TAWEEWAT SOMBOONPANYAKUL

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EMPLOYMENT

Chulalongkorn University *Nov 2023 - present*
Lecturer in the Physics Department

Stanford University *Aug 2021 - Oct 2023*
Kavli Fellow - Institutional fellowship at KIPAC

EDUCATION

Massachusetts Institute of Technology *Aug 2015 - Aug 2021*
Ph.D. in Physics, Advisor: Prof. Michael McDonald
Thesis: The Clusters Hiding in Plain Sight (CHiPS) survey

University of Chicago *Sept 2011 - Jun 2015*
BA in Physics with specialization in Astrophysics
Honor Thesis Advisor: Prof. Hsiao-Wen Chen

AWARDS

2024 **Grants for Development of New Faculty Staff** (120,000 Baht), Chulalongkorn University
2021 **The Kavli Fellowship**, Postdoctoral Research Fellowship, Stanford University
2019 Representative to Lindau Nobel Laureate Meetings, Lindau, Germany
2015 **MIT Clark Fellow**, Graduate Research Fellowship, MIT
2015 **Phi Beta Kappa, Dean's List**, The University of Chicago
2014 **The FOTI Global Leadership Award**, The University of Tokyo
2014, 2015 **The Maroon Key Society**, The University of Chicago
2013 **Walter and Fay Selove Prize in Physics**, The University of Chicago

SELECTED PRESS

- Daily Galaxy – "690 Trillion Suns-new look at an ancient quasar so bright it obscured a massive galaxy cluster", Oct. 2021
- MIT News Press – "MIT astronomers discover galaxy clusters hiding in plain sight", Mar. 2021
- NASA Press – "A weakened black hole allows its galaxy to awaken", Nov. 2019
- MIT News Press – "Sprawling galaxy cluster found hiding in plain sight", Aug. 2018
- Space.com Press – "Huge Galaxy Cluster Found Hiding in Plain Sight", Jun. 2018

OBSERVING

Successful Telescope Proposal as PI or as the majority contributor

- Thai National Telescope (TNO), 2024, 3 nights, "LRS Spectroscopy of potential spiral bright cluster galaxies (BCGs) at z 0.4"
- Thai National Radio Telescope (TNRT), 2024, 9hr, "CHIPS1911+4455: Detecting radio emission in the cooling flow of a massive, merging cluster"
- Chandra Cycle 25, 2023, 57ks, "Deep X-ray Observations of a highly luminous cool-core galaxy cluster at z$\sim$0.4"
- Chandra Cycle 24, 2022, 89ks, "Deep X-ray Observations of a new, highly luminous cool-core galaxy cluster at z$\sim$0.6"
- Chandra Cycle 23, 2021, 133ks, "CHiPS1911+4455: A Cooling Flow in a Merging Cluster"
- Hubble, 2019 Mid Cycle, 2 orbits, "Imaging a Rare Starburst Central Galaxy in a Merging Cluster"
- Magellan, 2018B, 3 nights, "Spectroscopic Follow Up for the CHiPS galaxy clusters candidates"
- Chandra, 2018, 137ks, "A Unique Sample of Extreme-BCG Clusters at $0.2 < z < 0.6$"

- Magellan, 2017B, 3 nights, "The CHiPS Surveys: Clusters Hiding in Plain Sight"
- Magellan, 2016A, 3 nights, "The CHiPS Surveys: Clusters Hiding in Plain Sight"

Observing Experience

- Magellan Telescope, Las Campanas Observatory (LCO), Long-slit spectroscopy with LDSS3, 2018
- Magellan Telescope, (LCO), Optical imaging with PISCO, 2017B
- Magellan Telescope, (LCO), Optical imaging with PISCO, 2017A
- Magellan Telescope, (LCO), Optical imaging with PISCO, 2016B

TEACHING AND MENTORING

Mentoring

- Tutoring low income high school students at Peninsula Bridge programs, Palo Alto, Fall 2022
- Supervising undergraduate students for summer research projects, Stanford, 2022
- Mentoring 6 undergraduate students in Physics at MIT for academic and social supports, MIT, 2020 (Austin Chin, Sydney Kim, Michael Kraus, Armando Martinez, Sarah Zhao, Amanda Zheng)

Undergraduate/Graduate Taught Courses

- Graduate Teaching Assistant in 8.01 Physics I - Mechanics at MIT, Fall 2020
- Graduate Teaching Assistant, for Prof. Michael McDonald in 8.902 graduate-level Astrophysics II at MIT, Fall 2019
- Graduate Teaching Assistant, for Prof. Kiyoshi Masui in 8.01 Physics I - Mechanics at MIT, Fall 2018
- College Core Tutor Program for Physics at the University of Chicago, 2015

SERVICE

- Chandra Peer Review Panel, NASA, Cycle 24, 2022
- Astrophysics Graduate Admission Committee, Stanford University, 2022, 2023
- Session Chair, "Galaxy Cluster I", 235th Meeting American Astronomical Society, 2020

OUTREACH

- Organizing Committee at KIPAC Community Day, Stanford, CA, Apr. 2023
- Volunteer at College of San Mateo, "Family Science Day", San Mateo, CA, Sep. 2022
- Invited Speaker in the **Benjamin Dean Astronomy Lecture** series, "Decoding the Mystery of Dark Matter Using Galaxy Clusters", California Academy of Sciences, San Francisco, CA, Aug. 2022
- Guest Speaker at Sacred Heart Prep School, Atherton, CA, May. 2022
- Guest Speaker at BASIS Independent Silicon Valley School, San Jose, CA, Mar. 2022 (virtual)
- Member of MIT Astrogazers, Observing with the public on the sidewalk, 2017-2021
- Volunteer at Vatino STEM Alliance Science Festival, Apr. 2019
- Volunteer at Cambridge Science Festival, "Solar Observing", Apr. 2018
- Volunteer at MIT Museum, "Nautical Day with Celestial Navigation", Mar./Nov. 2018
- Volunteer at MIT Museum, "Mathernoon Day", Mar./Nov. 2018
- Public Speaker at Mahidol University, "Impact of Active Galaxies on Clusters", Aug. 2017
- World Wide Telescope Ambassadors at Harvard University, 2016
- Organizer for a Yerkes Observatory Weekend Workshop, WI, 2014
- President of Ryerson Astronomical Society at the University of Chicago, 2013-2014

RESEARCH PRESENTATION

Invited Talks (Conference)

- 19th Siam Physics Congress 2024, Ayutthaya, TH, Jun. 2024 "CHIPS1911+4455: A Cooling flow in a Mering Cluster"

Contributed Talks (Conferences)

- East Asian Young Astronomers Meeting (EAYAM) 2024, Chiang Mai, TH, Jan. 2023 "Why and How Do We Study Relaxed Galaxy Clusters?"
- High-Resolution X-ray Spectroscopy: A Chandra Workshop, Cambridge, MA, Aug. 2023 "Advancing X-ray Background Modeling for Enhanced Data Analysis"
- 237th Meeting American Astronomical Society, AAS, Jan. 2021, "Galaxy Clusters and AGN Feedback" (virtual)
- 235th Meeting American Astronomical Society, AAS, Honolulu, HI, Jan. 2020, "Clusters Hiding in Plain Sight (CHiPS)"
- Planetary Systems: A Synergistic View, ICISE, Quy Nhon, Vietnam, Jul. 2015, "Transiting Exoplanet's Impact Parameter: Long vs Short Cadence"
- UChicago-Northwestern Exoplanet Workshop, Alder Planetarium, IL, 2014, "Transiting Exoplanet's Impact Parameter: Long vs Short Cadence"

Seminars

- Stanford University, Stanford, CA, Aug. 2023
- National Astronomical Research Institute of Thailand, Chiang Mai, Thailand, Feb. 2023
- University of Southampton, Southampton, UK, Mar. 2022 (virtual)
- University of North Texas, Denton, TX, Feb. 2022 (virtual)
- University of California, Santa Cruz, Santa Cruz, CA, Feb. 2021 (virtual)
- The Center for Astrophysics | Harvard & Smithsonian, Cambridge, MA, Feb. 2021 (virtual)
- California Institute of Technology, Pasadena, CA, Feb. 2021 (virtual)
- Stanford University, Stanford, CA, Dec. 2020 (virtual)
- Space Telescope Science Institute, Baltimore, MD, Nov. 2020 (virtual)
- University of Michigan, Ann Arbor, MI, Oct. 2020 (virtual)
- The University of Missouri–Kansas City, Kansas City, MO, Aug. 2020 (virtual)
- National Astronomical Research Institute of Thailand, Chiang Mai, Thailand, Jan. 2019
- Chiang Mai University, Chiang Mai, Thailand, Jan. 2019
- Kasetsart University, Bangkok, Thailand, Jan. 2019
- Mahidol University, Bangkok, Thailand, Jan. 2019
- Carnegie Observatories, Pasadena, Dec. 2018

Conference Posters

- 20th Meeting High Energy Astrophysics Division (HEAD), Waikoloa Village, HI, Mar. 2023
- 19th Meeting High Energy Astrophysics Division (HEAD), Pittsburgh, PA, Mar. 2022
- Tracing Cosmic Evolution with Clusters of Galaxies, Sesto (BZ), Italy, Jul. 2019
- 69th Lindau Nobel Laureate Meeting, Lindau, Germany, Jul. 2019
- 17th Meeting High Energy Astrophysics Division (HEAD), Monterey, CA, Mar. 2019
- SnowCluster – The Physics of Galaxy Clusters, Snowbird, UT, Mar. 2018
- Chandra Science for the Next Decade, Cambridge, MA, Aug. 2016
- 227th Meeting American Astronomical Society, AAS, Kissimmee, FL, Jan. 2016

REFEREED PUBLICATIONS

1. Calzadilla, M. S., M. McDonald, B. A. Benson, et al. ..., **Somboonpanyakul, T.** (2024), The SPT-Chandra BCG Spectroscopic Survey. I. Evolution of the Entropy Threshold for ICM Cooling and AGN Feedback in Galaxy Clusters over the Last 10 Gyr, ApJ, 976, 169
2. Bocquet, S., S. Grandis, L. E. Bleem, et al. ..., **Somboonpanyakul, T.** (2024), SPT clusters with DES and HST weak lensing. II. Cosmological constraints from the abundance of massive halos, PhRvD, 110, 083510

3. Bocquet, S., S. Grandis, L. E. Bleem, et al. ..., **Somboonpanyakul, T.** (2024), SPT clusters with DES and HST weak lensing. I. Cluster lensing and Bayesian population modeling of multi-wavelength cluster datasets, PhRvD, 110, 083509
4. Klein, M., J. J. Mohr, S. Bocquet, et al. ..., **Somboonpanyakul, T.** (2024), SPT-SZ MCMF: an extension of the SPT-SZ catalogue over the DES region, MNRAS, 531, 3973
5. Romero, C. E., M. Gaspari, G. Schellenberger, ..., **Somboonpanyakul, T.** et al. (2024), Surface Brightness Fluctuations in Two SPT Clusters: A Pilot Study, ApJ, 970, 73
6. Casas, M. C., K. Putnam, A. B. Mantz, ..., **Somboonpanyakul, T.** et al. (2024), Optical Photometric Indicators of Galaxy Cluster Relaxation, ApJ, 967, 14
7. Bleem, L. E., M. Klein, T. M. C. Abbot, ..., **Somboonpanyakul, T.** et al. (2024), Galaxy Clusters Discovered via the Thermal Sunyaev-Zel'dovich Effect in the 500-square-degree SPTpol Survey, OJAp, 7, 13
8. Kim, K. J., M. B. Bayliss, A. G. Noble, ..., **Somboonpanyakul, T.** et al. (2023), A Gradual Decline of Star Formation since Cluster Infall: New Kinematic Insights into Environmental Quenching at 0.3 ¡ z ¡ 1.1, ApJ, 955, 32
9. Ruppin, F., M. McDonald, J. Hlavacek-Larrondo, ..., **Somboonpanyakul, T.** et al. (2023), Redshift Evolution of the Feedback-Cooling Equilibrium in the Core of 48 SPT Galaxy Clusters: A Joint Chandra-SPT-ATCA Analysis, ApJ, 948, 49
10. Calzadilla, M. S., L. E. Bleem, M. McDonald, ..., **Somboonpanyakul, T.** et al. (2023), SPT-CL J2215-3537: A Massive Starburst at the Center of the Most Distant Relaxed Galaxy Cluster, ApJ, 947, 44
11. Masterson, M., M. McDonald, B. Ansarinejad, ..., **Somboonpanyakul, T.** et al. (2023), Evidence for AGN-regulated Cooling in Clusters at z 1.4: A Multiwavelength View of SPT-CL J0607-4448, ApJ, 944, 164
12. Strazzullo, V., Pannella, M., Mohr, J. J., ..., **Somboonpanyakul, T.**, et al. (2023), Galaxy populations in the most distant SPT-SZ clusters. II. Galaxy structural properties in massive clusters at $1.4 \leq z \leq 1.7$, A&A, 669, A131
13. Hernández-Lang, D., A. Zenteno, A. Diaz-Ocampo, ..., **Somboonpanyakul, T.** et al. (2022), Clash of Titans: A MUSE dynamical study of the extreme cluster merger SPT-CL J0307-6225, MNRAS, 517, 4355
14. Olivares, V., Y. Su, P. Nulsen, ..., **Somboonpanyakul, T.** et al. (2022), AGN feedback duty cycle in Planck SZ selected clusters using Chandra observations, MNRAS, 516, L101
15. Khullar, G., M. B. Bayliss, M. D. Gladders, ..., **Somboonpanyakul, T.** et al. (2022), Synthesizing Stellar Populations in South Pole Telescope Galaxy Clusters. I. Ages of Quiescent Member Galaxies at 0.3 ¡ z ¡ 1.4, ApJ, 934, 177
16. **Somboonpanyakul, T.**, M. McDonald, A. Noble, et al. (2022), The Evolution of AGN Activity in Brightest Cluster Galaxies, AJ, 163, 146
17. **Somboonpanyakul, T.**, M. McDonald, M. Gaspari, et al. (2021), The Clusters Hiding in Plain Sight (CHiPS) Survey: Complete Sample of Extreme BCG Clusters, ApJ, 910, 60
18. **Somboonpanyakul, T.**, M. McDonald, M. Bayliss, et al. (2021), The Clusters Hiding in Plain Sight (CHiPS) Survey: CHIPS1911+4455, a Rapidly Cooling Core in a Merging Cluster, ApJL, 907, L12
19. McDonald, M., B. R. McNamara, G. M. Voit, et al. (2019), Anatomy of a Cooling Flow: The Feedback Response to Pure Cooling in the Core of the Phoenix Cluster, ApJ, 885, 63
20. **Somboonpanyakul, T.**, M. McDonald, H. W. Lin, et al. (2018), The Clusters Hiding in Plain Sight (CHiPS) Survey: A First Discovery of a Massive Nearby Cluster around PKS 1353-341, ApJ, 863, 122