

Dongwoo Chung

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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:

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’, 2018, arXiv:1812.08135; ApJ, in rev.
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 & HC₇N 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