Carina **Cheng**

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Education

University of California, Berkeley
Berkeley, California

PH.D. ASTROPHYSICS — *in progress*

National Science Foundation Graduate Research Fellow

M.A. ASTROPHYSICS — *2013-2015*

UC Berkeley's Chancellor's Fellowship

University of California, Los Angeles
Los Angeles, California

B.S. ASTROPHYSICS — *2009-2013*

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

Research

UC Berkeley Graduate Student Researcher
Berkeley, California

ADVISOR: AARON PARSONS — *Spring, 2014 - Present*

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

UCLA Undergraduate Researcher
Los Angeles, California

ADVISOR: ANDREA GHEZ — *Fall, 2011 - Spring, 2013*

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

Teaching

UC Berkeley
Berkeley, California

GRADUATE STUDENT INSTRUCTOR — *Fall, 2015 & 2016*

- 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.

INSTRUCTOR — *Fall, 2016 & Spring, 2017*

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

HEAD GRADUATE STUDENT INSTRUCTOR — *Spring, 2015*

- Introduction to Astronomy (Professor Alex Filippenko)

GRADUATE STUDENT INSTRUCTOR — *Spring, 2014*

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

Graduate Student Instructor — *Fall, 2013*

- 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

Astro 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*

- Organize 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

Papers

- 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., Bradley, R. F., DeBoer, D. R., Hewitt, J. N., Parsons, A. R., Aguirre, J. E., Ali, Z. S., Bowman, J., **Cheng, C.**, Neben, A. R., Patra, N., Thyagaraian, N., Venter, M., de Lera Acedo E., Dillon, J. S., Doolittle, P., Egan, D., Hedrick M., Klima, P. J., Kohn, S. A., Schaffner, P., Shelton, J., Saliwanchik, B., Tegmark, M., Taylor, H. A., Taylor, R., Wirt, B. "The HERA Dish II: Electromagnetic Simulations and Science Implications." Astrophysical Journal, 831, 196, November 2016.
- Neben, A. R., Bradley, R. F., Hewitt, J. N., DeBoer, D. R., Parsons, A. R., Aguirre, J. E., Ali, Z. S., **Cheng, C.**, Ewall-Wice, A., Patra, N., Thyagaraian, N., Bowman, J., Dickenson, R., Dillon, J. S., Doolittle, P., Egan, D., Hedrick M., Jacobs, D. C., Kohn, S. A., Klima, P. J., Moodley, K., Saliwanchik, B. R. B., Schaffner, P., Shelton, J., Taylor, H. A., Taylor, R., Tegmark, M., Wirt, B., Zheng, H. "The Hydrogen Epoch of Reionization Array Dish I: Beam Pattern Measurements and Science Implications." Astrophysical Journal, 826, 2, August 2016.
- Parsons, A. R., Liu, A., Ali, Z. S., **Cheng, C.** "Optimized Beam Sculpting with Generalized Fringe-Rate Filters." Astrophysical Journal, 821, 51, March 2016.
- Pober, J. C., Ali, Z. S., Parsons, A. R., McQuinn, M., Aguirre, J. E., Bernardi, G., Bradley, R. F., Carilli, C. L., **Cheng, C.**, DeBoer, D. R., Dexter, M. R., Furlanetto, S. R., Grobbelaar, J., Horrell, J., Jacobs, D. C., Klima, P., Kohn, S. A., Liu, A., MacMahon, D. H. E., Maree, M., Messinger, A., Moore, D. F., Razavi-Ghods, N., Stefan, I. I., Walbrugh, W. P., Walker A., and Zheng, H. "PAPER-64 Constraints on Reionization II: The Temperature of the z=8.4 Intergalactic Medium." Astrophysical Journal, 809, 62, August 2015
- Ali, Z. S., Parsons, A. R., Zheng, H., Pober, J. C., Liu, A., Aguirred, J. E., Bradley, R. F., Bernardi, G., Carilli, C. L., **Cheng, C.**, DeBoer, D. R., Dexter, M. R., Grobbelaar, J., Horrell, J., Jacobs, D. C., Klima, P., MacMahon, D. H. E., Maree, M., Moore, D. F., Razavi, N., Stefan, I. I., Walbrugh, W. P., and Walker A. (2015). "PAPER-64 Constraints on Reionization: The 21cm Power Spectrum at z=8.4." Astrophysical Journal, 809, 61, August 2015.

Conference Proceedings

- Fitzgerald, M. P., Witzel, G., Britton, M. C., Ghez, A. M., Meyer, L., Sitarski, B. N., **Cheng, C.**, Becklin, E. E., Campbell, R. D., Do, T., Lu, J. R., Matthews, K., Morris, M. R., Neyman, C. R., Tyler, G. A., Wizinowich, P. L., and Yelda, S. (2012). Modeling Anisoplanatism in the Keck II Laser Guide Star Adaptive Optics System. Proc. SPIE.

Presentations

Talks

Cambridge, England

HI 21cm Cosmology Meeting — *Summer, 2016*

- "Redundant Calibration and its Application to PAPER"

Kissimmee, Florida

American Astronomical Society Meeting — *Winter, 2016*

- "PAPER-128 Status Update: Towards a Power Spectrum Detection"

Posters

Berkeley, California

NSF Mathematica and Physical Sciences Visit — *Winter, 2015*

- "21cm Epoch of Reionization Experiments PAPER and HERA"

Seattle, Washington

American Astronomical Society Meeting — *Winter, 2015*

- "Instrumental Simulations of the 21cm Epoch of Reionization Signal"

Los Angeles, California

UCLA Science Poster Day — *Spring, 2013*

- "Measuring the Effect of Limited Point Spread Function Halo Knowledge on Astrometry Measurements"

Long Beach, California

American Astronomical Society Meeting — *Winter, 2013*

- "Measuring the Effect of Limited Point Spread Function Halo Knowledge on Astrometry Measurements"

Los Angeles, California

UCLA Summer Program for Undergraduate Research — *Summer, 2012*

- "New Methodologies for Testing the Performance of High Precision Photometry with Adaptive Optics"

Los Angeles, California

UCLA Science Poster Day — *Spring, 2012*

- "Improved Technology for Obtaining Sharper Images with Ground Based Astronomical Telescopes"

Other

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 CIRTL MOOC "An Introduction to Evidence-Based Undergraduate STEM Teaching"