

# 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

**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–  
 UC San Diego, La Jolla, CA 2020  
 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.

## 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*”, in prep.
- [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
- [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

- [25] Lingfeng Wei, Christopher A. Theissen, Quinn M. Konopacky, Jessica R. Lu, **Chih-Chun Hsu**, Dongwon Kim, “*The 3D Kinematics of the Orion Nebula*”

- [24] 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. Jafowiczor, 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”, Accepted in ApJS, December 2023
- [23] 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”, Accepted in ApJ, December 2023
- [22] 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”, Accepted in AJ, December 2023
- [21] 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”, submitted to MNRAS, September 2023
- [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

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- [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
- [10] 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 I: Surface Densities of Ultracool Dwarfs in Deep HST/WFC3 Parallel Fields”, ApJ, 924, 144, January 2022
- [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
- [8] Faherty, Jacqueline K.; Gagne, Jonathan; Popinchalk, Mark; Vos, Johanna M.; Burgasser, Adam J.; Schumann, Jorg; Schneider, Adam C.; Kirkpatrick, J. Davy; Meisner, Aaron M.; Kuchner, Marc J.; Bardalez Gagliuffi, Daniella C.;

- Marocco, Federico; Caselden, Dan; Gonzales, Eileen C.; Rothermich, Austin; Casewell, Sarah L.; Debes, John H.; Aganze, Christian; Ayala, Andrew; **Hsu, Chih-Chun**; Cooper, William J.; Smart, R. L.; Gerasimov, Roman; Theissen, Christopher A.; The Backyard Worlds: Planet 9 Collaboration, “A Wide Planetary Mass Companion Discovered Through the Citizen Science Project Backyard Worlds: Planet 9”, *ApJ*, 923, 48, December 2021
- [7] Schneider, Adam C.; Meisner, Aaron M.; Gagne, Jonathan; Faherty, Jacqueline K.; Marocco, Federico; Burgasser, Adam J.; Kirkpatrick, J. Davy; Kuchner, Marc J.; Gramaize, Leopold; Rothermich, Austin; Brooks, Hunter; Vrba, Frederick J.; Bardalez Gagliuffi, Daniella; Caselden, Dan; Cushing, Michael C.; Gelino, Christopher R.; Line, Michael R.; Casewell, Sarah L.; Debes, John H.; Aganze, Christian Ayala, Andrew; Gerasimov, Roman; Gonzales, Eileen C.; **Hsu, Chih-Chun**; Kiman, Rocio; Popinchalk, Mark; Theissen, Christopher; Backyard Worlds: The Planet 9 Collaboration, “Ross 19B: An Extremely Cold Companion Discovered via the Backyard Worlds: Planet 9 Citizen Science Project”, *ApJ*, 921, 150, November 2021
- [6] Meisner, Aaron M.; Schneider, Adam C.; Burgasser, Adam J.; Marocco, Federico; Line, Michael R.; Faherty, Jacqueline K.; Kirkpatrick, J. Davy; Caselden, Dan; Kuchner, Marc J.; Gelino, Christopher R.; Gagne, Jonathan; Theissen, Christopher; Gerasimov, Roman; Aganze, Christian; **Hsu, Chih-Chun**; Wisniewski, John P.; Casewell, Sarah L.; Bardalez Gagliuffi, Daniella C.; Logsdon, Sarah E.; Eisenhardt, Peter R. M., “New Candidate Extreme T Subdwarfs from the Backyard Worlds: Planet 9 Citizen Science Project”, *ApJ*, 915, 120, July 2021
- [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 Wedraski; “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,

NON-  
REFEREED  
PUBLICATIONS

- 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
- [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
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- [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
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- [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
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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

“*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*” 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”* 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”*  
Cool Stars 20, Boston University, Cambridge, MA

July 2018

**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

**WORKSHOPS**

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

*Future Keck IR Spectroscopy Workshop* January 27 2021  
Virtual

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

*Telluric Line Hack Week Workshop* February 25–28 2019  
Flatiron Institute, New York, NY

*2017 Kraft Observational Astronomy Workshop* October 12–16 2017  
Lick Observatory, Mount Hamilton, CA

*SciCoder Workshop* July 31–August 4 2017  
Vanderbilt University, Nashville, TN

**TELESCOPE  
TIME  
AWARDED**

W. M. Keck Telescopes, Keck II 10-meter  
PI: **2023B–2024A**: “Precise Characterization of M Dwarf Exoplanet Host Abun-  
dances for KPIC”

- 1.0 night awarded (NIRSPEC)

Co-I: **2021B–2022B**: “Galactic Archaeology with Ultracool Dwarfs: Kinematic  
Structure Among L Dwarfs”

- 5.25 nights awarded (NIRSPEC)

Co-I: **2021B–2022B**: “The Old and the Quick: A Search for Halo Brown Dwarfs

with Backyard Worlds”

- 5.5 nights awarded (NIRES)

Co-I: **2019B–2020B**: “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**: “Abundance Calibration of Ultracool Dwarfs Using FGK Wide- Binaries with MMT Hectochelle”

- 1 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**: “Discovery of an Exceptionally Short-Period Very Low Mass Binary”

- 3 nights awarded (iSHELL)

PI: **2023B**: “Discovery of an Exceptionally Short-Period Very Low Mass Binary”

- 3 nights awarded (iSHELL)

Co-I: **2018A–2019B**: “Training the Cannon: Calibrating APOGEE Observations of Ultracool Dwarfs”

- 6 nights awarded (iSHELL)

## 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

- ShaneAO/ShARCS: 1 night

2019

*NASA InfraRed Telescope Facility (IRTF)/SpeX 2 nights*

2021–2022

## UNDERGRAD MENTORSHIP

Allie Salyga, Northwestern University

2023–present

Brigette Vazquez, UC San Diego

2021–2022

Delilah Jacobsen, UC San Diego

2021–2022

Tianxing “Sky” Zhou, UC San Diego

2021–2022

## TEACHING

*Teaching assistant for Workshop “How to Read Papers Efficiently and Effectively: A Workshop on Critical Reading for Students and Instructors”* 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

*Guest lecture for ASTRON 314/414*

May 11, 2023

Northwestern University, Evanston, IL

- Introductory lecture of brown dwarf astrophysics for undergraduate and graduate physics/astronomy students

*Guest lectures for ASTRON 441*

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

*Teaching assistant for PHYS 2D*

Spring 2021

UC San Diego, La Jolla, CA

- lower-division modern physics lecture for engineering/physical science majors

*Teaching assistant for PHYS 5*

Fall 2020

UC San Diego, La Jolla, CA

- lower-division introductory stellar astrophysics lecture for non-physics major

*Teaching assistant for PHYS 2DL* Spring & Fall 2017, 2019, Spring 2020, Fall 2021

UC San Diego, La Jolla, CA

- lower-division modern physics lab for engineering/physical science majors

*Teaching assistant for PHYS 1A*

Spring 2018

UC San Diego, La Jolla, CA

- lower-division mechanics lab for life-science majors

*Teaching assistant for PHYS 160*

Winter 2018, Fall 2018

UC San Diego, La Jolla, CA

- upper-division introductory stellar astrophysics lecture for physics major

*Teaching assistant for PHYS 2BL*

Fall 2016, Winter 2017

UC San Diego, La Jolla, CA

- lower-division electricity & magnetism lab for engineering/physics major

*California Professoriate for Access to Physics Careers (CPAPC)*

*Southern California Physics GRE Bootcamp*

August 2017

- UC San Diego, La Jolla, CA

## **PUBLIC OUTREACH**

**Astronomy on Tap Chicago (invited)**

February 9<sup>th</sup>, 2023

Begyle Brewing, Chicago, IL

- 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

- Python-programming bridge program for transferred students to UC San Diego

**2019 Institute for Scientist & Engineer Educators (ISEE)**

**Professional Development Program (PDP)**

March–September 2019

UC Santa Cruz/UC Los Angeles, CA

- 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**      July 20 2017  
UC San Diego, La Jolla, CA  
• Physics outreach for Latin American high school students (14–18 year old)

**The Barrio Logan Science & Art Expo**      March 16 2019  
Mercado del Barrio, San Diego, CA  
• Physics outreach for Mexican families from around southern San Diego

**REFeree**      **The Astrophysical Journal Letters**      2023  
**Gemini observing proposal (2023A)**      2022

**SERVICE**      **Co-organizer of the CIERA Observers Group Meetings**      2023 Fall–present

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

**SKILLS**      Python, L<sup>A</sup>T<sub>E</sub>X, Github, HTML; Languages: Mandarin (native), English (fluent)

**REFERENCES**      **Dr. Adam Burgasser**  
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[CV compiled on 2024/01/14]