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: pipeline coding with focus on simulations of observations
- CCAT-prime: continued work on signal and sensitivity forecasting for [C II] survey

Research assistant w/ Prof Sarah Church, Stanford University *Mar 2015–Sep 2020*
- Argus: Integration and testing of W-band focal plane array for noise stability and sideband separation performance, prior to installation at 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

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	Canadian Inst for Theoretical Astrophysics, Univ of Toronto	Nov 2020
Special SMA talk	Ctr for Astrophysics, Harvard & Smithsonian	Dec 2019
Cosmology/HEP seminar	Dept of Phys & Astronomy, Johns Hopkins Univ	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 (winter astrophysics conference)	Aspen Center for Physics	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)

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, arXiv:2104.11171; ApJ, in press
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