

CHUN-HAO TO

CONTACT

Physics Research Building
191 West Woodruff Avenue
Columbus, OH 43210

E-Mail: to.87@osu.edu
Phone: +1-702-235-8760
Webpage: chunhaoto.com

RESEARCH INTERESTS

Observational and Computational cosmology

Cluster abundance cosmology, Large-scale structure, Combined-probe analyses, Galaxy-halo connection

EMPLOYMENT

CCAPP postdoctoral Fellow, Ohio State University

2021–Present

EDUCATION

Ph.D in Physics

2016–2021

Department of Physics, Stanford University, CA, USA

B.S. in Physics

2011–2015

Department of Physics, National Taiwan University, Taipei, Taiwan

AWARDS

- Dark Energy Survey builder status (for 2 FTE years of infrastructure work) *2020*
- Dark Energy Survey Early Career Scientist *2019*
Awarded US\$1500 for participating in 2 DES Collaboration Meetings
- Dean’s Award of College of Science, National Taiwan University *2015*

SCIENTIFIC COLLABORATION

- Dark Energy Survey (DES)
 - Analysis Co-lead of cluster cosmology key projects
 - Active member of cluster, simulation, theory and combined-probes, and weak lensing working groups
 - Internal reviewer for various DES papers

TEACHING AND OUTREACH

- Public talk at Bexley library:
”Learning the dark universe with galaxies and galaxy clusters” *Summer 2022*
- Guest lecturer at Astronomy 2895 Topics in Astrophysics *Fall 2021*
- The Origin and Development of the Cosmos *Winter 2020*

- Astronomy Laboratory and Observational Astronomy *Fall 2018*
- Electricity and Magnetism Lab *Spring 2017*
- Teacher, Stanford ESP Splash! Program *Spring 2017*

MENTORING EXPERIENCE

- Kathlynn Simotas, undergrad student at Stanford (past), UCSD graduate student, Quantifying redMaPPer cluster systematics using galaxies with spectroscopic redshifts, 2019–2021
- Nihar Dalal, graduate student at Ohio State University, Cluster cosmology with ACT and DES, 2023–Now

PUBLICATIONS

103 publications (68 refereed in major science journals, all others pending refereeing) with a total of 1561 citations (1396 citations in refereed Journals), h-index=22 according to NASA/ADS Metrics Summary.

First author publications:

1. **To, C.-H.**, DeRose, J., Wechsler, R. H., et al. 2023, “Buzzard to Cardinal: Improved Mock Catalogs for Large Galaxy Surveys”, *arXiv e-prints*, arXiv:2303.12104
2. **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
3. **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
4. **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
5. **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
6. **To, C.-H.**, Wang, W.-H., & Owen, F. N. 2014, “Star Formation Rate and Extinction in Faint $z \sim 4$ Lyman Break Galaxies”, *The Astrophysical Journal*, 792, 139

PROGRAMMING SKILLS

Extensive experiences on Python, Pytorch, C/C++, and IDL

PRESENTATIONS

* Invited Presentations

2023	• Groups and Clusters of Galaxies at the Crossroad between Astrophysics and Cosmology at Aspen	<i>Aug</i>
2022	• ICML International Conference on Machine Learning	<i>July</i>
	• *Plenary talk at Dark Energy Survey Collaboration Meeting	<i>May</i>
	• *Colloquium, LMU	<i>May</i>
	• Colloquium, ASIAA	<i>May</i>
	• Advances in Cosmology through Numerical Simulations	<i>May</i>
	• Galaxy Clusters 2022: Challenging Our Cosmological Perspectives	<i>April</i>
2021	• Cluster Mass 2020	<i>Sep</i>
	• Colloquium, ASIAA	<i>Jan</i>
2020	• Survey science group meeting, University of Chicago	<i>Nov</i>
	• *Gravitational lensing group seminar, LMU	<i>Nov</i>
	• *Seminar at Stony Brook University	<i>Nov</i>
	• *Dark Sector Meeting, JPL	<i>Oct</i>
	• Cosmology Lunch, Princeton University	<i>Oct</i>
	• Cosmic surveys meeting, Fermilab	<i>Oct</i>
	• *CCAPP Seminar, OSU	<i>Oct</i>
	• *Cosmology Seminar, University of California, Berkeley	<i>Sep</i>
	• *11th CMB-S4 Workshop: Cosmology and Astrophysics in the Next Decade	<i>Aug</i>
	• Cosmology from Home	<i>Aug</i>
	• Dark Energy Survey Virtual Collaboration Meeting	<i>May</i>
2019	• Dark Energy Survey Collaboration Meeting	<i>Nov</i>
	• Cosmic Controversies	<i>Sep</i>
	• Great Lake Cosmology Workshop	<i>Aug</i>
	• Dark Energy Survey Collaboration Meeting	<i>May</i>
	• Panchromatic Panoramic Studies of Galaxy Clusters	<i>March</i>
2018	• Dark Energy Survey Y3KP workshop	<i>Oct</i>
	• Tucson DECaLS Workshop	<i>Aug</i>
	• Santa Cruz Galaxy Workshop	<i>Aug</i>

REFERENCES

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- Risa H. Wechsler
Physics Department, Stanford University
Stanford, CA 94305, USA

Email: rwechsler@stanford.edu

- Eduardo Rozo
Department of Physics, University of Arizona
Tucson, AZ 85721, USA
Email: erozo@email.arizona.edu
- Elisabeth Krause
Steward Observatory
Department of Astronomy, University of Arizona
Tucson, AZ 85721, USA
Email: krausee@email.arizona.edu
- Daniel Gruen
Geschwister-Scholl-Platz 1 D-80539 München
Email: Daniel.Gruen@lmu.de
- David Weinberg
4055 McPherson Laboratory
140 West 18th Avenue Columbus, Ohio 43210-1173
Email: weinberg.21@osu.edu