

# CHUN-HAO TO

## CONTACT

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## RESEARCH INTERESTS

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### **Observational and Computational cosmology**

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

## EMPLOYMENT

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**CCAPP postdoctoral Fellow, Ohio State University**

*2021–Present*

## EDUCATION

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### **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

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- 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

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- 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

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- 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

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- Kathlynn Simotas, undergrad student at Stanford (past), UCSD graduate student, Quantifying redMaPPer cluster systematics using galaxies with spectroscopic redshifts, 2019–2021

## PUBLICATIONS

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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.**, 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
2. **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
4. **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
5. **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

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

## PRESENTATIONS

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\* Invited Presentations

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|-------------|---|-------------|
| <b>2022</b> | • 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>  |

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|-------------|--|--------------|
|             | • Advances in Cosmology through Numerical Simulations                  | <i>May</i>   |
|             | • Galaxy Clusters 2022: Challenging Our Cosmological Perspectives      | <i>April</i> |
| <b>2021</b> | • Cluster Mass 2020  | <i>Sep</i>   |
|             | • Colloquium, ASIAA  | <i>Jan</i>   |
| <b>2020</b> | • 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>   |
| <b>2019</b> | • 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> |
| <b>2018</b> | • 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<br>Physics Department, Stanford University<br>Stanford, CA 94305, USA                             | Email: rwechsler@stanford.edu    |
| • Eduardo Rozo<br>Department of Physics, University of Arizona<br>Tucson, AZ 85721, USA                              | Email: erozo@email.arizona.edu   |
| • Elisabeth Krause<br>Steward Observatory<br>Department of Astronomy, University of Arizona<br>Tucson, AZ 85721, USA | Email: krausee@email.arizona.edu |

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