Dongwoo Chung

dongwooc@stanford.edu — https://web.stanford.edu/~dongwooc — +1 856 617 1042

Mailing address: 382 Via Pueblo Mall, Rm 203, Stanford CA 94305 **Citizenship:** USA

EDUCATION

PhD in Physics, Stanford University (*expected Jun 2020*) *2014–present*
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):

Research assistant w/ Prof Sarah Church, Stanford University *Mar 2015–present*
- 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

Research assistant w/ Prof Jason Hogan, Stanford University *Jan–Mar 2015*
- Design of vapour cell for strontium atom interferometry

Research assistant w/ Prof Kent Irwin, Stanford University *Sep–Dec 2014*
- Design of electronic/mechanical setup for microwave SQUID multiplexer tests

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

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*

TEACHING EXPERIENCE

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*

TALKS AND POSTERS

Contributed talks and department seminars:

- 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
- '[C II] line-intensity mapping; current forecasts and future directions'; Lines in the Large-Scale Structure, Aix-Marseille Université, Jul 2019
- 'CO-Lya cross-correlation: present and future steps in simulation and analysis' *(flash talk)*; Lines in the Large-Scale Structure, Aix-Marseille Université, Jul 2019
- 'How (Not) To Cross-correlate, or: the Quest for An Optimal Cross-correlation Target for the CO Mapping Array Pathfinder'; Cosmological Signals from Cosmic Dawn to the Present, Aspen Center for Physics, Feb 2018
- 'COMAP: The CO Mapping Array Pathfinder'; Second Annual Intensity Mapping Workshop, Johns Hopkins University, Jun 2017

Invited talks:

- '[C II] Intensity Mapping: From EoR to Cosmic Noon'; CCAT-prime / Chile Workshop, Cerro Calán, Apr 2019

Posters:

- 'Revealing the galaxy–halo connection through CO line searches' (with Church, S. & Wechsler, R.); Radio/Millimeter Astrophysical Frontiers in the Next Decade, University of Virginia, Jun 2019

OUTREACH AND SERVICE

Stanford Physics Equity and Inclusion Committee *2017–2019*

- One of 4–5 graduate student representatives on the committee
- Attended and coordinated intra- and extra-committee discussions about graduate 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, including —the College of San Mateo Family Science and Astronomy Festival (2015), —the APS/DPP Plasma Sciences Expo (2016), —and the KIPAC Open House (2018)

Stanford ESP/Splash! *Nov 2015*

- Volunteer teacher on two-hour lab (Discovering DNA with Diffraction, P4567)

Princeton SVC imPACT *2010–2013*

- Member of a student volunteer project tutoring Trenton middle school students

LIST OF PUBLICATIONS, PREPRINTS, AND PROCEEDINGS

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

1. Chung, D. T., 'A partial inventory of observational anisotropies in line-intensity mapping', 2019, ApJ, 881, 149 [DOI: 10.3847/1538-4357/ab3040]
2. 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]
3. 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]
4. 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. 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]
2. 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. Aravena, M. et al. (including Chung, D.), 'The CCAT-Prime Submillimeter Observatory', 2019, arXiv:1909.02587 (Astro2020 APC white paper)
2. Choi, S. K. et al. (including Chung, D. T.), 'Sensitivity of the Prime-Cam Instrument on the CCAT-prime Telescope', 2019, arXiv:1908.10451 (LTD-18 conference proceedings, submitted to JLTP for inclusion in special issue)
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