

Carina Cheng

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Education

University of California, Berkeley

PH.D. ASTROPHYSICS

National Science Foundation Graduate Research Fellow

Berkeley, California

expected May 2019

M.A. ASTROPHYSICS

UC Berkeley's Chancellor's Fellowship

2013-2015

University of California, Los Angeles

B.S. ASTROPHYSICS

Magna Cum Laude
Highest Departmental Honors
College Honors
Phi Beta Kappa
Charles Geoffrey Hilton Excellence in Astronomy Award
Clare Boothe Luce Scholar

Los Angeles, California

2009-2013

Research

UC Berkeley Graduate Student Researcher

ADVISOR: AARON PARSONS

- Analysis of data taken by radio telescope PAPER (Precision Array for Probing the Epoch of Reionization).
- Development of software and computational techniques used in data analysis pipeline (e.g. calibration tools).
- Simulations of galactic foregrounds and the Epoch of Reionization signal for PAPER.

Berkeley, California

Spring, 2014 - Present

UCLA Undergraduate Researcher

ADVISOR: ANDREA GHEZ

- Computational analysis of photometric Galactic Center data in order to improve Adaptive Optics systems for ground based telescopes.

Los Angeles, California

Fall, 2011 - Spring, 2013

Teaching

UC Berkeley

GRADUATE STUDENT INSTRUCTOR

- Instructional Techniques for Teaching Astronomy
- Co-taught a weekly course that prepares first-time graduate student instructors and emphasizes the implementation of pedagogical techniques in the classroom.

Berkeley, California

Fall, 2015, 2016, & 2017

INSTRUCTOR

- Physical Sciences Discipline Cluster Workshop
- Taught a Physical Sciences Discipline Cluster Workshop aimed at preparing first-time graduate student instructors for teaching in the physical sciences.

Fall, 2016, Spring, 2017, Fall 2017

HEAD GRADUATE STUDENT INSTRUCTOR

- Introduction to Astronomy (Professor Alex Filippenko)

Spring, 2015

GRADUATE STUDENT INSTRUCTOR

- Introduction to Astronomy (Professor Alex Filippenko)
- Outstanding GSI Award Winner

Spring, 2014

- Introduction to Astronomy (Professor Leo Blitz)

San Francisco Bay Area Project ASTRO

Richmond, California

CLASSROOM ASTRONOMER

Spring, 2014

- Lectured and led astronomy activities during visits to an 8th grade classroom.
- Attended workshop on designing and implementing astronomy lessons in the classroom.

Outreach

Astronomy Night

Berkeley, California

CREATOR AND LEAD ORGANIZER

Spring, 2016 - Present

- Organize monthly public talks and star parties for UC Berkeley's Astronomy Department.

Science@Cal

Berkeley, California

LARGE EVENTS ORGANIZER

Fall, 2013 - Present

- Organize astronomy participation in large outreach events such as the Bay Area Science Festival and UC Berkeley's Cal Day.

SCARLET CITY SCIENCE NIGHT ORGANIZING COMMITTEE

Winter, 2016 - Fall, 2016

- Organized bi-monthly public science talks at a local cafe.

UCLA Exploring Your Universe

Los Angeles, California

VOLUNTEER

2011, 2012, 2013

- Undergraduate volunteer for an annual science outreach event organized by UCLA's astronomy department.

UCLA Women in the Physical Sciences

Los Angeles, California

CO-PRESIDENT

Fall, 2012 - Spring, 2013

- Founded a club that aims to develop a supportive environment for female students in STEM fields of study and provide networking and research opportunities.

Publications

Primary Contributor Publications

- Parsons, A. R., Liu, A., Ali, Z. S., **Cheng, C.** "Optimized Beam Sculpting with Generalized Fringe-Rate Filters." *Astrophysical Journal*, 821, 51, March 2016.

Collaboration Publications

- Patra, N. et al. "The Hydrogen Epoch of Reionization Array Dish III: Measuring Chromaticity of Prototype Element with Reflectometry." Submitted to *ApJ*, ArXiv 1701.03209. January 2017.
- DeBoer, D. R., et al. "Hydrogen Epoch of Reionization Array (HERA). Publications of the Astronomical Society of the Pacific, 129, 974. March 2017.
- Ewall-Wice, A. et al. "The HERA Dish II: Electromagnetic Simulations and Science Implications." *Astrophysical Journal*, 831, 196, November 2016.
- Neben, A. R. et al. "The Hydrogen Epoch of Reionization Array Dish I: Beam Pattern Measurements and Science Implications." *Astrophysical Journal*, 826, 2, August 2016.
- Poher, J. C. et al. "PAPER-64 Constraints on Reionization II: The Temperature of the $z=8.4$ Intergalactic Medium." *Astrophysical Journal*, 809, 62, August 2015.
- Ali, Z. S. et al. "PAPER-64 Constraints on Reionization: The 21cm Power Spectrum at $z=8.4$." *Astrophysical Journal*, 809, 61, August 2015.

Conference Proceedings

- Fitzgerald, M. P. et al. "Modeling Anisoplanatism in the Keck II Laser Guide Star Adaptive Optics System." *Proc. SPIE*. 2012.

Presentations

Professional Talks

- **USNC-URSI National Radio Science Meeting** (Winter, 2018): *21cm Power Spectrum Lessons: Updated Results from the PAPER Experiment*
- **University of Sydney Science at Low Frequencies IV** (Fall, 2017): *21cm Power Spectrum Lessons: Updated Results from the PAPER Experiment*
- **Cambridge University HI 21cm Cosmology Meeting** (Summer, 2016): *Redundant Calibration and its Application to PAPER*
- **American Astronomical Society Meeting** (Winter, 2016): *PAPER-128 Status Update: Towards a Power Spectrum Detection*

Popular Talks

- **Wonderfest's Ask-a-Science-Envoy** (Fall, 2017): *Observing the Night Sky*

Posters

- **NSF Mathematics and Physical Sciences Visit** (Winter, 2015): *21cm Epoch of Reionization Experiments PAPER and HERA*
- **American Astronomical Society Meeting** (Winter, 2015): *Instrumental Simulations of the 21cm Epoch of Reionization Signal*
- **UCLA Science Poster Day** (Spring, 2013): *Measuring the Effect of Limited Point Spread Function Halo Knowledge on Astrometry Measurements*
- **American Astronomical Society Meeting** (Winter, 2013): *Measuring the Effect of Limited Point Spread Function Halo Knowledge on Astrometry Measurements*
- **UCLA Summer Program for Undergraduate Research** (Summer, 2012): *New Methodologies for Testing the Performance of High Precision Photometry with Adaptive Optics*
- **UCLA Science Poster Day** (Spring, 2012): *Improved Technology for Obtaining Sharper Images with Ground Based Astronomical Telescopes*

Other

Wonderfest

Bay Area, California

SCIENCE ENVOY

2017-2018

- Participation in a year-long program that trains researchers in science communication excellence.

UCLA Volunteer Income Tax Assistance

Los Angeles, California

TAX FILER VOLUNTEER

2011,2012,2013

- Acquired IRS certification and prepared personal income tax returns for eligible clients.

Griffith Observatory

Los Angeles, California

MUSEUM GUIDE

Summer, 2011

- Presented astronomical demonstrations and answered scientific questions.

Skills

Computing Python, LaTeX, Mathematica, BASH

Teaching Completion of the UC Berkeley Certificate of Teaching and Learning in Higher Education (Spring, 2017)

Teaching Completion of CIRTLL MOOC "An Introduction to Evidence-Based Undergraduate STEM Teaching" (Fall, 2016)