# CHUN-HAO TO

## CONTACT

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## RESEARCH INTERESTS

**Observational and Computational Cosmology**
Cluster cosmology, Weak gravitational lensing, Large-scale structure, Cosmological simulation, and Galaxy–halo connection.

## EMPLOYMENT

**Schmidt AI in Science Fellow**, University of Chicago *2024 – present*
**CCAPP Postdoctoral Fellow**, the Ohio State University *2021–2024*

## EDUCATION

**Ph.D in Physics** *2016–2021*
Department of Physics, Stanford University, CA, USA
Advisor: Risa H. Wechsler. Thesis: "Multi-probe cluster cosmology analyses with photometric surveys."
**B.S. in Physics** *2011–2015*
Department of Physics, National Taiwan University, Taipei, Taiwan

## AWARDS

- Midway Research II allocation *2025*
  Awarded 2 million computing hours
- Midway Research II allocation *2024*
  Awarded 2 million computing hours
- Schmidt AI in Science Fellowship *2024*
- CCAPP Fellowship *2021*
- Dark Energy Survey builder status (for 2 FTE years of infrastructure work) *2020*
- Dark Energy Survey Early Career Scientist *2019*
  Awarded US$3500 for participating in 4 DES Collaboration Meetings
- Dean's Award of College of Science, National Taiwan University *2015*
- Presidential Awards, National Taiwan University *2011-2015*

## SCIENCE LEADERSHIP

- Co-chair of the survey working group in the Roman High Latitude Imaging Survey Project Infrastructure Team (2025–)

  - One of the three working groups in the Roman team that builds the infrastructure for weak lensing analyses.
- Co-convenor of the cluster working group in the Dark Energy Survey (2024–)
  - Designed, led, and delivered the year three cluster cosmology constraints.
  - Co-initiated the simulation-based cluster cosmology key project.
- Key project coordinator of the cluster working group in the Dark Energy Survey (2021–2024)
  - Led the development of simulations used for the full Dark Energy Survey key project analyses.
  - Led the development of the likelihood sampling tool for the joint analysis of clusters, weak lensing, and large-scale structure.

## SERVICE

- Professional Service
  - Grant reviewer for: NASA Astrophysics Data Analysis Program Grant (ADAP).
  - Journal referee for: MNRAS, MNRAS-Letter, APJ, and A&A.
- Departmental Service
  - Open SkAI conference LOC, 2025.
  - Organizer of Schmidt AI summer school at UChicago, 2025.
  - Organizer of SkAI journal club at UChicago, since 2025.
  - Organizer of Schmidt AI in science seminar series at UChicago, since 2024.
  - Organizer of Cosmolunch at OSU, 2021-2024.
- Collaboration Service
  - Internal referee of the Dark Energy Survey, since 2020.
  - Internal referee of the Dark Energy Spectroscopic Instrument, 2025.
  - Observing shift for the Dark Energy Spectroscopic Instrument, 2021

## TEACHING AND OUTREACH

- Astronomy Conversations Volunteer at Adler Planetarium *Fall 2024-*
- Public talk at Bexley library:
  "Simulating the Universe with Supercomputers" *Summer 2023*
  "Learning the dark universe with galaxies and galaxy clusters" *Summer 2022*
- KIPAC Blog Post Exploring the Cosmos while Preserving Spaceship Earth *Fall 2022*
- Guest lecturer at Astronomy 2895 Topics in Astrophysics, OSU *Fall 2021*

- Guest lecturer at Physics 367: Structure formation and galaxy evolution, Stanford *Spring 2021*
- Teaching assistant for The Origin and Development of the Cosmos, Stanford *Winter 2020*
- Teaching assistant for Astronomy Laboratory, Stanford *Fall 2018*
- Teaching assistant for Electricity and Magnetism Lab, Stanford *Spring 2017*
- Teacher, Stanford ESP Splash! Program, Stanford *Spring 2017*

## MENTORING

- Yufei Zhen, master student at the Data Science Institute of UChicago, Self-organizing map-based photometric redshift estimations of Roman Core Community Survey, 2025–
- Nihar Dalal, graduate student at the OSU, co-supervising with Chris Hirata, Constraining baryonic physics with ACT clusters and DES weak lensing, 2023–
- I-Hsuan Li, visiting undergrad student at NCKU, cluster finding with Roman and Rubin, 2025
- Gwen Sheley, undergrad student at UChicago, Quantify systematics in tSZ x shear, 2024–2025
- Kathlynn Simotas, undergrad student at Stanford (past), UCSB graduate student, Quantifying redMaPPer cluster systematics using galaxies with spectroscopic redshifts, 2019–2021

## PRESS

Scientists release new survey of the biggest objects in the universe [UChicago 2025]

Dark Energy Survey physicists open new window into dark energy [SLAC 2021]

A New View of the Universe's Dark Side [APS 2021]

## PROGRAMMING

Extensive experience in Python, Pytorch, C/C++, Jax, and IDL

Github Page: `https://github.com/chto`

## PRESENTATIONS

### * Invited Presentations

**2025**

- Cosmo 25: 28th International Conference on Particle Physics & Cosmology, Pittsburgh, PA *Oct*
- *Tracing Cosmic Evolution with Galaxy Clusters V, Sexten Center for Astrophysics Riccardo Giacconi *July*

- *mm Universe 2025, KICP *June*
- *Colloquium, Universität Innsbruck *April*
- *Colloquium, Ludwig Maximilian University of Munich *April*
- *APS Global Physics Summit 2025, Exploring the Expanding Universe with the Dark Energy Survey *March*

**2024**
- Cosmology and galaxy astrophysics with simulations and machine learning, CCA *Dec*
- Roman HLIS PIT F2F meeting, IPAC *Oct*
- Seminar, LMU *May*
- *Colloquium, ASIAA *March*

**2023**
- *Cosmology Astrophysics Seminar at University of Michigan *Nov*
- Plenary talk at Dark Energy Survey Collaboration Meeting *Oct*
- Groups and Clusters of Galaxies at the Crossroad between Astrophysics and Cosmology at Aspen *Aug*
- *CMB-S4 Workshop *Aug*

**2022**
- ICML International Conference on Machine Learning *July*
- Plenary talk at Dark Energy Survey Collaboration Meeting *May*
- *Colloquium, LMU *May*
- Colloquium, ASIAA *May*
- Advances in Cosmology through Numerical Simulations *May*
- Galaxy Clusters 2022: Challenging Our Cosmological Perspectives *April*

**2021**
- Cluster Mass 2020 *Sep*
- Colloquium, ASIAA *Jan*

**2020**
- Survey science group meeting, University of Chicago *Nov*
- *Gravitational lensing group seminar, LMU *Nov*
- *Seminar at Stony Brook University *Nov*
- *Dark Sector Meeting, JPL *Oct*
- Cosmology Lunch, Princeton University *Oct*
- Cosmic surveys meeting, Fermilab *Oct*
- *CCAPP Seminar, OSU *Oct*
- *Cosmology Seminar, University of California, Berkeley *Sep*
- *11th CMB-S4 Workshop: Cosmology and Astrophysics in the Next Decade *Aug*
- Cosmology from Home *Aug*

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| | • Dark Energy Survey Virtual Collaboration Meeting | *May* |
| **2019** | • Dark Energy Survey Collaboration Meeting | *Nov* |
| | • Cosmic Controversies | *Sep* |
| | • Great Lake Cosmology Workshop | *Aug* |
| | • Dark Energy Survey Collaboration Meeting | *May* |
| | • Panchromatic Panoramic Studies of Galaxy Clusters | *March* |
| **2018** | • Dark Energy Survey Y3KP workshop | *Oct* |
| | • Tucson DECaLS Workshop | *Aug* |
| | • Santa Cruz Galaxy Workshop | *Aug* |

## PUBLICATIONS

159 refereed publications with a total of 7884 citations (8742 citations in refereed Journals), h-index=50 according to NASA/ADS Metrics Summary.

Note that there are three separate numbered sections below: **Leading contributions** (main contributor of the project or papers from students I directly advise and have significant contributions) of 12 publications in cluster cosmology, simulations, cross-correlations, weak lensing, and other large-scale structure cosmology topics, **Supporting contributions** of 16 papers with a brief description on the contributions, and **Selected publications that are credited as a DES builder**. Full publication list available at ADS.

- **Leading contributions:**
  * **Student-led papers.**

12. **To, C.-H.**, Chang, C., Anbajagane, D., et al. 2025, "A DECADE of dwarfs: first detection of weak lensing around spectroscopically confirmed low-mass galaxies", *arXiv e-prints*, arXiv:2509.20458

11. *Dalal, N., **To, C.-H.**, Hirata, C., Hyeon-Shin, T., Hilton, M., Pandey, S., & Bond, J. R. 2025, "Deciphering Baryonic Feedback from ACT tSZ Galaxy Clusters", *arXiv e-prints*, arXiv:2507.04476

10. Abbott, T. M. C., Aguena, M., Alarcon, A., et al. 2025, "Dark energy survey year 3 results: Cosmological constraints from cluster abundances, weak lensing, and galaxy clustering", *Physical Review D*, 112, 083535

    *Alphabetically ordered. Contributions include Scientific management and coordination, Project development (including paper writing and figures), Data analysis and methods validation, and Data vector generation. See contributions in the Author Contributions section.*

9. **To, C.-H.**, Krause, E., Chang, C., et al. 2025, "Dark energy survey: Modeling strategy for multiprobe cluster cosmology and validation for the full six-year dataset", *Physical Review D*, 112, 063537

8. Bocquet, S., Grandis, S., Krause, E., **To, C.-H.**, et al. 2025, "Multiprobe cosmology from the abundance of SPT clusters and DES galaxy clustering and weak lensing", *Physical Review D*, 111, 063533
   *The second to the fourth authors are alphabetically ordered.*

7. **To, C.-H.**, Pandey, S., Krause, E., Dalal, N., Anbajagane, D., & Weinberg, D. H. 2024, "Deciphering baryonic feedback with galaxy clusters", *Journal of Cosmology and Astroparticle Physics*, 2024, 037

6. **To, C.-H.**, DeRose, J., Wechsler, R. H., et al. 2024, "Buzzard to Cardinal: Improved Mock Catalogs for Large Galaxy Surveys", *The Astrophysical Journal*, 961, 59

5. **To, C.-H.**, Rozo, E., Krause, E., Wu, H.-Y., Wechsler, R. H., & Salcedo, A. N. 2023, "LINNA: Likelihood Inference Neural Network Accelerator", *Journal of Cosmology and Astroparticle Physics*, 2023, 016

4. **To, C.-H.**, Krause, E., Rozo, E., et al. 2021, "Dark Energy Survey Year 1 Results: Cosmological Constraints from Cluster Abundances, Weak Lensing, and Galaxy Correlations", *Physical Review Letters*, 126, 141301

3. **To, C.-H.**, Krause, E., Rozo, E., et al. 2021, "Combination of cluster number counts and two-point correlations: validation on mock Dark Energy Survey", *Monthly Notices of the Royal Astronomical Society*, 502, 4093

2. **To, C.-H.**, Reddick, R. M., Rozo, E., Rykoff, E., & Wechsler, R. H. 2020, "RedMaPPer: Evolution and Mass Dependence of the Conditional Luminosity Functions of Red Galaxies in Galaxy Clusters", *The Astrophysical Journal*, 897, 15

1. **To, C.-H.**, Wang, W.-H., & Owen, F. N. 2014, "Star Formation Rate and Extinction in Faint z ~4 Lyman Break Galaxies", *The Astrophysical Journal*, 792, 139

- **Supporting publications:**

16. Hsu, Y.-H., Gruen, D., Gallardo, P. A., Dolag, K., To, C.-H., Wu, H.-Y., Marini, I., & Rozo, E. 2025, "Robustness of Pairwise Kinematic SZ Effect to Optical Cluster Selection Bias", *arXiv e-prints*, arXiv:2505.14791
*Providing expertise on simulating optical clusters in hydro-simulations*

15. DES Collaboration, Cao, S., Wu, H.-Y., et al. 2025, "Association between optically identified galaxy clusters and the underlying dark matter halos", *arXiv e-prints*, arXiv:2506.17526
*Contributed Cardinal simulation.*

14. Pandey, S., Salcido, J., To, C.-H., Hill, J. C., Anbajagane, D., Baxter, E. J., & McCarthy, I. G. 2025, "Accurate connected modeling of gas thermodynamics and matter distribution", *Physical Review D*, 111, 043529

    *Contributed to code development.*

13. Salcedo, A. N., Wu, H.-Y., Rozo, E., Weinberg, D. H., To, C.-H., Sunayama, T., & Lee, A. 2024, "Consistency of Dark Energy Survey Year 1 Galaxy Clusters with Planck", *Physical Review Letters*, 133, 221002

    *Contributed to project conceptualization and provided expertise on DES cluster cosmology.*

12. Zhou, C., Wu, H.-Y., Salcedo, A. N., et al. 2024, "Forecasting the constraints on optical selection bias and projection effects of galaxy cluster lensing with multiwavelength data", *Physical Review D*, 110, 103508

    *Contributed to project conceptualization.*

11. Lee, A., Wu, H.-Y., Salcedo, A. N., et al. 2025, "Optical galaxy cluster mock catalogs with realistic projection effects: Validations with the SDSS clusters", *Physical Review D*, 111, 063502

    *Contributed to project conceptualization.*

10. Zaborowski, E. A., Taylor, P., Honscheid, K., et al. 2025, "A sound horizon-free measurement of $H_0$ in DESI 2024", *Journal of Cosmology and Astroparticle Physics*,

2025, 020

*Contributed to project conceptualization.*

9. Taylor, P. L., Cuceu, A., To, C.-H., & Zaborowski, E. A. 2024, "CombineHarvester-Flow: Joint Probe Analysis Made Easy with Normalizing Flows", *The Open Journal of Astrophysics*, 7, 86

   *Contributed to code development.*

8. Schiappucci, E., Raghunathan, S., To, C., et al. 2025, "Constraining cosmological parameters using the pairwise kinematic Sunyaev-Zel'dovich effect with CMB-S4 and future galaxy cluster surveys", *Physical Review D*, 111, 063541

   *Contributed to simulations of projection effect.*

7. Zhang, Z., Wu, H.-Y., Zhang, Y., et al. 2023, "Modelling galaxy cluster triaxiality in stacked cluster weak lensing analyses", *Monthly Notices of the Royal Astronomical Society*, 523, 1994

   *Contributed to project conceptualization and provided expertise on simulation products usage.*

6. Zhang, T., Chuang, C.-H., Wechsler, R. H., et al. 2023, "Covariance matrices for variance-suppressed simulations", *Monthly Notices of the Royal Astronomical Society*, 518, 3737

   *Contributed to project conceptualization.*

5. Wu, H.-Y., Costanzi, M., To, C.-H., et al. 2022, "Optical selection bias and projection effects in stacked galaxy cluster weak lensing", *Monthly Notices of the Royal Astronomical Society*, 515, 4471

   *Contributed to project conceptualization, provided expertise on projection effect, and supported simulation products usage.*

4. Myles, J., Gruen, D., Mantz, A. B., et al. 2021, "Spectroscopic quantification of projection effects in the SDSS redMaPPer galaxy cluster catalogue", *Monthly Notices of the Royal Astronomical Society*, 505, 33

   *Contributed to project conceptualization, provided expertise on projection effect, and derived projection effect estimators.*

3. Abbott, T. M. C., Aguena, M., Alarcon, A., et al. 2020, "Dark Energy Survey Year 1 Results: Cosmological constraints from cluster abundances and weak lensing", *Physical Review D*, 102, 023509

   *Helped quantify the selection effect of redMaPPer clusters and fixed bugs in the projection effect model.*

2. Korytov, D., Hearin, A., Kovacs, E., et al. 2019, "CosmoDC2: A Synthetic Sky Catalog for Dark Energy Science with LSST", *The Astrophysical Journal Supplement Series*, 245, 26

*Contributed to the validation of cosmoDC2 by running redMaPPer on the catalog and by investigating the colors of red galaxies in mocks.*

1. Chuang, C.-H., Yepes, G., Kitaura, F.-S., et al. 2019, "UNIT project: Universe N-body simulations for the Investigation of Theoretical models from galaxy surveys", *Monthly Notices of the Royal Astronomical Society*, 487, 48

   *Derived the estimator quantifying the improvement in suppressed variance methods.*

- **Selected publications that are credited as a DES builder**:

87. Kornoelje, K., Bleem, L. E., Rykoff, E. S., et al. 2025, "The SPT-Deep Cluster Catalog: Sunyaev-Zel'dovich Selected Clusters from Combined SPT-3G and SPTpol Measurements over 100 Square Degrees", *arXiv e-prints*, arXiv:2503.17271

86. DES Collaboration, Abbott, T. M. C., Acevedo, M., et al. 2025, "Dark Energy Survey: implications for cosmological expansion models from the final DES Baryon Acoustic Oscillation and Supernova data", *arXiv e-prints*, arXiv:2503.06712

85. Singh, A., Mohr, J. J., Davies, C. T., et al. 2025, "Galaxy cluster matter profiles: I. Self-similarity, mass calibration, and observable-mass relation validation employing cluster mass posteriors", *Astronomy and Astrophysics*, 695, A49

84. Anbajagane, D., Chang, C., Drlica-Wagner, A., et al. 2025, "The DECADE cosmic shear project IV: cosmological constraints from 107 million galaxies across 5,400 deg$^2$ of the sky", *arXiv e-prints*, arXiv:2502.17677

83. Anbajagane, D., Chang, C., Chicoine, N., et al. 2025, "The DECADE cosmic shear project III: validation of analysis pipeline using spatially inhomogeneous data", *arXiv e-prints*, arXiv:2502.17676

82. Grandis, S., Costanzi, M., Mohr, J. J., et al. 2025, "Selection Function of Clusters in Dark Energy Survey Year 3 Data from Cross-Matching with South Pole Telescope Detections", *arXiv e-prints*, arXiv:2502.12914

81. McCullough, J., Amon, A., Legnani, E., et al. 2024, "Dark Energy Survey Year 3: Blue Shear", *arXiv e-prints*, arXiv:2410.22272

80. Bocquet, S., Grandis, S., Bleem, L. E., et al. 2024, "SPT clusters with DES and HST weak lensing. II. Cosmological constraints from the abundance of massive halos", *Physical Review D*, 110, 083510

79. Bocquet, S., Grandis, S., Bleem, L. E., et al. 2024, "SPT clusters with DES and HST weak lensing. I. Cluster lensing and Bayesian population modeling of multi-wavelength cluster datasets", *Physical Review D*, 110, 083509

78. Chicoine, N., Prat, J., Zacharegkas, G., et al. 2024, "Weak Gravitational Lensing around Low Surface Brightness Galaxies in the DES Year 3 Data", *The Open Journal of Astrophysics*, 7, 89

77. Klein, M., Mohr, J. J., Bocquet, S., et al. 2024, "VizieR Online Data Catalog: SPT-SZ MCMF catalog (Klein+, 2024)", *VizieR Online Data Catalog*, 753, J/MNRAS/531/3973

76. Lokken, M., van Engelen, A., Aguena, M., et al. 2024, "Superclustering with the Atacama Cosmology Telescope and Dark Energy Survey: II. Anisotropic large-scale coherence in hot gas, galaxies, and dark matter", *arXiv e-prints*, arXiv:2409.04535

75. Mena-Fernández, J., Rodríguez-Monroy, M., Avila, S., et al. 2024, "Dark Energy Survey: Galaxy sample for the baryonic acoustic oscillation measurement from the final dataset", *Physical Review D*, 110, 063514

74. Kelly, P. M., Jobel, J., Eiger, O., et al. 2024, "Dark energy survey year 3 results: miscentring calibration and X-ray-richness scaling relations in redMaPPer clusters", *Monthly Notices of the Royal Astronomical Society*, 533, 572

73. Klein, M., Mohr, J. J., Bocquet, S., et al. 2024, "SPT-SZ MCMF: an extension of the SPT-SZ catalogue over the DES region", *Monthly Notices of the Royal Astronomical Society*, 531, 3973

72. Zhang, Y., Golden-Marx, J. B., Ogando, R. L. C., et al. 2024, "Dark Energy Survey Year 6 results: Intra-cluster light from redshift 0.2 to 0.5", *Monthly Notices of the Royal Astronomical Society*, 531, 510

71. Cross, D., Thoron, G., Jeltema, T. E., et al. 2024, "Examining the self-interaction of dark matter through central cluster galaxy offsets", *Monthly Notices of the Royal Astronomical Society*, 529, 52

70. Bleem, L. E., Klein, M., Abbot, T. M. C., et al. 2024, "Galaxy Clusters Discovered via the Thermal Sunyaev-Zel'dovich Effect in the 500-square-degree SPTpol Survey", *The Open Journal of Astrophysics*, 7, 13

69. Anbajagane, D., Chang, C., Baxter, E. J., et al. 2024, "Cosmological shocks around galaxy clusters: a coherent investigation with DES, SPT, and ACT", *Monthly Notices of the Royal Astronomical Society*, 527, 9378

68. Giannini, G., Alarcon, A., Gatti, M., et al. 2024, "Dark Energy Survey Year 3 results: redshift calibration of the MAGLIM lens sample from the combination of SOMPZ and clustering and its impact on cosmology", *Monthly Notices of the Royal Astronomical Society*, 527, 2010

67. Marques, G. A., Madhavacheril, M. S., Darwish, O., et al. 2024, "Cosmological constraints from the tomography of DES-Y3 galaxies with CMB lensing from ACT DR4", *Journal of Cosmology and Astroparticle Physics*, 2024, 033

66. Zhou, C., Tong, A., Troxel, M. A., et al. 2023, "The intrinsic alignment of red galaxies in DES Y1 redMaPPer galaxy clusters", *Monthly Notices of the Royal Astronomical Society*, 526, 323

65. Dark Energy Survey and Kilo-Degree Survey Collaboration, Abbott, T. M. C., Aguena, M., et al. 2023, "DES Y3 + KiDS-1000: Consistent cosmology combining cosmic shear surveys", *The Open Journal of Astrophysics*, 6, 36

64. Samuroff, S., Mandelbaum, R., Blazek, J., et al. 2023, "The Dark Energy Survey Year 3 and eBOSS: constraining galaxy intrinsic alignments across luminosity and colour space", *Monthly Notices of the Royal Astronomical Society*, 524, 2195

63. Elvin-Poole, J., MacCrann, N., Everett, S., et al. 2023, "Dark Energy Survey Year 3 results: magnification modelling and impact on cosmological constraints from galaxy clustering and galaxy-galaxy lensing", *Monthly Notices of the Royal Astronomical Society*, 523, 3649

62. Mallaby-Kay, M., Amodeo, S., Hill, J. C., et al. 2023, "Kinematic Sunyaev-Zel'dovich effect with ACT, DES, and BOSS: A novel hybrid estimator", *Physical Review D*, 108, 023516

61. Upsdell, E. W., Giles, P. A., Romer, A. K., et al. 2023, "The XMM cluster survey: exploring scaling relations and completeness of the dark energy survey year 3 redMaPPer cluster catalogue", *Monthly Notices of the Royal Astronomical Society*, 522, 5267

60. Prat, J., Zacharegkas, G., Park, Y., et al. 2023, "Non-local contribution from small scales in galaxy-galaxy lensing: comparison of mitigation schemes", *Monthly Notices of the Royal Astronomical Society*, 522, 412

59. Lemos, P., Weaverdyck, N., Rollins, R. P., et al. 2023, "Robust sampling for weak lensing and clustering analyses with the Dark Energy Survey", *Monthly Notices of the Royal Astronomical Society*, 521, 1184

58. Abbott, T. M. C., Aguena, M., Alarcon, A., et al. 2023, "Dark Energy Survey Year 3 results: Constraints on extensions to $\Lambda$ CDM with weak lensing and galaxy clustering", *Physical Review D*, 107, 083504

57. Schiappucci, E., Bianchini, F., Aguena, M., et al. 2023, "Measurement of the mean central optical depth of galaxy clusters via the pairwise kinematic Sunyaev-Zel'dovich effect with SPT-3G and DES", *Physical Review D*, 107, 042004

56. Chen, A., Aricò, G., Huterer, D., et al. 2023, "Constraining the baryonic feedback with cosmic shear using the DES Year-3 small-scale measurements", *Monthly Notices of the Royal Astronomical Society*, 518, 5340

55. Abbott, T. M. C., Aguena, M., Alarcon, A., et al. 2023, "Joint analysis of Dark Energy Survey Year 3 data and CMB lensing from SPT and Planck. III. Combined cosmological constraints", *Physical Review D*, 107, 023531

54. Chang, C., Omori, Y., Baxter, E. J., et al. 2023, "Joint analysis of Dark Energy Survey Year 3 data and CMB lensing from SPT and P l a n c k . II. Cross-correlation measurements and cosmological constraints", *Physical Review D*, 107, 023530

53. Omori, Y., Baxter, E. J., Chang, C., et al. 2023, "Joint analysis of Dark Energy Survey Year 3 data and CMB lensing from SPT and Planck. I. Construction of CMB lensing maps and modeling choices", *Physical Review D*, 107, 023529

52. Amon, A., Robertson, N. C., Miyatake, H., et al. 2023, "Consistent lensing and clustering in a low-$S_8$ Universe with BOSS, DES Year 3, HSC Year 1, and KiDS-1000", *Monthly Notices of the Royal Astronomical Society*, 518, 477

51. Porredon, A., Crocce, M., Elvin-Poole, J., et al. 2022, "Dark Energy Survey Year 3 results: Cosmological constraints from galaxy clustering and galaxy-galaxy lensing using the MAGLIM lens sample", *Physical Review D*, 106, 103530

50. Gatti, M., Jain, B., Chang, C., et al. 2022, "Dark Energy Survey Year 3 results: Cosmology with moments of weak lensing mass maps", *Physical Review D*, 106, 083509

49. Chen, R., Scolnic, D., Rozo, E., et al. 2022, "Measuring Cosmological Parameters with Type Ia Supernovae in redMaGiC Galaxies", *The Astrophysical Journal*, 938, 62

48. Kovács, A., Vielzeuf, P., Ferrero, I., et al. 2022, "Dark Energy Survey Year 3 results: Imprints of cosmic voids and superclusters in the Planck CMB lensing map", *Monthly Notices of the Royal Astronomical Society*, 515, 4417

47. Pandey, S., Krause, E., DeRose, J., et al. 2022, "Dark Energy Survey year 3 results: Constraints on cosmological parameters and galaxy-bias models from galaxy clustering and galaxy-galaxy lensing using the redMaGiC sample", *Physical Review D*, 106, 043520

46. Lokken, M., Hložek, R., van Engelen, A., et al. 2022, "Superclustering with the Atacama Cosmology Telescope and Dark Energy Survey. I. Evidence for Thermal Energy Anisotropy Using Oriented Stacking", *The Astrophysical Journal*, 933, 134

45. Pandey, S., Gatti, M., Baxter, E., et al. 2022, "Cross-correlation of Dark Energy Survey Year 3 lensing data with ACT and P l a n c k thermal Sunyaev-Zel'dovich effect observations. II. Modeling and constraints on halo pressure profiles", *Physical Review D*, 105, 123526

44. Gatti, M., Pandey, S., Baxter, E., et al. 2022, "Cross-correlation of Dark Energy Survey Year 3 lensing data with ACT and Planck thermal Sunyaev-Zel'dovich effect observations. I. Measurements, systematics tests, and feedback model constraints", *Physical Review D*, 105, 123525

43. DeRose, J., Wechsler, R. H., Becker, M. R., et al. 2022, "Dark Energy Survey Year 3 results: Cosmology from combined galaxy clustering and lensing validation on cosmological simulations", *Physical Review D*, 105, 123520

42. Secco, L. F., Jarvis, M., Jain, B., et al. 2022, "Dark Energy Survey Year 3 Results: Three-point shear correlations and mass aperture moments", *Physical Review D*, 105, 103537

41. Sánchez, C., Prat, J., Zacharegkas, G., et al. 2022, "Dark Energy Survey Year 3 results: Exploiting small-scale information with lensing shear ratios", *Physical Review D*, 105, 083529

40. Prat, J., Blazek, J., Sánchez, C., et al. 2022, "Dark energy survey year 3 results: High-precision measurement and modeling of galaxy-galaxy lensing", *Physical Review D*, 105, 083528

39. Rodríguez-Monroy, M., Weaverdyck, N., Elvin-Poole, J., et al. 2022, "Dark Energy Survey Year 3 results: galaxy clustering and systematics treatment for lens galaxy samples", *Monthly Notices of the Royal Astronomical Society*, 511, 2665

38. Cordero, J. P., Harrison, I., Rollins, R. P., et al. 2022, "Dark Energy Survey Year 3 results: marginalization over redshift distribution uncertainties using ranking of

discrete realizations", *Monthly Notices of the Royal Astronomical Society*, 511, 2170

37. Somboonpanyakul, T., McDonald, M., Noble, A., et al. 2022, "The Evolution of AGN Activity in Brightest Cluster Galaxies", *The Astronomical Journal*, 163, 146

36. Leauthaud, A., Amon, A., Singh, S., et al. 2022, "Lensing without borders - I. A blind comparison of the amplitude of galaxy-galaxy lensing between independent imaging surveys", *Monthly Notices of the Royal Astronomical Society*, 510, 6150

35. Abbott, T. M. C., Aguena, M., Allam, S., et al. 2022, "Dark Energy Survey Year 3 results: A 2.7% measurement of baryon acoustic oscillation distance scale at redshift 0.835", *Physical Review D*, 105, 043512

34. Gatti, M., Giannini, G., Bernstein, G. M., et al. 2022, "Dark Energy Survey Year 3 Results: clustering redshifts - calibration of the weak lensing source redshift distributions with redMaGiC and BOSS/eBOSS", *Monthly Notices of the Royal Astronomical Society*, 510, 1223

33. Lee, S., Huff, E. M., Choi, A., et al. 2022, "Probing gravity with the DES-CMASS sample and BOSS spectroscopy", *Monthly Notices of the Royal Astronomical Society*, 509, 4982

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