Jiashu Han

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EDUCATION

University of California, San Diego, La Jolla, CA — September 2019 — Present
Ph.D Candidate in Physics

University of California, Berkeley, Berkeley, CA — August 2015 — May 2019
Bachelor of Arts: Physics, Astrophysics

TEACHING EXPERIENCE

University of California, San Diego — La Jolla, CA
Graduate Teaching Assistant — September 2019 — Present

- Four years as a lead TA for more than 1000 students in the introductory physics lab series (Physics 1AL/1BL/1CL).
- Organized weekly training sessions for a team of more than 10 TAs and 20 graders and coordinated communications within the instructional team.
- Designed, tested and improved lab experiments for the courses and rewrote the lab manuals.
- Conducted discussion and problem solving sessions for undergraduate physics courses (Physics 2A/2B/2C) with more than 200 students for two years.

University of California, Berkeley — Berkeley, CA
Tutor — September 2017 — May 2018

- Supervised weekly lab sections and provided guidance to undergraduate students in the Data Structures (CS 61B) and Quantum Mechanics (Physics 137A) courses.

RESEARCH EXPERIENCE

Department of Physics, University of California, San Diego — La Jolla, CA
Graduate Student Researcher — May 2020 — Present

- Derived the likelihoods of scale-dependent signatures of primordial origin in the galaxy power spectrum and demonstrated the practicality of using sample variance cancellation to significantly improve the error bound on the signal amplitude in realistic experimental settings.
- Developed sophisticated Fisher and MCMC forecasting codes that inform the ability of present and future galaxy surveys to detect predicted deviations from Gaussian statistics due to inflationary interactions of light fields.
- Analyzed auto-correlation results of BOSS galaxies to place constraints on the amplitude and scaling relationship of non-Gaussian correlators of the early universe, and studied means to minimize measurement error of the three-point correlation amplitude via different experimental design factors.
- Examined previously unexplored parameter space in the quasi-single field inflation model to reveal the plausibility of experimentally detecting signals of heavy particle production during the early universe through present and near-future galaxy survey experiements.

Center for Computational Astrophysics, Flatiron Institute — New York, NY
Summer Research Assistant — June 2018 — August 2018

- Calculated for the first time the cross-correlation between the *Planck* CMB gravitational lensing signal and the SDSS-IV/eBOSS quasars.
- Constrained the bias of the SDSS-IV quasar sample at 5σ level using the CMB lensing-quasar cross-power spectrum, and ruled out systematic effects in the measurement due to 6 possible foreground contaminants at 2σ level, thus demonstrating the potential of CMB lensing as an alternative pathway for probing quasar properties.

Lawrence Berkeley National Laboratory — Berkeley, CA
Research Affiliate — October 2016 — June 2018

- Studied the theoretical and observational connections between gravitational lensing signatures in the cosmic microwave background and the clustering of quasars and galaxies from the SDSS-III/BOSS survey.
- Performed statistical inference on the *Planck* CMB lensing measurements and quasar/galaxy observations to measure clustering properties of the SDSS-III quasars.

PUBLICATIONS

Journal paper

- D. Green, **J. Han**, B. Wallisch, in progress.
- D. Green, Y. Guo, **J. Han**, B. Wallisch, "Light fields during inflation from BOSS and future galaxy surveys." *JCAP* 05 (2024) 090.
- **J. Han**, S. Ferraro, E. Giusarma, S. Ho, "Probing Gravitational Lensing of the CMB with SDSS-IV Quasars." *Monthly Notices of the Royal Astronomical Society* 485 (2019) 2, 1720-1726.

AWARDS

Dean's List Berkeley, CA
December 2018

Dean's List Berkeley, CA
May 2018

Isidore Pomerantz Endowment Fund Award Berkeley, CA
May 2018