

Christian Aganze

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🌐 <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

30 publications, 509 citations, h-index=14

First-author, Peer-reviewed Articles

- 1 **Aganze, C.**, Pearson, S., Starckenburg, T., Contardo, G., Johnston, K. V., Tavangar, K., ... Burgasser, A. J. (2024, February). *Prospects for Detecting Gaps in Globular Cluster Stellar Streams in External Galaxies with the Nancy Grace Roman Space Telescope*. doi:10.3847/1538-4357/ad159c. arXiv: 2305.12045 [astro-ph.GA]
- 2 **Aganze, C.**, Burgasser, A. J., Malkan, M., Theissen, C. A., Tejada Arevalo, R. A., Hsu, C.-C., ... Holwerda, B. (2022a, July). *Beyond the Local Volume. II. Population Scaleheights and Ages of Ultracool Dwarfs in Deep HST/WFC3 Parallel Fields*. doi:10.3847/1538-4357/ac7053. 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. (2022b, 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.IAB System*. doi:10.3847/0004-6256/151/2/46. arXiv: 1512.08659 [astro-ph.SR]

Co-author, Peer-reviewed Articles





- 1 Barkaoui, K., Schwarz, R. P., Narita, N., Mistry, P., Magliano, C., Hirano, T., ... Wohler, B. (2024, July). Three short-period Earth-sized planets around M dwarfs discovered by TESS: TOI-5720 b, TOI-6008 b, and TOI-6086 b. *687, A264*. doi:10.1051/0004-6361/202349127. arXiv: 2405.06350 [astro-ph.EP]

- 2 Gillon, M., Pedersen, P. P., Rackham, B. V., Dransfield, G., Ducrot, E., Barkaoui, K., ... Zong Lang, F. (2024a, July). Detection of an Earth-sized exoplanet orbiting the nearby ultracool dwarf star SPECULOOS-3. *Nature Astronomy*, 8, 865–878. doi:10.1038/s41550-024-02271-2
- 3 Timmermans, M., Dransfield, G., Gillon, M., Triaud, A. H. M. J., Rackham, B. V., Aganze, C., ... Winn, J. N. (2024, July). TOI-4336 A b: A temperate sub-Neptune ripe for atmospheric characterization in a nearby triple M-dwarf system. *687*, A48. doi:10.1051/0004-6361/202347981. arXiv: 2404.12722 [astro-ph.EP]
- 4 Marocco, F., Kirkpatrick, J. D., Schneider, A. C., Meisner, A. M., Popinchalk, M., Gelino, C. R., ... Backyard Worlds Collaboration. (2024, June). Thirteen New M Dwarf + T Dwarf Pairs Identified with WISE/NEOWISE. *967*(2), 147. doi:10.3847/1538-4357/ad3f1d. arXiv: 2404.14324 [astro-ph.SR]
- 5 Rothermich, A., Faherty, J. K., Bardalez-Gagliuffi, D., Schneider, A. C., Kirkpatrick, J. D., Meisner, A. M., ... Wedracki, Z. (2024, June). 89 New Ultracool Dwarf Comoving Companions Identified with the Backyard Worlds: Planet 9 Citizen Science Project. *167*(6), 253. doi:10.3847/1538-3881/ad324e. arXiv: 2403.04592 [astro-ph.SR]
- 6 Gillon, M., Pedersen, P. P., Rackham, B. V., Dransfield, G., Ducrot, E., Barkaoui, K., ... Zong Lang, F. (2024b, May). Detection of an Earth-sized exoplanet orbiting the nearby ultracool dwarf star SPECULOOS-3. *Nature Astronomy*. doi:10.1038/s41550-024-02271-2. arXiv: 2406.00794 [astro-ph.EP]
- 7 Holwerda, B. W., Hsu, C.-C., Hathi, N., Bisigello, L., de la Vega, A., Haro, P. A., ... Kirkpatrick, A. (2024, April). Cosmic evolution early release science survey (CEERS): multiclassing galactic dwarf stars in the deep JWST/NIRCam. *529*(2), 1067–1081. doi:10.1093/mnras/stae316. arXiv: 2309.05835 [astro-ph.GA]
- 8 Kirkpatrick, J. D., Marocco, F., Gelino, C. R., Raghu, Y., Faherty, J. K., Bardalez Gagliuffi, D. C., ... The Backyard Worlds: Planet 9 Collaboration. (2024, April). The Initial Mass Function Based on the Full-sky 20 pc Census of ~3600 Stars and Brown Dwarfs. *271*(2), 55. doi:10.3847/1538-4365/ad24e2. arXiv: 2312.03639 [astro-ph.SR]
- 9 Dransfield, G., Timmermans, M., Triaud, A. H. M. J., Dévora-Pajares, M., **Aganze, C.**, Barkaoui, K., ... Zapparata, A. (2024, January). A 1.55 R_⊕ habitable-zone planet hosted by TOI-715, an M4 star near the ecliptic South Pole. *527*(1), 35–52. doi:10.1093/mnras/stad1439. arXiv: 2305.06206 [astro-ph.EP]
- 10 Ghachoui, M., Soubkiou, A., Wells, R. D., Rackham, B. V., Triaud, A. H. M. J., Sebastian, D., ... Schwarz, R. P. (2023, September). TESS discovery of a super-Earth orbiting the M-dwarf star TOI-1680. *677*, A31. doi:10.1051/0004-6361/202347040. arXiv: 2307.05368 [astro-ph.EP]
- 11 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]



- 12 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]
- 13 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]
- 14 Delrez, L., Murray, C. A., Pozuelos, F. J., Narita, N., Ducrot, E., Timmermans, M., ... Gillon, M. (2022, November). Two temperate super-Earths transiting a nearby late-type M dwarf. *667*, A59. doi:10.1051/0004-6361/202244041. arXiv: 2209.02831 [astro-ph.EP]
- 15 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]
- 16 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]
- 17 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
- 18 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]
- 19 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]
- 20 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]
- 21 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]

- 22 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]
- 23 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]
- 24 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]
- 25 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]
- 26 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]

Service

- 2024  NSF AAG Review
 Stanford/KIPAC committees
- 2022  Referee for MNRAS
- 2016–2022  UCSD graduate student committees

Mentoring

- 2024–  B. Martinez Ramirez (Cal Poly Pomona)
- 2022–2023  M. Desai (UCSD: 2022–2023), J. D. Draxl Giannoni (UCSD: 2022–2023), C. Dunning (UCSD: 2022–2023), E. G. Gutierrez (2022), G. Eduardo Gauna (2022), A. M. Maytorena (2022), Z. Gong (2022), C. Verdaguer (2022)

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*)
- 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*)
- 2020
- **Journal Club Talk, Princeton**
 - **Journal Club Talk, NOIRLAB**

Scientific Presentations (continued)

- 2019 ■ **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

- 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)
■ 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

- 2021 ■ Software Carpentries Instructor Training (Virtual)
■ Summer School on Galactic Dynamics (The Flatiron Institute, NY, NY)

Training and Workshops (continued)

- 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

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

Skills

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