

# Yi-Kuan Chiang

## ASSISTANT RESEARCH FELLOW — ASIAA

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## Research

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Data-Intensive Astronomy Focusing on Cosmological Galaxy Formation, Cosmic Structures and Inventory

## Academic History

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2016	<b>University of Texas at Austin</b> Ph.D. in Astronomy	AUSTIN, TX, USA
2009	<b>National Tsing Hua University</b> M.S. in Astronomy	HSINCHU, TAIWAN
2007	B.S. in Computer Science with Physics Minor	

## Positions Held

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2022–	<b>Academia Sinica Institute of Astronomy &amp; Astrophysics (ASIAA)</b> Assistant Research Fellow (Tenure Track)	TAIPEI, TAIWAN
2019–2021	<b>The Ohio State University</b> Center for Cosmology and AstroParticle Physics Fellow	COLUMBUS, OH, USA
2016–2019	<b>Johns Hopkins University</b> Postdoctoral Fellow	BALTIMORE, MD, USA
Jun–Sep 2016	<b>University of Tokyo</b> Japan Society for the Promotion of Science Postdoctoral Fellow	TOKYO, JAPAN

## Honors and Awards

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2024	Academia Sinica Career Development Award
2023	Li Foundation Heritage Prize
2019	Ohio State Center for Cosmology and AstroParticle Physics (CCAPP) Fellowship
2016	Japan Society for the Promotion of Science (JSPS) Fellowship
2014	UT Austin Homer Lindsey Bruce Graduate Fellowship
2014	UT Austin Roland K. Blumberg Endowment in Astronomy Award
2014, 2016	UT Austin Graduate School Professional Development Awards
2014	UT Austin Astronomy Frank Edmonds Memorial Fellowship
2013	UT Austin Astronomy Board of Visitors Best Second Year Research Award

## Sky Surveys and Roles

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2020–	SPHEREx Mission   Co-Convener of the Cosmology Group
2022–	Subaru Prime Focus Spectrograph (PFS) Survey   Member
2018–	Vera C. Rubin Observatory Legacy Survey of Space and Time (LSST)   Member
2020–2021	Euclid Mission   Member
2019–2021	Dark Energy Spectroscopic Instrument (DESI)   Member
2017–2019	Subaru Hyper Suprime-Cam (HSC) Survey   External Collaborator
2012–2016	Hobby-Eberly Telescope Dark Energy Experiment (HETDEX)   Member

## Professional Services

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2023–	Taiwan TAC Chair   Canada France Hawaii Telescope (CFHT) Time Allocation
2014–	Paper Referee   Nature, ApJ, ApJS, MNRAS, and A&A
2022	Taiwan TAC Member   Canada France Hawaii Telescope (CFHT) Time Allocation
2022	Reviewer   James Clerk Maxwell Telescope (JCMT) Time Allocation
2021	Panel Member   National Science Foundation (NSF) Grant Proposal Review
2020, 2021	Panel Member   Hubble Space Telescope Time Allocation
2020	Referee   Subaru Telescope Time Allocation

## Awarded Telescope Time

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### PI Programs:

2017	Subaru-Gemini Time Exchange <i>JWST High-z Pathfinder: 3D-HST Metal Poor Galaxies at <math>z = 0.8</math></i>	9.5 HRS GMOS-N
2015, 2016	Gemini Telescope (2 Proposals Accepted) <i>Mapping out the Densest Structures in the COSMOS Field at <math>z = 2-3</math></i>	61 HRS GMOS-N + GMOS-S
2009, 2011	Chandra X-ray Observatory (2 Proposals Accepted) <i>The X-Ray Evolution of Supernova 2004am</i>	\$25K GRANT   10+15 KS ACIS

### Selected Co-I Programs:

2020	NOAO Large Survey (As Co-I   PI: K. Lee & E. Gawiser) <i>A 100 deg<sup>2</sup> DECam Narrow-Band Survey for the LSST Era: Tracing the Largest Cosmic Structures in the Distant Universe</i>	78 NIGHTS DECam TIME, 2021 – 2023
2018–2020	Subaru Telescope (3 Proposals Accepted   PI: S. Mukae) <i>Uncovering the Physical Origin of a Giant Lyman-Alpha Nebula with MOIRCS</i>	3 NIGHTS MOIRCS
2017	Hubble Space Telescope (PI: C. Casey) <i>The Environments of <math>6 &lt; z &lt; 7</math> Quasars: Rich with Starbursts?</i>	13 ORBITS ACS & WFC3
2017	Gemini Telescope (PI: Y. Ono) <i>Spectroscopic Confirmation of a Distant Galaxy Cluster at the Epoch of Reionization <math>z = 6.57</math></i>	8 HRS GMOS-N
2016	ALMA Observatory (PI: C. Casey) <i>Galaxies' Gas Supply in Two Massive, Starbursting Galaxy Cluster Progenitors at <math>z &gt; 2</math></i>	11 HRS BAND 6
2016	ESO Very Large Telescope (2 Proposals Accepted   PI: R. Overzier) <i>Rise of the Clusters: Galaxy Formation in the Densest Regions at <math>z = 2.5</math></i>	32 HRS KMOS
2012	McDonald Observatory (PI: R. Overzier) <i>The Environments of the Most Extreme Objects at <math>z = 2.5</math></i>	10 NIGHTS HJST VIRUS-P

## On-Site Observing Experience

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2017	Apache Point Observatory   ARC 3.5m Telescope   DIS, SPIcam, TSpec	3 NIGHTS
2014	European Southern Observatory   Very Large Telescope   KMOS	4 HALF-NIGHTS
2013	Kitt Peak National Observatory   Mayall Telescope   NEWFIRM	3 NIGHTS
2013–2014	McDonald Observatory   Harlan J. Smith Telescope   VIRUS-P IFU	11 NIGHTS

## Tool Releases

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2020	<b>The Tomographer</b> A Web Tool for Estimating Redshift Distributions from Source Catalogs and Sky Maps Using Statistical Clustering	<a href="http://tomographer.org/">HTTP://TOMOGRAPHER.ORG/</a> <a href="#">LINK TO ASTROBETTER POST</a>
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## Publications

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### FIRST-AUTHOR PAPERS ARE LISTED FIRST

- 32 **Chiang, Y.-K.**, 2023, *ApJ*, 958, 118  
*Corrected SFD: A More Accurate Galactic Dust Map with Minimal Extragalactic Contamination*
  - 31 **Chiang, Y.-K.**, Makiya, R., Komatsu, E., & Ménard, B., 2021, *ApJ*, 910, 32  
*The Thermal and Gravitational Energy Densities in the Large-Scale Structure of the Universe*
  - 30 **Chiang, Y.-K.**, Makiya, R., Ménard, B., & Komatsu, E., 2020, *ApJ*, 902, 56  
*The Cosmic Thermal History Probed by Sunyaev-Zeldovich Effect Tomography*
  - 29 **Chiang, Y.-K.**, Ménard, B., & Schiminovich, D., 2019, *ApJ*, 877, 150  
*Broadband Intensity Tomography: Spectral Tagging of the Cosmic UV Background*
  - 28 **Chiang, Y.-K.** & Ménard, B., 2019, *ApJ*, 870, 120  
*Extragalactic Imprints in Galactic Dust Maps*
  - 27 **Chiang, Y.-K.**, Overzier, R. A., Gebhardt, K., & Henriques, B., 2017, *ApJ*, 844, L23  
*Galaxy Protoclusters as Drivers of Cosmic Star Formation History in the First 2 Gyr*
  - 26 **Chiang, Y.-K.**, Overzier, R., Gebhardt, K., Finkelstein, S., Chiang, C.-T., & 10 coauthors, 2015, *ApJ*, 808, 37  
*Surveying Galaxy Proto-Clusters in Emission: A Large-Scale Structure at  $z=2.44$  and the Outlook for HETDEX*
  - 25 **Chiang, Y.-K.**, Overzier, R., & Gebhardt, K., 2014, *ApJ*, 782, L3  
*Discovery of a Large Number of Candidate Protoclusters by  $\sim 15$  Mpc-Scale Galaxy Overdensities in COSMOS*
  - 24 **Chiang, Y.-K.**, Overzier, R., & Gebhardt, K., 2013, *ApJ*, 779, 127  
*Ancient Light from Young Cosmic Cities: Physical and Observational Signatures of Galaxy Proto-Clusters*
  - 23 **Chiang, Y.-K.** & Kong, A. K. H., 2011, *MNRAS*, 414, 1329  
*The Long-Term Variability of the X-ray Sources in M82*
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- 22 Lee, K.-S., Gawiser, E., Park, C., & 39 Coauthors including **Chiang, Y.-K.**, 2023, arXiv:2309.10191  
*The One-hundred-deg<sup>2</sup> DECam Imaging in Narrowbands (ODIN): Survey Design and Science Goals*
  - 21 Popescu, R., Pope, A., Lee, K.-S., & 6 Coauthors including **Chiang, Y.-K.**, 2023, arXiv:2308.00745  
*Tracing the Total Stellar Mass and Star Formation of High-Redshift Protoclusters*
  - 20 Das, S., **Chiang, Y.-K.**, & Mathur, S. 2023, *ApJ*, 951, 125  
*Detection of Thermal Sunyaev-Zel'dovich Effect in the Circumgalactic Medium of Low-mass Galaxies-A Surprising Pattern in Self-similarity and Baryon Sufficiency*
  - 19 Han, J. J., Dey, A., Price-Whelan, A. M. & 206 Coauthors including **Chiang, Y.-K.**, 2023, arXiv:2306.11784  
*NANCY: Next-generation All-sky Near-infrared Community survey*
  - 18 Lin, Y.-T., Miyatake, H., Guo, H., **Chiang, Y.-K.**, Chen, K.-F., Lan, T.-W., & Chang, Y.-Y., 2022, *A&A*, 666, A97  
*A Pair of Early- and Late-Forming Galaxy Cluster Samples: a Novel Way of Studying Halo Assembly Bias Assisted by a Constrained Simulation*
  - 17 Lin, H.-H., Lin, K.-Y, Li, C.-T. & 43 Coauthors including **Chiang, Y.-K.**, 2022, *PASP*, 134, 094106  
*BURSTT: Bustling Universe Radio Survey Telescope for Taiwan*
  - 16 Huang, Y., Lee, K.-S., Cucciati, O. & 13 Coauthors including **Chiang, Y.-K.**, 2022, *ApJ*, 941, 134  
*Evaluating Ly $\alpha$  Emission as a Tracer of the Largest Cosmic Structure at  $z=2.47$*
  - 15 McKinney, J., Ramakrishnan, V., Lee, K.-S., & 4 Coauthors including **Chiang, Y.-K.**, 2022, *ApJ*, 928, 88  
*Measuring the Total Ultraviolet Light from Galaxy Clusters at  $z=0.5-1.6$ : The Balance of Obscured and Unobscured Star Formation*
  - 14 Alberts, S., Lee, K.-S., Pope, A., Brodwin, M., **Chiang, Y.-K.**, & 11 Coauthors, 2021, *MNRAS*, 501, 1970  
*Measuring the Total Infrared Light from Galaxy Clusters at  $z=0.5-1.6$ : Connecting Stellar Populations to Dusty Star Formation*

- 13 Crill, B. P., Werner, M., Akeson, R., & 51 Coauthors including **Chiang, Y.-K.**, 2020, SPIE, 11443, 114430  
*SPHEREx: NASA's near-infrared spectrophotometric all-sky survey*
- 12 Mukae, S., Ouchi, M., Cai, Z., & 21 Coauthors including **Chiang, Y.-K.**, 2020, ApJ, 896, 45  
*Three-Dimensional Distribution Map of HI Gas and Galaxies Around an Enormous Ly $\alpha$  Nebula and Three QSOs at  $z = 2.3$  Revealed by the HI Tomographic Mapping Technique*
- 11 Kubo, M., Toshikawa, J., Kashikawa, N., **Chiang, Y.-K.**, & 10 Coauthors, 2019, ApJ, 887, 214  
*Planck Far-Infrared Detection of Hyper Suprime-Cam Protoclusters at  $z \sim 4$*
- 10 Zavala, J., Casey, C., Scoville, N., Champagne, J., **Chiang, Y.-K.**, & 8 Coauthors, 2019, ApJ, 887, 183  
*On the Gas Content, Star Formation Efficiency, and Environmental Quenching of Massive Galaxies in Proto-Clusters at  $z \sim 2.0-2.5$*
- 9 Heap, S., Hull, T., Kendrick, S., & 61 coauthors including **Chiang, Y.-K.**, 2019, BAAS, 51, 159  
*The Probe-Class Mission Concept, Cosmic Evolution Through UV Surveys (CETUS)*
- 8 Higuchi, R., Ouchi, M., Ono, Y., & 17 coauthors including **Chiang, Y.-K.**, 2019, ApJ, 879, 28  
*SILVERRUSH. VII. Subaru/HSC Identifications of Protocluster Candidates at  $z \sim 6-7$ : Implications for Cosmic Reionization*
- 7 Jiang, L., Wu, J., Bian, F., **Chiang, Y.-K.**, & 12 Coauthors, 2018, **Nature Astronomy**, 2, 962  
*A Giant Protocluster of Galaxies at Redshift 5.7*
- 6 Uchiyama, H., Toshikawa, J., Kashikawa, N., Overzier, R., **Chiang, Y.-K.**, & 20 Coauthors, 2018, PASJ, 70, S32  
*Luminous Quasars do not Live in the Most Overdense Regions of Galaxies at  $z \sim 4$*
- 5 Mukae, S., Ouchi, M., Kakiichi, K., & 7 coauthors including **Chiang, Y.-K.**, 2017, ApJ, 835, 281  
*Cosmic Galaxy-IGM HI Relation at  $z \sim 2-3$  Probed in the COSMOS/UltraVISTA 1.6 Deg<sup>2</sup> Field*
- 4 Smolcic, V., Miettinen, O., Tomicic, N., & 20 coauthors including **Chiang, Y.-K.**, 2017, A&A, 597, A4  
*(Sub)millimetre Interferometric Imaging of a Sample of COSMOS/AzTEC Submillimetre Galaxies III. Environments*
- 3 Hung, C.-L., Casey, C., **Chiang, Y.-K.**, & 10 Coauthors, 2016, ApJ, 826, 130  
*Large Scale Structure Around a  $z=2.1$  Cluster*
- 2 Hagen, A., Zeimann, G., Behrens, C., & 14 coauthors including **Chiang, Y.-K.**, 2016, ApJ, 817, 79  
*HST ELGs at  $z \sim 2$ : Comparing Physical Properties of Ly $\alpha$  and Optical Emission Line Selected Galaxies*
- 1 Rigby, E., Hatch, N., Röttgering, H., Sibthorpe, B., **Chiang, Y.-K.**, & 13 Coauthors, 2014, MNRAS, 437, 1882  
*Searching for Large-Scale Structures Around High-Redshift Radio Galaxies with Herschel*

## References

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