Dongwoo Chung

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Mailing address: 202 Space Sciences Bldg, Ithaca NY 14853 — **Citizenship:** USA
Current position: Assistant Professor, Department of Astronomy, Cornell University

EDUCATION

PhD in Physics, Stanford University *2014–2020*
Thesis: Line-intensity mapping with the CO Mapping Array Pathfinder and beyond
Advisor: Prof Sarah Church

AB in Physics, Princeton University (*magna cum laude*) *2010–2014*
Thesis: Characterization of a microwave SQUID multiplexer *Advisor:* Prof Lyman Page

RESEARCH

Interests: spectral line-intensity mapping; cosmic star-formation history, galaxy formation, epoch of reionisation; galaxy–halo connection; structure formation; statistical probes of non-Gaussian information; radio/mm-wave instrumentation and observational techniques.

Assistant Professor, Cornell University *Jul 2024–present*
- COMAP: Season 2 science; investigating stacking and cross-correlation techniques
- TIME: ongoing instrument support and commissioning analysis to prepare for science
- CCAT: ongoing definition of LIM science cases and survey/analysis workflows

CITA–Dunlap Institute Research Fellow, University of Toronto *Nov 2020–Jun 2024*
- COMAP: signal forecasting, analysis and interpretation of early science results
- TIME: part of site team for 2021–22 season; instrument support, analysis
- Advisory discussions on simulations, analysis with SPT-SLIM, EXCLAIM teams

Research assistant w/ Prof Sarah Church, Stanford University *Mar 2015–Sep 2020*
- Argus: commissioning of W-band focal plane array for Green Bank Telescope
- COMAP: signal forecasting, commissioning data analysis

Student researcher in Gravity Group, Princeton University *intermittent, 2011–2014*

TEACHING AND MENTORING (SELECTED)

PhD students mentored or co-mentored:
- Megan Schultze (Cornell, astronomy) *Aug 2025–present*
- Selina Yang (Cornell, physics; primary advisor Prof Abigail Crites) *Aug 2025–present*

Undergraduate students mentored: *(* supervised project resulted in publication/preprint)*
- Treyton Grahn (Cornell, independent study) *Aug 2025–present*
- Ashley Kim (Cornell, independent study) *Aug 2025–present*
- Sophie McAtee* (Cornell, Nexus Scholar / independent study) *May 2025–present*
- Ella Mansfield* (Cornell, independent study) *Sep 2024–present*
- Natalie Faraj (U of Toronto, CITA SURF) *May–Aug 2023*
- Patrick Horlaville* (McGill, CITA SURF; co-sup. w/ Prof J R Bond) *May–Aug 2022*
- Ishika Bangari* (U of Toronto; SURP 2021 poster hon. mention) *Jun–Aug 2021*
- Lisa Nasu-Yu (U of Toronto; co-supervised w/ Prof Abigail Crites) *Jun–Aug 2021*
- Meredie Cohen (Brown, worked at Stanford; co-sup. w/ Prof S Church) *Jun–Aug 2018*

Courses at Cornell:
- The Life of Stars (ASTRO 3302; general astronomy) *Aug–Dec 2025*
- The History of the Universe (ASTRO 2201; non-majors) *2025, 2026*

AWARDS AND HONOURS

Vincent and Beatrice Tremaine Postdoctoral Fellowship, CITA, U of Toronto *2022–2023*
CITA & Dunlap Postdoctoral Fellowships, University of Toronto *2020–2024*
KIPAC Giddings Graduate Student Fellowship, Stanford University *2014–2015*
Allen G. Shenstone Prize in Physics, Princeton University *2014*
Joseph Henry Fellowship & Treiman Fellowship, Princeton University *2013*
Kusaka Memorial Prize in Physics, Princeton University *2012, 2013*

ACADEMIC PRESENTATIONS (SELECTED)

Invited conference talks and department seminars:
—Rochester Institute of Technology, SoPA colloquium *Oct 2025*
—University of Chicago, KICP seminar *May 2024*
—Present and Future of Line-Intensity Mapping (MPIA, Garching) *Apr 2023*
—SPT-SLIM collaboration meeting (KICP, University of Chicago) *Jul 2022*
—New York University, CCPP Astrophysics Seminar *Apr 2022*
—Flatiron CCA, Tri-State Cosmology $\times$ Data Science *Apr 2022*
—Cross-correlations with CHORD Workshop (McGill University, *virtual*) *Oct 2021*
—CfA, Harvard & Smithsonian, Special SMA talk *Dec 2019*
—Princeton University, Dept of Astrophysical Sciences, Cosmology seminar *Oct 2019*
Contributed presentations and informal seminars:
—CNRS/LAPTh, LIM25 conference (Annecy, France) *Jun 2025*
—UIUC, Line-Intensity Mapping 2024 conference *Jun 2024*
—Stanford/SLAC, KIPAC@20 conference *Sep 2023*
—UCSB, Dept of Physics, Astro Lunch *Feb 2023*
—KITP, Co-evolution of the Cosmic Web and Galaxies across Cosmic Time *Feb 2023*
—Caltech, Dept of Astronomy, Astronomy Tea talk *(virtual)* *Oct 2022*
—Cornell University, Dept of Astronomy, Galaxy lunch *Sep 2022*
—McGill University, CMB+EoR workshop *Jul 2022*
—Stanford University, KIPAC Tea talk *Jun 2022*
—AAS 240th Meeting (Pasadena, California) *Jun 2022*
—CASCA 2022 Annual General Meeting (University of Waterloo, *virtual*) *May 2022*
—University of Chicago, KICP Line-intensity Mapping Workshop *(virtual)* *Jun 2021*
—Johns Hopkins University, Dept of Phys & Astro, Cosmology/HEP seminar *Oct 2019*
—Cornell University, Dept of Astronomy, Astrophysics lunch *Oct 2019*
—Aix-Marseille Université, 'L2S2' (Lines in the LSS) conf. *(two talks)* *Jul 2019*
—Aspen Ctr for Phys, Cosmological Signals from Cosmic Dawn to the Present *Feb 2018*
—Johns Hopkins University, Second Annual Intensity Mapping Workshop *Jun 2017*

OUTREACH AND SERVICE (SELECTED)

4-H Career Explorations Focus for Teens astronomy faculty panelist *Jun 2025*
LIM25 Conference Scientific Organising Committee *Oct 2024–Jun 2025*
Astronomy on Tap Ithaca inaugural event speaker *Sep 2024*
Line-Intensity Mapping 2024 Conference Scientific Organising Committee *Jun 2024*
CITA Pan-Canadian Reionisation Workshop co-organiser *Aug 2023*
CITA National Jamboree co-organiser *2021, 2022, 2023*
UofT dep't committees: Grad. Admissions (2021–22), Community Climate (2022–2024)
Cornell dep't committees: Grad. Admissions (2024–26), Curriculum Revision (2025, *ad hoc*)
PhD committees: Cassie Sevilla (Cornell), Ryan Wills (RIT), Michael Camilo (Cornell)
Referee service: **ApJ** (2020–), **MNRAS** (2022), **Phys Rev D** (2023), **JCAP** (2024)

LIST OF PUBLICATIONS, PREPRINTS, AND PROCEEDINGS

*(**names set in bold type**: mentored student involved directly in publication/preprint work)*

First-author, refereed: *(in reverse order of preprint announcement)*

1. Chung, D. T. et al. (COMAP Collaboration), 'COMAP Pathfinder – Season 2 results III. Implications for cosmic molecular gas content at $z \sim 3$', 2024, A&A, 691, A337 [DOI: 10.1051/0004-6361/202451122]
2. Chung, D. T., Chluba, J., & Breysse, P. C., 'Carbon monoxide and ionized carbon line emission global signals: foregrounds and targets for absolute microwave spectrometry', 2024, Phys Rev D, 110, 023513 [DOI: 10.1103/PhysRevD.110.023513]
3. Chung, D. T., 'Constraining the halo-ISM connection through multi-transition carbon monoxide line-intensity mapping', 2023, JCAP, 12(2023)024 [DOI: 10.1088/1475-7516/2023/12/024]
4. Chung, D. T., **Bangari, I.**, Breysse, P. C., Ihle, H. T. et al. (COMAP Collaboration), 'The deconvolved distribution estimator: enhancing reionisation-era CO line-intensity mapping analyses with a cross-correlation analogue for one-point statistics', 2023, MNRAS, 520, 5305 [DOI: 10.1093/mnras/stad359]
5. Chung, D. T., 'Leveraging cross-correlations and linear covariance-based filtering for line-intensity map reconstructions at linear scales', 2023, Phys Rev D, 107, 023509 [DOI: 10.1103/PhysRevD.107.023509]
6. Chung, D. T., 'Exploration of 3D wavelet scattering transform coefficients for line-intensity mapping measurements', 2022, MNRAS, 517, 2 [DOI: 10.1093/mnras/stac2662]
7. Chung, D. T., 'Cross-correlations between mm-wave line-intensity mapping and weak lensing surveys: preliminary consideration of long-term prospects', 2022, MNRAS, 513, 4090 [DOI: 10.1093/mnras/stac1142]
8. Chung, D. T. et al. (COMAP Collaboration), 'COMAP Early Science: V. Constraints and Forecasts at $z \sim 3$', 2022, ApJ, 933, 186 [DOI: 10.3847/1538-4357/ac63c7]
9. Chung, D. T. et al. (COMAP Collaboration), 'A model of spectral line broadening in signal forecasts for line-intensity mapping experiments', 2021, ApJ, 923, 188 [DOI: 10.3847/1538-4357/ac2a35]
10. Chung, D. T., 'A partial inventory of observational anisotropies in line-intensity mapping', 2019, ApJ, 881, 149 [DOI: 10.3847/1538-4357/ab3040]
11. Chung, D. T., Viero, M. P., Church, S. E., & Wechsler, R. H., 'Forecasting [C II] line-intensity mapping measurements between the end of reionization and the epoch of galaxy assembly', 2020, ApJ, 892, 51 [DOI: 10.3847/1538-4357/ab798f]
12. Chung, D. T., Viero, M. P., Church, S. E., Wechsler, R. H. et al. (COMAP Collaboration), 'Cross-correlating Carbon Monoxide Line-intensity Maps with Spectroscopic and Photometric Galaxy Surveys', 2019, ApJ, 872, 186 [DOI: 10.3847/1538-4357/ab0027]
13. Chung, D. T., Li, T. Y., Viero, M. P., Church, S. E., & Wechsler, R. H., 'On estimation of contamination from hydrogen cyanide in carbon monoxide line intensity mapping', 2017, ApJ, 846, 60 [DOI: 10.3847/1538-4357/aa8624]

Contributing author, refereed:

1. **Mansfield, E. M.**, Dunne, D. A., & Chung, D. T., 'Clustering Confuses Spectro-photometry: An Investigation of 2D and 3D Forced Profile Matching for Stacking Line-intensity Mapping Data on Source Catalogues', 2025, to be submitted to ApJ [arXiv:2512.22356]
2. **Yang, S. F.**, **McAtee, S. M.**, Vaughan, B. J., Crites, A. T., et al. (TIME Collaboration, including Chung, D. T.), 'TIME Commissioning Observations: I. Mapping Dust and Molecular Gas in the Sgr A Molecular Cloud Complex at the Galactic Center', 2025, submitted to ApJ

[arXiv:2511.09473]

3. Dunne, D. A., et al. (COMAP Collaboration, including Chung, D. T. and **Mansfield, E. M.**), 'COMAP Pathfinder – Season 2 results IV. A stack on eBOSS/DESI quasars', 2025, to be submitted to A&A [arXiv:2510.23568]
4. Lunde, J. G. S., et al. (COMAP Collaboration, including Chung, D. T.), 'Separation of gain fluctuation and continuum signals in total power spectrometers with application to COMAP', 2025, to be submitted to A&A [arXiv:2510.23502]
5. Carlson, N. J., Bond, J. R., Chung, D. T., **Horlaville, P.**, & Morrison, T., 'The Websky [CII] Forecasts and the search for primordial intermittent non-Gaussianity', 2025, submitted to JCAP [arXiv:2510.18312]
6. Mayer, E. C., Lowe, I. N., Marrone, D. P., et al. (including Chung, D.), 'Development of a planar cable-driven parallel robot for submillimeter and terahertz beam mapping measurements', 2025, submitted to JATIS [arXiv:2511.09446]
7. Butler, V. L. et al. (including Chung, D. T.), 'TES Bolometer Design and Testing for the Tomographic Ionized-carbon Mapping Experiment Millimeter Array', 2025, submitted to IEEE TAS [arXiv:2510.02459]
8. Dunne, D. A., Cleary, K. A., Breysse, P. C., Chung, D. T., Ihle, H. T., et al., 'Three-Dimensional Stacking as a Line Intensity Mapping Statistic', 2025, A&A, 702, A247 [DOI: 10.1051/0004-6361/202554780] [arXiv:2503.21743]
9. Lunde, J. G. S., Stutzer, N.-O. et al. (COMAP Collaboration, including Chung, D. T.), 'COMAP Pathfinder – Season 2 results I. Improved data selection and data processing', 2024, A&A, 691, A335 [DOI: 10.1051/0004-6361/202451121] [arXiv:2406.07510]
10. Stutzer, N.-O., Lunde, J. G. S. et al. (COMAP Collaboration, including Chung, D. T.), 'COMAP Pathfinder – Season 2 results II. Updated constraints on the CO(1-0) power spectrum', 2024, A&A, 691, A336 [DOI: 10.1051/0004-6361/202451123] [arXiv:2406.07511]
11. **Horlaville, P.**, Chung, D. T., Bond, J. R., & Liang, L., 'The informativeness of [C II] line-intensity mapping as a probe of the H I content and metallicity of galaxies at the end of reionization', 2024, MNRAS, 531, 2958 [DOI: 10.1093/mnras/stae1333]
12. Dunne, D. A., Cleary, K. A., Breysse, P. C., Chung, D. T., Ihle, H. T., et al. (COMAP Collaboration), 'COMAP Early Science: VIII. A Joint Stacking Analysis with eBOSS Quasars', 2024, ApJ, 965, 7 [DOI: 10.3847/1538-4357/ad2dfc]
13. Liang, L., Feldmann, R., Murray, N., et al. (including Chung, D. T.), '[C II] 158 μm emission as an indicator of galaxy star formation rate', 2024, MNRAS, 528, 499 [DOI: 10.1093/mnras/stad3792]
14. Breysse, P. C., Chung, D. T., & Ihle, H. T., 'Characteristic functions for cosmological cross-correlations', 2023, MNRAS, 525, 1824 [DOI: 10.1093/mnras/stad2350]
15. Viero, M. P., Sun, G., Chung, D. T. et al., 'The early Universe was dust-rich and extremely hot', 2022, MNRAS Letters, 516, L30 [DOI: 10.1093/mnrasl/slac075]
16. Cleary, K. A., et al. (COMAP Collaboration, including Chung, D. T.), 'COMAP Early Science: I. Overview', 2022, ApJ, 933, 182 [DOI: 10.3847/1538-4357/ac63cc]
17. Lamb, J. W., et al. (COMAP Collaboration, including Chung, D. T.), 'COMAP Early Science: II. Pathfinder Instrument', 2022, ApJ, 933, 183 [DOI: 10.3847/1538-4357/ac63c6]
18. Foss, M. K., Ihle, H. T. et al. (COMAP Collaboration, including Chung, D. T.), 'COMAP Early Science: III. CO Data Processing', 2022, ApJ, 933, 184 [DOI: 10.3847/1538-4357/ac63ca]
19. Ihle, H. T. et al. (COMAP Collaboration, including Chung, D. T.), 'COMAP Early Science: IV. Power Spectrum Methodology and Results', 2022, ApJ, 933, 185 [DOI: 10.3847/1538-

4357/ac63c5]

20. Rennie, T. J. et al. (COMAP Collaboration, including Chung, D. T.), 'COMAP Early Science: VI. A First Look at the COMAP Galactic Plane Survey', 2022, ApJ, 933, 187 [DOI: 10.3847/1538-4357/ac63c8]
21. Breysse, P. C. et al. (COMAP Collaboration, including Chung, D. T. as second author), 'COMAP Early Science: VII. Prospects for CO Intensity Mapping at Reionization', 2022, ApJ, 933, 188 [DOI: 10.3847/1538-4357/ac63c9]
22. CCAT-prime collaboration et al. (including Chung, D. T.), 'CCAT-prime Collaboration: Science Goals and Forecasts with Prime-Cam on the Fred Young Submillimeter Telescope', 2023, ApJS, 264, 7 [DOI: 10.3847/1538-4365/ac9838]
23. Seo, Y. M., Majumdar, L., Goldsmith, P. F., et al. (including Chung, D.), 'An Ammonia Spectral Map of the L1495-B218 Filaments in the Taurus Molecular Cloud: II CCS & HC_7N Chemistry and Three Modes of Star Formation in the Filaments'. 2019, ApJ, 871, 134 [DOI: 10.3847/1538-4357/aaf887]
24. Ihle, H. T., Chung, D., Stein, G. et al. (COMAP Collaboration), 'Joint power spectrum and voxel intensity distribution forecast on the CO luminosity function with COMAP', 2019, ApJ, 871, 75 [DOI: 10.3847/1538-4357/aaf4bc]

Proceedings and non-refereed articles:

1. Butler, V. L. et al. (including Chung, D. T.), 'TIME: the Tomographic Ionized-carbon Mapping Experiment: an update on design, characterization, and data from the 2022 commissioning observations', 2024, Proc SPIE, 13102, 131022G [DOI: 10.1117/12.3021442]
2. Karkare, K. S. et al. (including Chung, D. T.), 'Snowmass 2021 Cosmic Frontier White Paper: Cosmology with Millimeter-Wave Line Intensity Mapping', 2022, arXiv:2203.07258
3. Silva, M. B. et al. (including Chung, D. T.), 'Synergies between the COMAP CO Line Intensity Mapping mission and a Lyα galaxy survey: How to probe the early universe with voxel based analysis of observational data', 2021, arXiv:2111.05354; originally submitted to A&A
4. Choi, S. K. et al. (including Chung, D. T.), 'Sensitivity of the Prime-Cam Instrument on the CCAT-prime Telescope', 2020, JLTP, 199, 1089 [DOI: 10.1007/s10909-020-02428-z]
5. Herter, T. et al. (including Chung, D.), 'The CCAT-Prime Submillimeter Observatory', 2019, Bulletin of the AAS, 51, 213 [arXiv:1909.02587]
6. Vavagiakis, E. M. et al. (including Chung, D.), 'Prime-Cam: A first-light instrument for the CCAT-prime telescope', 2018, Proc SPIE, 10708, 107081U [DOI: 10.1117/12.2313868]
7. Stacey, G. J. et al. (including Chung, D. T.), 'CCAT-Prime: science with an ultra-widefield submillimeter observatory on Cerro Chajnantor', 2018, Proc SPIE, 10700, 107001M [DOI: 10.1117/12.2314031]
8. Kovetz, E. D. et al. (including Chung, D.), 'Line-Intensity Mapping: 2017 Status Report', 2017, arXiv:1709.09066