

# Chih-Chun “Dino” Hsu

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<b>EDUCATION</b>	<b>University of California, San Diego</b> , La Jolla, CA, USA Doctor of Philosophy (Ph.D.) in Physics Thesis: “Kinematics, Multiplicity, Rotational Dynamics, and Population Properties of Ultracool Dwarfs Inferred from High-Resolution Near-Infrared Spectroscopy” Advisor: Adam Burgasser Expected June 2022
	<b>National Tsing Hua University</b> , Hsinchu, Taiwan Bachelor of Science (B.S) in Physics June 2014
<b>RESEARCH INTERESTS</b>	lowest-mass stars; brown dwarfs; exoplanets; medium-/high-resolution spectroscopy; very low-mass binaries; stellar populations; stellar kinematics; stellar rotation
<b>RESEARCH EXPERIENCE</b>	<b>Graduate Research Student</b> 2016–present Center for Astrophysics and Space Sciences, UC San Diego, La Jolla, CA Advisor: Adam Burgasser
	<b>Research Assistant</b> 2015–2016 Institute of Astronomy, National Tsing Hua University, Hsinchu, Taiwan Supervisor: Huei-Ru “Vivien” Chen
	<b>Undergraduate Research Student</b> 2013–2014 Physics Department, National Tsing Hua University, Hsinchu, Taiwan Advisor: Kingman Cheung
<b>ACADEMIC HONORS &amp; AWARDS</b>	<b>Friends of the International Center fellowship</b> (\$2,000) 2020 UC San Diego, La Jolla, CA Awarded for promoting international friendship, understanding, and cooperation.
	<b>Carol and George Lattimer Award for Graduate Excellence</b> (\$4,000) 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.
	<b>Physics Chair’s Challenge Award * 2</b> (\$500) 2017–2018 UC San Diego, La Jolla, CA Awarded for supporting educational excellence and training for physics students.
	<b>Physics Excellence Award</b> (\$9,200) 2016 UC San Diego, La Jolla, CA Awarded to highly qualified students admitted to the Physics PhD program.
	<b>College of Science Elite Student Award * 3</b> 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.; Gelino, C. R.; Birky, J. L.; Diamant, S. J. M.; Bardalez Gagliuffi, D. C.; Aganze, C., Blake, C. H., Jacqueline K. Faherty, “The Brown Dwarf Kinematics Project (BDKP). VI. Radial and Rotational Velocities of late-M and L Dwarfs from Keck/NIRSPEC High-Resolution Spectroscopy”, in prep.
- [3] **Hsu, C.**; Burgasser, A. J.; Theissen, C. A.; Birky, J. L.; Aganze; Schmidt, S. J. ; C., Blake, C. H.; Covey, K. R., “Ultracool Dwarf Radial and Rotational Velocity Survey with SDSS/APOGEE High-Resolution Spectrometer”, in prep.
- [2] **Hsu, C.**; Burgasser, A. J.; Bardalez Gagliuffi, D. C.; Sahlmann, Johannes; Theissen, C. A., “2MASS J21265916+7617440: A Long Period Brown Dwarf Binary System”, in prep.
- [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., Jacqueline K. Faherty, “The Brown Dwarf Kinematics Project (BDKP). V. Radial and Rotational Velocities of T Dwarfs From Keck/NIRSPEC High-Resolution Spectroscopy”, accepted in ApJS, arXiv:2107.01222.

**CONTRIBUTING  
AUTHOR  
PUBLICATIONS**

- [9] 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”, accepted in ApJ, arXiv:2110.07672
- [8] 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”, accepted in ApJ, arXiv:2108.05321
- [7] 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”, submitted to ApJ, arXiv:2105.05871
- [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”, accepted in ApJ, arXiv:2106.01387, June 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 Wedracki; “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; Wedracki, 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
- [1] 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

NON-  
REFEREED  
PUBLICATIONS

## TALKS

*“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

*“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

	<p><i>“Precise Radial Velocities to Detect Exoplanets around Ultracool Dwarfs Using the NIRSPEC High-Resolution Spectrograph”</i> September 2018 ExSoCal 2018, Caltech, Pasadena, CA</p> <p><i>“Refined Measurements of Radial and Rotational Velocities of 300+ Ultracool Dwarfs from NIRSPEC High-Resolution Spectroscopy”</i> July 2018 Cool Stars 20, Boston University, Cambridge, MA</p>	
<b>PRESS COVERAGE</b>	<p><i>“Here’s how cool a star can be and still achieve lasting success”</i>, Science News, August 2021</p>	
<b>WORKSHOPS</b>	<p><i>Future Keck IR Spectroscopy Workshop</i> January 27 2021 Virtual</p> <p><i>High-Resolution Infrared Spectroscopy for Exoplanet Characterization Hackathon</i> February 4–6 2020 Caltech, Pasadena, CA</p> <p><i>Telluric Line Hack Week Workshop</i> February 25–28 2019 Flatiron Institute, New York, NY</p> <p><i>2017 Kraft Observational Astronomy Workshop</i> October 12–16 2017 Lick Observatory, Mount Hamilton, CA</p> <p><i>SciCoder Workshop</i> July 31–August 4 2017 Vanderbilt University, Nashville, TN</p>	
<b>TELESCOPE TIME AWARDED</b>	<p><i>W. M. Keck Telescopes, Keck II 10-meter</i> Co-I: <b>2021B</b>: “Galactic Archaeology with Ultracool Dwarfs: Kinematic Structure Among L Dwarfs”  <ul style="list-style-type: none"> <li>• 1.75 nights awarded (NIRSPEC)</li> </ul> </p> <p>Co-I: <b>2021B</b>: “The Old and the Quick: A Search for Halo Brown Dwarfs with Backyard Worlds”  <ul style="list-style-type: none"> <li>• 2 nights awarded (NIREs)</li> </ul> </p> <p>Co-I: <b>2019B–2020B</b>: “Completing the Kinematic Census of Local T Dwarfs”  <ul style="list-style-type: none"> <li>• 5.75 nights awarded (NIRSPEC)</li> </ul> </p> <p>Co-I: <b>2018B–2021A</b>: “NIREs Follow-up of Young T Dwarfs from Backyard Worlds”  <ul style="list-style-type: none"> <li>• 9 nights awarded (NIREs)</li> </ul> </p> <p><i>NASA InfraRed Telescope Facility (IRTF)</i> Co-I: <b>2018A–2019B</b>: “Training the Cannon: Calibrating APOGEE Observations of Ultracool Dwarfs”  <ul style="list-style-type: none"> <li>• 6 nights awarded (iSHELL)</li> </ul> </p>	
<b>ADDITIONAL OBSERVING EXPERIENCE</b>	<p><i>Keck II 10-meter/NIRSPEC 7 nights</i> 2017–2018</p> <p><i>Keck I 10-meter/HIRES 0.5 nights</i> 2018</p> <p><i>Shane Telescope 3-meter</i>  <ul style="list-style-type: none"> <li>• Kast Double Spectrograph: 22 nights</li> </ul> 2018–2021</p>	

	<ul style="list-style-type: none"> <li>• ShaneAO/ShARCS: 1 night</li> </ul>	2019
	<i>NASA InfraRed Telescope Facility (IRTF)/SpeX 0.5 nights</i>	2021
<b>UNDERGRAD MENTORSHIP</b>	Brigette Vazquez, UC San Diego	2021–Present
	Delilah Jacobsen, UC San Diego	2021–Present
	Tianxing “Sky” Zhou, UC San Diego	2021–Present
<b>TEACHING</b>	<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 OUTREACH</b>	<b>Python Workshop for Physics Undergraduate Students</b>	November 2019, November 2020
	<ul style="list-style-type: none"> <li>• UC San Diego, La Jolla, CA</li> </ul>	
	<b>2019 Institute for Scientist &amp; Engineer Educations (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	

- Physics outreach for Mexican families from around southern San Diego

**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**  
 Professor of Physics  
 University of California San Diego  
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**Dr. Quinn Konopacky**  
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[CV compiled on 2021/10/18]