michael C. Cushing; Federico Marocco; Sarah Casewell; Les Hamlet; Michaela B. Allen; Paul Beaulieu; Guillaume Colin; Jean Marc Gantier; Leopold Gramaize; Peter Jalowiczor; Martin Kabatnik; Frank Kiwi; David W. Martin; Billy Pendrill; Ben Pumphrey; Arttu Sainio; Jorg Schumann; Nikolaj Stevnbak; Guoyou Sun; Christopher Tanner; Vinod Thakur; Melina Thevenot; Zbigniew Wedraski, “89 New Ultracool Dwarf Co-Moving Companions Identified With The Backyard Worlds: Planet 9 Citizen Science Project”, AJ, 167, 253, June, 2024
- [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 Schümann, Karl Selg-Mann, Harshdeep Singh, Andres Stenner, Guoyou Sun, Christopher Tanner, Melina Thévenot, Maurizio Ventura, Nikita V. Voloshin, Jim Walla, Zbigniew Wedraski, 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 ~3,600 Stars and Brown Dwarfs”, ApJS, 271, 55, April 2024
- [24] Holwerda, B. W.; **Hsu, Chih-Chun**; Hathi, Nimish; Bisigello, Laura; de la Vega, Alexander; Arrabal Haro, Pablo; Bagley, Micaela; Dickinson, Mark;

- Finkelstein, Steven L.; Kartaltepe, Jeyhan S.; Koekemoer, Anton M.; Papovich, Casey; Pirzkal, Nor; Cook, Kyle; Robertson, Clayton; Casey, Caitlin M.; Aganze, Christian; Pérez-González, Pablo G.; Lucas, Ray A.; Jogee, Shardha; Wilkins, Stephen; Burgarella, Denis; Kirkpatrick, Allison, “Cosmic Evolution Early Release Science Survey (CEERS): Multi-classing Galactic Dwarf Stars in the deep JWST/NIRCam”, *MNRAS*, 529, 1067, March 2024
- [23] Lingfeng Wei, Christopher A. Theissen, Quinn M. Konopacky, Jessica R. Lu, **Chih-Chun Hsu**, Dongwon Kim, “The 3D Kinematics of the Orion Nebula Cluster II: Mass-dependent Kinematics of the Inner Cluster”, *ApJ*, 962, 174, February 2024
- [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 Sappey, 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 Sappey, 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
- [17] Xin, Yinzi; Xuan, Jerry W.; Mawet, Dimitri; Wang, Jason; Ruane, Garreth; Echeverri, Daniel; Jovanovic, Nemanja; Do’O, Clarissa; Fitzgerald, Michael; Horstman, Katelyn; **Hsu, Chih-Chun**; Liberman, Joshua; Lopez, Ronald A.; Phillips, Caprice L.; Ren, Bin B.; Ruffio, Jean-Baptiste; Sapprey, Ben, “On-sky speckle nulling through a single-mode fiber with the Keck Planet Imager and Characterizer”, JATIS, 23026L, August 2023
- [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
- [15] Schneider, Adam C.; Burgasser, Adam J.; Bruursema, Justice; Munn, Jeffrey A.; Vrba, Frederick J.; Caselden, Dan; Kabatnik, Martin; Rothermich, Austin; Sainio, Arttu; Bickle, Thomas P.; Dahm, Scott E.; Meisner, Aaron M.; Kirkpatrick, J. Davy; Suarez, Genaro; Gagne, Jonathan; Faherty, Jacqueline K.; Vos, Johanna M.; Kuchner, Marc J.; Williams, Stephen J.; Bardalez Gagliuffi, Daniella; Aganze, Christian; **Hsu, Chih-Chun**; Theissen, Christopher; Cushing, Michael C.; Marocco, Federico; Casewell, Sarah; Backyard Worlds: Planet 9 Collaboration, “Redder than Red: Discovery of an Exceptionally Red L/T Transition Dwarf”, ApJL, 943, L16, February 2023
- [14] Kiwy, Frank; Faherty, Jacqueline K.; Meisner, Aaron; Schneider, Adam C.; Kirkpatrick, J. Davy; Kuchner, Marc J.; Burgasser, Adam J.; Casewell, Sarah; Kiman, Rocio; Calamari, Emily; Aganze, Christian; **Hsu, Chih-Chun**; Sainio, Arttu; Thakur, Vinod; The Backyard Worlds: Planet 9 Collaboration, “Discovery of 34 low-mass comoving systems using NOIRLab Source Catalog DR2”, AJ, 164, 3, July 2022
- [13] Aganze, Christian; Burgasser, Adam J.; Malkan, Mathew; Theissen, Christopher A; Tejada Arevalo, Roberto A; **Hsu, Chih-Chun**; Bardalez Gagliuffi, Daniella C; E Ryan, Russell, Jr; Holwerda, Benne, “Beyond the Local Volume II: Population Scaleheights and Ages of Ultracool Dwarfs in Deep HST/WFC3 Parallel Fields”, ApJ, 934, 73, July 2022

- [12] Softich, Emma; Schneider, Adam C.; Patience, Jennifer; Burgasser, Adam J.; Shkolnik, Evgenya; Faherty, Jacqueline K.; Caselden, Dan; Meisner, Aaron M.; Kirkpatrick, J. Davy; Kuchner, Marc J.; Gagne, Jonathan; Bardalez-Gagliuffi, Daniella; Cushing, Michael C.; Casewell, Sarah L.; Aganze, Christian; **Hsu, Chih-Chun**; Andersen, Nikolaj Stevnbak; Kiwy, Frank; Thevenot, Melina; The Backyard Worlds: Planet 9 Collaboration, “CWISE J014611.20-050850.0AB: The Widest Known Brown Dwarf Binary in the Field”, *ApJL*, 922, L12, February 2022
- [11] Theissen, C. A.; Konopacky, Q. M.; Lu, J. R.; Kim D.; Zhang, S. Y.; **Hsu, C.**; Chu, L.; Wei, L., “The 3-D Kinematics of the Orion Nebula Cluster: NIRSPEC-AO Radial Velocities of the Core Population”, *ApJ*, 926, 141, February 2022
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- [9] Gagliano, Alexander; Izzo, Luca; Kilpatrick, Charles D.; Mockler, Brenna; Jacobson-Galán, Wynn Vincente; Terreran, Giacomo; Dimitriadis, Georgios; Zenati, Yossef; Auchettl, Katie; Drout, Maria R.; Narayan, Gautham; Foley, Ryan J.; Margutti, R.; Rest, Armin; Jones, D. O.; Aganze, Christian; Aleo, Patrick D.; Burgasser, Adam J.; Coulter, D. A.; Gerasimov, Roman; Gall, Christa; Hjorth, Jens; **Hsu, Chih-Chun**; Magnier, Eugene A.; Mandel, Kaisey S.; Piro, Anthony L.; Rojas-Bravo, César; Siebert, Matthew R.; Stacey, Holland; Stroh, Michael Cullen; Swift, Jonathan J.; Taggart, Kirsty; Tinyanont, Samaporn, “An Early-time Optical and Ultraviolet Excess in the Type-Ic SN 2020oi”, *ApJ*, 924, 55, January 2022
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the Backyard Worlds: Planet 9 Citizen Science Project”, ApJ, 915, 120, July 2021

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- [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; Wędracki, 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
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NON-  
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PUBLICATIONS



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- [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

- “*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”* January 10, 2023  
AAS 241 Meeting Press Conference, Seattle Convention Center, Seattle, WA
- “Kinematics and Multiplicity of Ultracool Dwarfs with High-Resolution Near-Infrared Spectroscopy”* November 16, 2022  
Northwestern CIERA Observational Astronomy Meeting, Evanston, IL
- “Kinematics, Rotation, and Multiplicity of Ultracool Dwarfs with High-Resolution Near-Infrared Spectroscopy”* 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, Halicioglus 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
- “Ultracool Dwarf Kinematics and Ages Revealed by High-Resolution Spectroscopy”* November 13, 2020  
CASS Journal Club, UC San Diego, La Jolla, CA
- “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**

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

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

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

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

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|-------------------------------|--|-----------------------|
| <b>WORKSHOPS</b>              | <i>2023 Sagan Summer Workshop</i><br>Caltech, Pasadena, CA   | July 24–28 2023       |
|                               | <i>Future Keck IR Spectroscopy Workshop</i><br>Virtual   | January 27 2021       |
|                               | <i>High-Resolution Infrared Spectroscopy for Exoplanet Characterization Hackathon</i><br>Caltech, Pasadena, CA   | February 4–6 2020     |
|                               | <i>Telluric Line Hack Week Workshop</i><br>Flatiron Institute, New York, NY  | February 25–28 2019   |
|                               | <i>2017 Kraft Observational Astronomy Workshop</i><br>Lick Observatory, Mount Hamilton, CA   | October 12–16 2017    |
|                               | <i>SciCoder Workshop</i><br>Vanderbilt University, Nashville, TN   | July 31–August 4 2017 |
| <b>GRANTS &amp; FUNDINGS</b>  | <i>Characterizing the Lowest-mass Planet Hosts and Investigating the Potential Link</i><br>2024–2026 between Stellar Surface Gravity and Planet Occurrence<br>Co-I, NASA XRP (PI: Christopher Theissen), \$618k            | 2024–2026             |
|                               | <i>Infrared Gold: A Student-Centered Program to Extract, Analyze, and Disseminate 20 Years of IRTF/SpeX Point-Source Spectroscopy</i><br>Co-I, NASA ADAP (PI: Adam Burgasser), \$666,511                                   | 2022–2025             |
| <b>TELESCOPE TIME AWARDED</b> | <i>James Webb Space Telescope</i><br>Co-I: <b>Cycle 3</b> : “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: <b>Cycle 3</b> : “Is CWISE 1055+5443 the first young Y-type brown dwarf?”, (PI: Aaron Meisner), 4.09 Primary Spacecraft Hours awarded  |                       |
|                               | <i>W. M. Keck Telescopes, Keck II 10-meter</i><br><b>PI: 2024B</b> : “Precise Abundances of Ultracool Dwarfs using FGK Wide Binaries”, 0.5 night awarded (NIRSPEC)   |                       |
|                               | <b>PI: 2023B–2024A</b> : “Precise Characterization of M Dwarf Exoplanet Host Abundances for KPIC”, 1.0 night awarded (NIRSPEC)   |                       |
|                               | Co-I: <b>2021B–2022B</b> : “Galactic Archaeology with Ultracool Dwarfs: Kinematic Structure Among L Dwarfs”, 5.25 nights awarded (NIRSPEC)   |                       |
|                               | Co-I: <b>2021B–2022B</b> : “The Old and the Quick: A Search for Halo Brown Dwarfs with Backyard Worlds”, 5.5 nights awarded (NIRSPEC)  |                       |
|                               | Co-I: <b>2019B–2020B</b> : “Completing the Kinematic Census of Local T Dwarfs”, 5.75 nights awarded (NIRSPEC)  |                       |

Co-I: **2018B–2021A**: “NIRES Follow-up of Young T Dwarfs from Backyard Worlds”, 9 nights awarded (NIRES)

*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)

*NASA InfraRed Telescope Facility (IRTF)*

**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)

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|--|--|-------------------------|
| <b>ADDITIONAL<br/>OBSERVING<br/>EXPERIENCE</b> | <i>Keck II 10-meter/NIRSPEC 7 nights</i>   | 2017–2018               |
|  | <i>Keck I 10-meter/HIRES 0.5 nights</i>  | 2018                    |
|  | <i>Shane Telescope 3-meter</i>   |                         |
|  | • Kast Double Spectrograph: 22 nights  | 2018–2021               |
|  | • ShaneAO/ShARCS: 1 night  | 2019                    |
|  | <i>NASA InfraRed Telescope Facility (IRTF)/SpeX 2 nights</i>   | 2021–2022               |
| <b>MENTORSHIP</b>                              | Julianne Cronin, graduate student at Northwestern University   | 2023–present            |
|  | Allie Salyga, undergraduate student at Northwestern University   | 2023–present            |
|  | Brigitte Vazquez, undergraduate student at UC San Diego  | 2021–2022               |
|  | Delilah Jacobsen, undergraduate student at UC San Diego  | 2021–2022               |
|  | Tianxing “Sky” Zhou, undergraduate student at UC San Diego   | 2021–2022               |
| <b>TEACHING</b>                                | <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   |                         |
|  | • Introductory lecture of brown dwarf astrophysics for undergraduate and graduate physics/astronomy students   |                         |
|  | <i>Guest lecture for ASTRON 314/414</i>  | May 11, 2023            |
|  | Northwestern University, Evanston, IL  |                         |
|  | • Introductory lecture of brown dwarf astrophysics for undergraduate and graduate physics/astronomy students   |                         |
|  | <i>Guest lectures for ASTRON 441</i>   | October 25 and 27, 2022 |
|  | Northwestern University, Evanston, IL  |                         |
|  | • workshops on Overleaf and reading academic papers for first- and second-year astronomy Ph.D. students  |                         |
|  | <i>Teaching assistant for PHYS 2D</i>  | Spring 2021             |

|                            |   |  |
|----------------------------|---|--|
|                            | UC San Diego, La Jolla, CA  |  |
|                            | <ul style="list-style-type: none"> <li>• lower-division modern physics lecture for engineering/physical science majors</li> </ul>   |  |
|                            | <i>Teaching assistant for PHYS 5</i>  | Fall 2020  |
|                            | UC San Diego, La Jolla, CA  |  |
|                            | <ul style="list-style-type: none"> <li>• lower-division introductory stellar astrophysics lecture for non-physics major</li> </ul>  |  |
|                            | <i>Teaching assistant for PHYS 2DL</i>  | Spring & Fall 2017, 2019, Spring 2020, Fall 2021 |
|                            | UC San Diego, La Jolla, CA  |  |
|                            | <ul style="list-style-type: none"> <li>• lower-division modern physics lab for engineering/physical science majors</li> </ul>   |  |
|                            | <i>Teaching assistant for PHYS 1A</i>   | Spring 2018                                      |
|                            | UC San Diego, La Jolla, CA  |  |
|                            | <ul style="list-style-type: none"> <li>• lower-division mechanics lab for life-science majors</li> </ul>  |  |
|                            | <i>Teaching assistant for PHYS 160</i>  | Winter 2018, Fall 2018                           |
|                            | UC San Diego, La Jolla, CA  |  |
|                            | <ul style="list-style-type: none"> <li>• upper-division introductory stellar astrophysics lecture for physics major</li> </ul>  |  |
|                            | <i>Teaching assistant for PHYS 2BL</i>  | Fall 2016, Winter 2017                           |
|                            | UC San Diego, La Jolla, CA  |  |
|                            | <ul style="list-style-type: none"> <li>• lower-division electricity &amp; magnetism lab for engineering/physics major</li> </ul>  |  |
|                            | <i>California Professoriate for Access to Physics Careers (CPAPC)</i>   |  |
|                            | <i>Southern California Physics GRE Bootcamp</i>   | August 2017                                      |
|                            | <ul style="list-style-type: none"> <li>• UC San Diego, La Jolla, CA</li> </ul>  |  |
| <b>PUBLIC<br/>OUTREACH</b> | <b>Astronomy on Tap Chicago (invited)</b>   | February 9 <sup>th</sup> , 2023                  |
|                            | Begyle Brewing, Chicago, IL   |  |
|                            | <ul style="list-style-type: none"> <li>• Famous astronomy outreach program to general public</li> <li>• “Discovery of the Closest-Separated, Fastest-Orbiting Ultracool Dwarf Couple”</li> </ul>  |  |
|                            | <b>Python Workshop for Physics Undergraduate Students</b>   |  |
|                            | UC San Diego, La Jolla, CA  | 2019–2021  |
|                            | <ul style="list-style-type: none"> <li>• Python-programming bridge program for transferred students to UC San Diego</li> </ul>  | November   |
|                            | <b>2019 Institute for Scientist &amp; Engineer Educators (ISEE)</b>   |  |
|                            | <b>Professional Development Program (PDP)</b>   | March–September 2019                             |
|                            | UC Santa Cruz/UC Los Angeles, CA  |  |
|                            | <ul style="list-style-type: none"> <li>• 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.</li> </ul> |  |
|                            | <b>Institute of the Americas (IOA) Science Innovation Camp</b>  | July 20 2017                                     |
|                            | UC San Diego, La Jolla, CA  |  |
|                            | <ul style="list-style-type: none"> <li>• Physics outreach for Latin American high school students (14–18 year old)</li> </ul>   |  |
|                            | <b>The Barrio Logan Science &amp; Art Expo</b>  | March 16 2019                                    |
|                            | Mercado del Barrio, San Diego, CA   |  |
|                            | <ul style="list-style-type: none"> <li>• Physics outreach for Mexican families from around southern San Diego</li> </ul>  |  |
| <b>REFEREE</b>             | <b>The AAS Journals, MNRAS</b>  | 2023-present                                     |
|                            | <b>Gemini observing proposal (2023A)</b>  | 2022   |

**PROFESSIONAL AFFILIATIONS** American Astronomical Society (AAS) 2018–Present

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*Chih-Chun Hsu, Page 15 of 15, Curriculum Vitae*