Chin Yi Tan

DiRAC Postdoctoral Fellow,
University of Washington Seattle
ORCID : 0000-0003-0478-0473
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Contact Information

5640 S. Ellis Ave, Room 426 ERC
Chicago, IL 60637

Email: chinyi@uchicago.edu
Phone Number: +1-773-886-3485

Professional Position

DiRAC Postdoctoral Fellow at the University of Washington (2026-Onging)

Education

University of Chicago (2020 - 2026)
Ph.D. in Physics

- Thesis : Probing Dark Matter with the DELVE Milky Way Satellite Galaxy Census
- Advisor : Alex Drlica-Wagner

University of Edinburgh (2015-2020)
Integrated Master of Physics (MPhys) in Physics, First Class Honours

- Thesis : Probing the properties of MACHOs with Ultra Faint Galaxies
- Advisor : Jorge Peñarrubia
- Exchange Abroad Program at University of California, Berkeley (2017-2018)

Honors, Awards, Fellowships

- DES Early Career Scientists Travel Award, Fermilab (2025)
- Robert G. Sachs Fellowship, University of Chicago (2020)
- Neil Arnott Prize, University of Edinburgh (2020)
- Physics Integrated Masters Class Medal, University of Edinburgh (2020)
- Physics Senior Honour Class Medal, University of Edinburgh (2019)
- Physics & Astronomy Career Development Scholarship, University of Edinburgh (2018)
- William & Isabella Dick 2nd Year Prize, University of Edinburgh (2017)

Observing Proposals

- Gemini South: Deep Imaging Confirmation of Two Newly Identified Ultra-Faint Milky Way Satellites (GS-2025A-FT-209, 2.5 hours, PI: Tan)
- Blanco Telescope: DECam Follow-up on Newly Discovered Ultra-Faint Dwarf Galaxies (2025A-603790, 1 night, PI: Tan)
- Blanco Telescope: Searching for Ultra-Faint Dwarf Galaxies with DECam (2023B-879130, 2024A-359193, 2024B - 369624, 27 nights, PI: Drlica-Wagner)
- Hubble Space Telescope: A 4% determination of the Hubble constant from gravitational time delays with maximally flexible lens mass profile (GO-17130 (2022), 22 orbits, PI: Treu) [2022hst..prop17130T].

Observing Experience

- Blanco Telescope, 18 Nights (both in person and remotely)

Research Keywords

- Milky Way dark matter halo, Dwarf galaxies, Sky surveys

Teaching and Mentoring

Research Mentoring

- Jack Sharp - Undergraduate Student at University of Chicago - Crowdsourcing Dwarf-Galaxy Discovery with Zooniverse
- Kate Overdeck - Postbac Student at University of Chicago - Searching for Milky Way Satellite Galaxies with Citizen Science and Machine Learning
- Maggie Hirschauer - High School Student at IMSA Student Inquiry and Research Program - Searching for Smallest Star Clusters and Galaxies with Zooniverse
- Elena Kang-Chou - High School Student at Naperville North - Improving Zooniverse Searches for Dwarf Galaxies

Teaching Assistant, University of Chicago

- Introductory Physics for Physical Sciences: Physics 131, 132, 133 (Autumn 2020, Winter 2021 Spring 2023)

Outreach and Volunteering

- Picture an Astronomer, Local Organising Committee Member (2025)
- UChicago Dwarf Galaxies, Star Clusters, and Streams in the LSST Era Workshop, Local Organising Committee Member (2024)
- South Side Science Festival, Volunteer (2024)
- Space Explorers Summer Institute, Volunteer (2024)
- Malaysia Olympiad on Astronomy and Astrophysics, Councilor (2023 & 2024)
- Dark Matter Day at the Adler Planetarium, Volunteer (2023)
- Fermilab SIST Summer Internships program, Volunteer (2023)
- Physics with a Bang!, Volunteer (2023)

Talks and Posters

Selected Contributed Conference Talks

- TeV Particle Astrophysics 2024, Chicago (August 2024)
- Lensing at Different Scales: strong, weak, and synergies between the two, Chicago (July 2023)
- IAUS 381: Strong gravitational lensing in the era of big data, Otranto (June 2023)
- Global Malaysian Astronomers Convention, Kuala Lumpur (January 2023)
- 241st American Astronomical Society Meeting, Seattle (January 2023)

Selected Invited Seminar Talks

- Stanford KIPAC Tea Talks, Stanford (Aug 2025)
- UC San Diego STRAND (Simulations TheoRy AND more), San Diego (Aug 2025)
- Princeton Survey Science Discussion, Princeton (May 2025)
- Rutgers Astro Journal Club, New Brunswick (May 2025)
- UPenn Astro Lunch/Journal Club, Philadelphia (May 2025)
- National Tsing Hua University Astronomy Club Astrophysics Study Group Seminar Series, Virtual (April 2023)
- Attended various collaboration meetings, including Dark Energy Survey (Urbana-Champaign 2023; Philadelphia 2025), DECam Local Volume Exploration (Tucson 2022; Urbana-Champaign 2023; Chicago 2024; Dartmouth 2025), LSST Dark Energy Science Collaboration (Chicago 2022), and TDCOSMO (Chicago 2023).

Selected Posters

- Galactic Frontiers II: Dwarf Galaxies in the Local Volume, Dartmouth (2025)
- Small Galaxies, Cosmic Questions - II, Durham, UK (2024)
- Dwarf Galaxies, Star Clusters, and Streams in the LSST Era, Chicago (2024)
- DECam at 10 years — Looking Back, Looking Forward, Tucson (2022)

Publications Statistics

A total of **22** papers have been published or submitted, including **5 published first-author papers**, **16 co-authored papers**, and **1 first-author conference proceeding**. These works have received a total of **419 citations**, including **101 citations** for first-author papers (as of 13 March 2025, ADS).

Publications

First Author and Mentee-led Publications

1. **C. Y. Tan**, A. J. Shajib, et al., "Project Dinos I: A joint lensing–dynamics constraint on the deviation from the power law in the mass profile of massive ellipticals", MNRAS, 530, 1474–1505 (2024) [arXiv:2311.09307]
2. **C. Y. Tan**, W. Cerny, et al., "A Pride of Satellites in the Constellation Leo? Discovery of the Leo VI Milky Way Satellite Galaxy with DELVE Early Data Release 3", ApJ, 979, 176 (2025)[arXiv:2408.00865]
3. **C. Y. Tan**, A. Dekker, A. Drlica-Wagner, "Mixed Warm Dark Matter Constraints using Milky Way Satellite Galaxies Counts", Phys. Rev. D, 111, 063079 (2025)[arXiv:2409.18917]
4. **C. Y. Tan**, A. Drlica-Wagner, et. al., "DELVE Milky Way Satellite Galaxy Census I: Satellite Population and Survey Selection Function in DES, DELVE, and Pan-STARRS", ApJ, 1000, 87 (2026)[arXiv:2509.12313]
5. **C. Y. Tan**, W. Cerny, A. B. Pace, et. al., "Ultra-Faint Milky Way Satellites Discovered in Carina, Phoenix, and Telescopium with DELVE Data Release 3", ApJ, 1000, 46 (2026)[arXiv:2510.11684]
6. K. Overdeck, W. Cerny, **C. Y. Tan**, et. al., "Discovery and Spectroscopic Characterization of a Distant, Compact Milky Way Satellite in Gemini", in preprint [arXiv:2606.09975]

Conference Proceedings and Non-Refereed Papers

1. **C. Y. Tan**, A. J. Shajib, "Joint lensing–dynamics constraint on the elliptical galaxy mass profile from the largest galaxy–galaxy lens sample", Proceedings of the International Astronomical Union, S381, 23-27 (2022)

Nth Author Publications with Significant Contributions

- **Dwarf galaxy characterization with `ugali` and DELVE DR3**

    1. W. Cerny, et al., "Discovery and Spectroscopic Confirmation of Aquarius III: A Low Mass Milky Way Satellite Galaxy", ApJ 979, 164 (2025) [arXiv:2410.00981]
    2. A. B. Pace, et al., "Spectroscopic Analysis of Pictor II: a very low metallicity ultra-faint dwarf galaxy bound to the Large Magellanic Cloud", OJAp 8, 112 (2025), [arXiv:2506.21841]

- **DELVE DR3 coadd images and catalogs**

    3. D. Anbajagane, C. Chang, Z. Zhang, **C. Y. Tan**, et al., "The DECADE cosmic shear project I: A new weak lensing shape catalog of 107 million galaxies", in preprint [arXiv:2502.17674]

4. D. Anbajagane, C. Chang, A. Drlica-Wagner, **C. Y. Tan**, et al., "The DECADE cosmic shear project IV: cosmological constraints from 107 million galaxies across 5,400 deg^2 of the sky", in preprint [arXiv:2502.17677]
5. D. Anbajagane, C. Chang, A. Drlica-Wagner, **C. Y. Tan**, et al., "The Dark Energy Camera All Data Everywhere cosmic shear project V: Constraints on cosmology and astrophysics from 270 million galaxies across 13,000 deg^2 of the sky", in preprint [arXiv:2509.03582]

- **Galaxy–galaxy strong lensing: lens models and modelling software**

6. W. Sheu, et al., "Project Dinos II: Redshift evolution of dark and luminous matter in elliptical galaxy lenses across $0.1 < z < 0.9$", MNRAS, 541, 1-27 (2025) [arXiv:2408.10316]
7. A. Shajib, N. S. Nihal, **C. Y. Tan**, et al., "dolphin: A fully automated forward modeling pipeline powered by artificial intelligence for galaxy-scale strong lenses", in preprint [arXiv:2503.22657]
8. TDCOSMO Collaboration, "TDCOSMO 2025: Cosmological constraints from strong lensing time delays", in preprint [arXiv:2506.03023]

Other N$^{\text{th}}$ Author Publications

9. A. Drlica-Wagner, P. Ferguson, et al., "The DECam Local Volume Exploration Survey Data Release 2", ApJS, 261, 38 (2023), [arXiv:2203.16565]
10. E. Zaborowski, et al., "Identification of Galaxy–Galaxy Strong Lens Candidates in the DECam Local Volume Exploration Survey Using Machine Learning", ApJ 954, 68 (2023), [arXiv:2210.10802]
11. D. Anbajagane, et al., "The DECADE cosmic shear project II: photometric redshift calibration of the source galaxy sample", in preprint [arXiv:2502.17675]
12. D. Anbajagane, et al., "The DECADE cosmic shear project III: validation of analysis pipeline using spatially inhomogeneous data", in preprint [arXiv:2502.17676]
13. Placco, Vinicius M., et al., "The DECam MAGIC Survey: Spectroscopic Follow-up of the Most Metal-poor Stars in the Distant Milky Way Halo", ApJ 991, 101 (2025), [arXiv:2506.19163]
14. M. Gatti, et al., "DECADE+DES Y3 Weak Lensing Mass Map: A 13,000 deg^2 View of Cosmic Structure from 270 Million Galaxies", in preprint [arXiv:2509.03798]
15. C. To, et al., "A DECADE of dwarfs: first detection of weak lensing around spectroscopically confirmed low-mass galaxies", in preprint [arXiv:2509.20458]
16. K. Bechtol, et al., "Dark Energy Survey Year 6 Results: Photometric Dataset for Cosmology", ApJS 282, 62 (2026), [arXiv:2501.05739]