Dongwoo Chung

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EDUCATION

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

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

RESEARCH

Interests: spectral line-intensity mapping; cosmic star-formation history, galaxy formation, epoch of reionisation; empirical modelling of galaxy–halo connection; radio and mm-wave astronomical instrumentation and observational techniques.

Experience (selected):

CITA–Dunlap Institute Research Fellow, University of Toronto *Nov 2020–present*
- COMAP: signal forecasting, analysis and interpretation of early science results
- TIME: part of site team for 2021–22 season; instrument support, analysis of calibration observations, simulations of signal observations
- CCAT-prime: continued advisory work on [C II] survey projections

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, and miscellaneous hardware/software tasks for dedicated $z \sim 3$ CO line-intensity mapping instrument
- CCAT-prime: signal and sensitivity forecasting for [C II] line-intensity survey

Student researcher in Gravity Group, Princeton University *intermittent, 2011–2014*
(w/ Prof Suzanne Staggs 2011–2012, w/ Prof Lyman Page 2013–2014)
- Demonstration of microwave SQUID multiplexer in basic cryogenic operation
- Measurement of MuSE bolometer frequency-dependent impedance
- Recording and analysis of SQUID bias noise in ACTPol lab tests

TEACHING AND MENTORING (SELECTED)

Summer undergraduates mentored:
- Ishika Bangari (U of Toronto; SURP 2021 poster hon. mention) *Jun–Aug 2021*
- Lisa Nasu-Yu (U of Toronto; co-supervised w/ Abigail Crites) *Jun–Aug 2021*

Stanford teaching assistantships:
- Electricity, Magnetism, and Optics Lab (PHYSICS 24) *Jan–Mar 2019*
- Introduction to Modern Physics (PHYSICS 70) *Sep–Dec 2016*
- Electricity and Magnetism Lab (PHYSICS 44) *Mar–Jun 2015*

ACADEMIC PRESENTATIONS

Contributed talks and department seminars:		
KICP Line-intensity Mapping Workshop	Univ of Chicago *(virtual)*	Jun 2021
CITA seminar	CITA, University of Toronto	Nov 2020
Special SMA talk	CfA, Harvard & Smithsonian	Dec 2019
Cosmology/HEP seminar	Dept of Phys & Astronomy, Johns Hopkins University	Oct 2019
Astrophysics lunch	Dept of Astronomy, Cornell University	Oct 2019
Cosmology seminar	Dept of Astrophysical Sciences, Princeton University	Oct 2019
Lines in the Large-Scale Structure conference *(two contributed talks)*	Aix-Marseille Université	Jul 2019
Cosmological Signals from Cosmic Dawn to the Present	Aspen Center for Physics *(winter astrophys. conf.)*	Feb 2018
Second Annual Intensity Mapping Workshop	Johns Hopkins University	Jun 2017
Invited talks:		
Cross-correlations with CHORD Workshop	McGill University *(virtual)*	Oct 2021
CCAT-prime / Chile Workshop	Cerro Calán	Apr 2019
Posters:		
Radio/Millimeter Astrophysical Frontiers in the Next Decade *(w/ Church, S., Wechsler, R.)*	University of Virginia	Jun 2019

OUTREACH AND SERVICE (SELECTED)

UofT DADDAA Graduate Admissions Committee *2021-2022*

- Evaluated applications, interviewed select applicants; sole non-faculty member

CITA National Jamboree *2021*

- Co-organised Canada-wide hybrid in-person/remote meeting of CITA affiliates

Stanford Physics Equity and Inclusion Committee *2017–2019*

- Coordinated discussions on admissions, health care, advising, LGBTQIA+ in physics

Kavli Institute for Particle Astrophys. and Cosmology (KIPAC) Outreach *2015–2019*

- Represented KIPAC at various education and public outreach events

AWARDS AND HONOURS

KIPAC Giddings Graduate Student Fellowship, Stanford University	*AY2014–15*
Allen G. Shenstone Prize in Physics, Princeton University	*2014*
Joseph Henry Fellowship, Princeton University	*2013*
Treiman Fellowship, Princeton University	*2013*
Kusaka Memorial Prize in Physics, Princeton University	*2012, 2013*

LIST OF PUBLICATIONS, PREPRINTS, AND PROCEEDINGS

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

1. Chung, D. T. et al. (COMAP Collaboration), 'COMAP Early Science: V. Constraints and Forecasts at $z \sim 3$', 2021, arXiv:2111.05931; submitted to ApJ
2. 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]
3. Chung, D. T., 'A partial inventory of observational anisotropies in line-intensity mapping', 2019, ApJ, 881, 149 [DOI: 10.3847/1538-4357/ab3040]
4. 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]
5. 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]
6. 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. Cleary, K. A., et al. (COMAP Collaboration, including Chung, D. T.), 'COMAP Early Science: I. Overview', 2021, arXiv:2111.05927; submitted to ApJ
2. Lamb, J. W., et al. (COMAP Collaboration, including Chung, D. T.), 'COMAP Early Science: II. Pathfinder Instrument', 2021, arXiv:2111.05928; submitted to ApJ
3. Foss, M. K., Ihle, H. T. et al. (COMAP Collaboration, including Chung, D. T.), 'COMAP Early Science: III. CO Data Processing', 2021, arXiv:2111.05929; submitted to ApJ
4. Ihle, H. T. et al. (COMAP Collaboration, including Chung, D. T.), 'COMAP Early Science: IV. Power Spectrum Methodology and Results', 2021, arXiv:2111.05930; submitted to ApJ
5. Rennie, T. J. et al. (COMAP Collaboration, including Chung, D. T.), 'COMAP Early Science: VI. A First Look at the COMAP Galactic Plane Survey', 2021, arXiv:2111.05932; submitted to ApJ
6. 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', 2021, arXiv:2111.05933; submitted to ApJ
7. 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; submitted to A&A
8. 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'. 2021, arXiv:2107.10364; submitted to AAS Journals
9. 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]

10. 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. 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]
2. Herter, T. et al. (including Chung, D.), 'The CCAT-Prime Submillimeter Observatory', 2019, Bulletin of the AAS, 51, 213 [arXiv:1909.02587]
3. 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]
4. 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]
5. Kovetz, E. D. et al. (including Chung, D.), 'Line-Intensity Mapping: 2017 Status Report', 2017, arXiv:1709.09066