

# Christian Aganze

✉ caganze@ucsd.edu

🌐 <https://caganze.github.io>

## Appointments

- 2023– 📌 Stanford Science Fellow, Stanford University
- 2023– 📌 KIPAC Rubin Fellow, Stanford University

## Education

- 2016 – 2023 📌 **PhD Physics**, UC San Diego, CA  
Thesis title: *Galactic Archeology with Ultracool Dwarfs*  
Advisor: Prof. Adam Burgasser
- 2012 – 2016 📌 **B.Sc. Physics**, Morehouse College, Atlanta, GA

## Publications

### First-author, Peer-reviewed Articles

- 1 **Aganze, C.**, Pearson, S., Starkenburg, T., Contardo, G., Johnston, K. V., Tavangar, K., ... Burgasser, A. J. (2023, May). *Prospects for Detecting Gaps in Globular Cluster Stellar Streams in External Galaxies with the Nancy Grace Roman Space Telescope*. doi:10.48550/arXiv.2305.12045. arXiv: 2305.12045 [astro-ph.GA]
- 2 **Aganze, C.**, Burgasser, A. J., Malkan, M. A., Theissen, C. A., Tejada Arevalo, R. A., Hsu, C.-C., ... Holwerda, B. W. (2022, April). *Beyond the Local Volume II: Population Scaleheights and Ages of Ultracool Dwarfs in Deep HST/WFC3 Parallel Fields*. arXiv: 2204.07621 [astro-ph.GA]
- 3 **Aganze, C.**, Burgasser, A. J., Malkan, M., Theissen, C. A., Tejada Arevalo, R. A., Hsu, C.-C., ... Holwerda, B. (2022, January). *Beyond the Local Volume. I. Surface Densities of Ultracool Dwarfs in Deep HST/WFC3 Parallel Fields*. doi:10.3847/1538-4357/ac35ea. arXiv: 2110.07672 [astro-ph.SR]
- 4 **Aganze, C.**, Burgasser, A. J., Faherty, J. K., Choban, C., Escala, I., Lopez, M. A., ... Rockward, W. (2016, February). *Characterization of the Very-low-mass Secondary in the GJ 660.1AB System*. doi:10.3847/0004-6256/151/2/46. arXiv: 1512.08659 [astro-ph.SR]

### Co-author, Peer-reviewed Articles

- 1 Ghachoui, M., Soubkiou, A., Wells, R. D., Rackham, B. V., Triaud, A. H. M. J., Sebastian, D., ... Schwarz, R. P. (2023, July). *TESS discovery of a super-Earth orbiting the M dwarf star TOI-1680*. *arXiv e-prints*, arXiv:2307.05368. doi:10.48550/arXiv.2307.05368. arXiv: 2307.05368 [astro-ph.EP]

- 2 Dransfield, G., Timmermans, M., Triaud, A. H. M. J., Dévora-Pajares, M., **Aganze, C.**, Barkaoui, K., ... Zapparata, A. (2023, May). A  $1.55 R_{Earth}$  habitable-zone planet hosted by TOI-715, an M4 star near the ecliptic South Pole. doi:10.1093/mnras/stad1439. arXiv: 2305.06206 [astro-ph.EP]
- 3 Calissendorff, P., De Furio, M., Meyer, M., Albert, L., **Aganze, C.**, Ali-Dib, M., ... Vandal, T. (2023, April). JWST/NIRCam Discovery of the First Y+Y Brown Dwarf Binary: WISE J033605.05-014350.4. 947(2), L30. doi:10.3847/2041-8213/acc86d. arXiv: 2303.16923 [astro-ph.SR]
- 4 Pozuelos, F. J., Timmermans, M., Rackham, B. V., Garcia, L. J., Burgasser, A. J., Kane, S. R., ... Mancini, L. (2023, April). A super-Earth and a mini-Neptune near the 2:1 MMR straddling the radius valley around the nearby mid-M dwarf TOI-2096. 672, A70. doi:10.1051/0004-6361/202245440. arXiv: 2303.08174 [astro-ph.EP]
- 5 Schneider, A. C., Burgasser, A. J., Bruursema, J., Munn, J. A., Vrba, F. J., Caselden, D., ... Backyard Worlds: Planet 9 Collaboration. (2023, February). Redder than Red: Discovery of an Exceptionally Red L/T Transition Dwarf. 943(2), L16. doi:10.3847/2041-8213/acb0cd. arXiv: 2301.02322 [astro-ph.SR]
- 6 Delrez, L., Murray, C. A., Pozuelos, F. J., Narita, N., Ducrot, E., Timmermans, M., ... Gillon, M. (2022, September). Two temperate super-Earths transiting a nearby late-type M dwarf. *arXiv e-prints*, arXiv:2209.02831. arXiv: 2209.02831 [astro-ph.EP]
- 7 Gan, T., Soubkiou, A., Wang, S. X., Benkhaldoun, Z., Mao, S., Artigau, É., ... Jenkins, J. M. (2022, August). TESS discovery of a sub-Neptune orbiting a mid-M dwarf TOI-2136. 514(3), 4120-4139. doi:10.1093/mnras/stac1448. arXiv: 2202.10024 [astro-ph.EP]
- 8 Kiwy, F., Faherty, J. K., Meisner, A., Schneider, A. C., Kirkpatrick, J. D., Kuchner, M. J., ... Backyard Worlds: Planet 9 Collaboration. (2022, July). Discovery of 34 Low-mass Comoving Systems Using NOIRLab Source Catalog DR2. 164(1), 3. doi:10.3847/1538-3881/ac68e7. arXiv: 2204.09739 [astro-ph.SR]
- 9 Ryan, R. E., Thorman, P., Aganze, C., Burgasser, A. J., Cohen, S. H., Hathi, N. P., ... Windhorst, R. A. (2022, June). A Self-consistent Model for Brown Dwarf Populations. 932(2), 96. doi:10.3847/1538-4357/ac6de5
- 10 Softich, E., Schneider, A. C., Patience, J., Burgasser, A. J., Shkolnik, E., Faherty, J. K., ... Backyard Worlds: Planet 9 Collaboration. (2022, February). CWISE J014611.20-050850.0AB: The Widest Known Brown Dwarf Binary in the Field. 926(2), L12. doi:10.3847/2041-8213/ac51d8. arXiv: 2202.02315 [astro-ph.SR]
- 11 Gagliano, A., Izzo, L., Kilpatrick, C. D., Mockler, B., Jacobson-Galán, W. V., Terreran, G., ... Tinyanont, S. (2022, January). An Early-time Optical and Ultraviolet Excess in the Type-Ic SN 2020oi. 924(2), 55. doi:10.3847/1538-4357/ac35ec. arXiv: 2105.09963 [astro-ph.HE]
- 12 Faherty, J. K., Gagné, J., Popinchalk, M., Vos, J. M., Burgasser, A. J., Schümann, J., ... Backyard Worlds: Planet 9 Collaboration. (2021, December). A Wide Planetary Mass Companion Discovered through the Citizen Science Project Backyard Worlds:

Planet 9. *923*(1), 48. doi:10.3847/1538-4357/ac2499. arXiv: 2112.04678 [astro-ph.SR]

- 13 Hsu, C.-C., Burgasser, A. J., Theissen, C. A., Gelino, C. R., Birky, J. L., Diamant, S. J. M., ... Faherty, J. K. (2021, December). The Brown Dwarf Kinematics Project (BDKP). V. Radial and Rotational Velocities of T Dwarfs from Keck/NIRSPEC High-resolution Spectroscopy. *257*(2), 45. doi:10.3847/1538-4365/ac1c7d. arXiv: 2107.01222 [astro-ph.SR]
- 14 Schneider, A. C., Meisner, A. M., Gagné, J., Faherty, J. K., Marocco, F., Burgasser, A. J., ... Backyard Worlds: Planet 9 Collaboration. (2021, November). Ross 19B: An Extremely Cold Companion Discovered via the Backyard Worlds: Planet 9 Citizen Science Project. *921*(2), 140. doi:10.3847/1538-4357/ac1c75. arXiv: 2108.05321 [astro-ph.EP]
- 15 Meisner, A. M., Faherty, J. K., Kirkpatrick, J. D., Schneider, A. C., Caselden, D., Gagne, J., ... Theissen, C. (2021, October). VizieR Online Data Catalog: Spitzer follow up of 95 brown dwarfs (Meisner+, 2020). *VizieR Online Data Catalog*, J/ApJ/899/123.
- 16 Meisner, A. M., Schneider, A. C., Burgasser, A. J., Marocco, F., Line, M. R., Faherty, J. K., ... Backyard Worlds: Planet 9 Collaboration. (2021, July). New Candidate Extreme T Subdwarfs from the Backyard Worlds: Planet 9 Citizen Science Project. *915*(2), 120. doi:10.3847/1538-4357/ac013c. arXiv: 2106.01387 [astro-ph.SR]
- 17 Kirkpatrick, J. D., Gelino, C. R., Faherty, J. K., Meisner, A. M., Caselden, D., Schneider, A. C., ... Backyard Worlds: Planet 9 Collaboration. (2021, March). The Field Substellar Mass Function Based on the Full-sky 20 pc Census of 525 L, T, and Y Dwarfs. *253*(1), 7. doi:10.3847/1538-4365/abd107. arXiv: 2011.11616 [astro-ph.SR]
- 18 Meisner, A. M., Faherty, J. K., Kirkpatrick, J. D., Schneider, A. C., Caselden, D., Gagné, J., ... Backyard Worlds: Planet 9 Collaboration. (2020, August). Spitzer Follow-up of Extremely Cold Brown Dwarfs Discovered by the Backyard Worlds: Planet 9 Citizen Science Project. *899*(2), 123. doi:10.3847/1538-4357/aba633. arXiv: 2008.06396 [astro-ph.SR]
- 19 Burgasser, A. J., Lopez, M. A., Mamajek, E. E., Gagné, J., Faherty, J. K., Tallis, M., ... **Aganze, C.** (2016, March). The First Brown Dwarf/Planetary-mass Object in the 32 Orionis Group. *820*(1), 32. doi:10.3847/0004-637X/820/1/32. arXiv: 1602.03022 [astro-ph.SR]

## Conference Proceedings, White Papers and Research Notes

- 1 Gong, Z., Nava Vega, A., Gauna Gutierrez, E., Mendiola Maytorena, A., Verdaguer, C., **Aganze, C.**, ... Burgasser, A. J. (2022, April). *Applying Random Forest Classification to Ultracool Dwarf Discovery in Deep Surveys. I. Color Classification with SDSS, UKIDSS, and WISE Photometry*. doi:10.3847/2515-5172/ac6521

- 2 Gutierrez, E. G., Maytorena, A. M., Gong, Z., Vega, A. N., Verdaguer, C., Aganze, C., ... Burgasser, A. J. (2022, April). *Applying Random Forest Classification to Ultracool Dwarf Discovery in Deep Surveys. II. Color Classification with PanSTARRS, 2MASS, UKIDSS, and WISE Photometry*. doi:10.3847/2515-5172/ac6522
- 3 Gezari, S., Bentz, M., De, K., French, K. D., Meisner, A., Ntampaka, M., ... Williams, B. (2022, February). *R2-D2: Roman and Rubin – From Data to Discovery*. arXiv: 2202.12311 [astro-ph.IM]
- 4 Dimitriadis, G., Foley, R. J., Aganze, C., Burgasser, A., Gerasimov, R., Hsu, C., ... Theissen, C. (2020a, March). *Spectroscopic Classifications of AT 2020dvr with the Lick Shane telescope*.
- 5 Dimitriadis, G., Foley, R. J., Aganze, C., Burgasser, A., Gerasimov, R., Hsu, C., ... Theissen, C. (2020b, March). *UCSC Transient Classification Report for 2020-03-04*.

## Scientific Presentations

- 2022
- **LSST Kickstarter Colloquium**  
Counts, Colors, Kinematics and Ages for Ultracool Dwarfs with HST surveys and the Vera Rubin Observatory (*Invited Talk*)
  - **Stanford KIPAC Tea Talk**  
Detecting Gaps in Globular Cluster Streams in M31 and Other External Galaxies with the Nancy Grace Roman Telescope
  - **University of Michigan Astro Seminar**  
Galactic Archeology with Ultracool Dwarfs (*Invited Talk*)
  - **National Society of Black Physicists (NSBP)**  
Galactic Archeology with Ultracool Dwarfs (*Contributed Talk*)
  - **NSBP Innovate Seminar**  
Ultracool Dwarfs as Tracers for Galactic Structure and Star Formation History: Prospects with Large-Scale Surveys (*Invited Talk*)
  - **Journal Club Talk, STScI**  
Detecting Gaps in Globular Cluster Streams in M31 and Other External Galaxies with the Nancy Grace Roman Telescope (*Invited Talk*)
  - **21st Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun (Cool Stars 21)**  
Popsims: A Population Simulation Code for Ultracool Dwarfs throughout the Galaxy (*Poster*)
  - **American Astronomical Society Meeting (AAS 240)**  
Probing Gaps in Globular Cluster Streams in External Galaxies with the Nancy Grace Roman Telescope (*poster*)  
**Chambliss Poster Award (Honorable Mention)**
  - **Division of Dynamical Astronomy Meeting**  
Probing Gaps in Globular Cluster Streams in External Galaxies with the Nancy Grace Roman Telescope (*poster*)

## Scientific Presentations (continued)

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- 2021
- **National Society of Black Physicists (NSBP)**  
Scale heights & Ages of Brown Dwarfs in Deep Fields (*talk*)  
**Beth Brown Memorial Award (Honorable Mention)**
  - **Big Apple Dynamics**  
Streams, Dark Matter: Future Prospects for Galaxies Beyond the Milky Way (*talk*)
  - **American Astronomical Society Meeting (AAS 237)**  
Studying Ultracool Dwarfs with the Nancy Grace Roman Space Telescope (*Invited Talk*)
  - **American Astronomical Society Meeting (AAS 237)**  
Brown Dwarfs in the Galaxy: Predictions for Future Wide-Field Observatories (*Poster*)
  - **Journal Club Talk, Princeton**
- 2020
- **Journal Club Talk, NOIRLAB**
  - **National Society of Black Physicists (NSBP)**  
Searching for Distant Ultracool Dwarfs in Deep HST/WFC3 Surveys (*Poster*)  
**Beth Brown Memorial Award**
- 2019
- **Nancy Grace Roman Telescope Meeting**  
Brown Dwarfs Beyond Gaia: A Deep Survey of late-M, L, T Dwarfs with HST-WFC3 Parallel Fields (*Poster*)
- 2018
- **20th Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun (Cool Stars 20)**  
Brown Dwarfs Beyond Gaia: A Deep Survey of late-M, L, T Dwarfs with HST-WFC3 Parallel Fields (*Poster*)
- 2017
- **American Astronomical Society Meeting (AAS 228, 229)**  
Toward a Comprehensive Sample of VLM Chemical Abundances with APOGEE (*Poster*) **FAMOUS grant award**
- 2016
- **American Astronomical Society Meeting (227)**  
Identifying Distant Brown Dwarfs in HST/WFC3 Parallel Fields (*Poster*)
- 2015
- **National Society of Black Physicists (NSBP)**  
Characterization of the M Dwarf Binary System GJ 660.1AB (*Poster*)
- 2014
- **Society for Advancement of Chicanos/Hispanics and Native Americans in Science conference(SACNAS)**  
Characterization of the M Dwarf Binary System GJ 660.1AB (*Poster*)  
**Best Poster Award**

## Awards

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- 2023
- **AAS Rodger Doxsey Travel Award**
- 2022
- **AAS Chambliss Poster Award (Honorable Mention)**
  - **Bouchet Honor Society (Honorable Mention)**
- 2021
- **Beth Brown Memorial Award (Honorable Mention AAS, NSBP)**

## Awards (continued)

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- LSST DPo Delegate
- 2020 ■ Beth Brown Memorial Award (AAS, NSBP)  
*Recognition by the AAS and the NSBP for the best presentation at the NSBP meeting*
- 2018 ■ LSSTC Data Science Fellowship
- 2016 ■ UC-HBCU Graduate Student Fellowship  
*Fellowship that covers 2 years of graduate school funding*
- 2015 ■ FAMOUS Travel Grant (AAS)
- 2014 ■ Poster Award (SACNAS)

## Training and Workshops

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- 2021 ■ Software Carpentries Instructor Training (Virtual)
- Summer School on Galactic Dynamics (The Flatiron Institute, NY, NY)
- 2020 ■ Big Data and Deep Learning Workshop (Pittsburg Supercomputing Center)
- 2017 ■ Kraft Observational Astronomy Workshop (Lick Observatory, San Jose, CA)
- Scicoder Workshop (Vanderbilt University, Nashville, TN)

## Telescope Proposals

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- 2021 ■ *Telescope Proposal*: Radial Velocity Monitoring of A New Peculiar Nearby M Dwarf (APF/Shane Telescope)

## Skills

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- Coding ■ Python, Github, Parallel Computing
- Research ■ NIR Spectral Analysis, Machine Learning, Archival Data Analysis, Optical & NIR Telescope Observations

## Organizations, Service and Outreach

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- 2016– ■ American Astronomical Society (AAS)  
National Society of Black Physicists (NSBP)  
UCSD Graduate Student Association (GSA)  
Physics Graduate Student Council (PGC)
- 2014–2016 ■ Society of Physics Students (SPS)