Christine O'Donnell

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Astronomer with a proven record of contributing to teams to develop, assess, and continuously improve innovative & inclusive evidence-based education techniques designed to connect science and society.

EDUCATION

University of Arizona (UA), *Tucson, AZ*

– **Ph.D. Candidate**, College of Science, Department of Astronomy *GPA: 3.50/4.00* May 2020 *(expected)*
- Relevant non-astronomy coursework: Whiteness & Education (HED 629 Fall 2018)
- College of Science Award for Excellence in Service (2019) for attention to broader impacts & involvement in activities beyond academic responsibilities that benefit the university and the larger community

– **Master of Science**, College of Science, Department of Astronomy *GPA: 3.50/4.00* Dec. 2017
- University Fellowship: prestigious fellowship awarded to ∼15 incoming graduate students across all departments for interdisciplinary scholarship and leadership

University of Virginia (UVa), *Charlottesville, VA*

– **Master of Public Policy**, Frank Batten School of Leadership & Public Policy *GPA: 3.90/4.00* May 2014
- Selected for highly competitive accelerated program
- Thesis: "Women in Physics: Reducing the Gender Gap at the College Level"

– **Bachelor of Arts**, College of Arts & Sciences, Department of Astronomy *GPA: 3.92/4.00* May 2013
- B.A. (Highest Distinction) in Astronomy/Physics; D. Nelson Limber Award (best astronomy undergraduate)
- Echols Scholar (UVa Honors Program, ∼10% of each class); Dean's List every semester

SELECTED ASTRONOMY & ASTROPHYSICS RESEARCH

Research Assistant, University of Arizona, *Tucson, AZ* Fall 2014 – present
- Independent research project on comparing theoretical simulations with observational data to study dark matter accretion rates of galaxy halos (advisor: Prof. Peter Behroozi; Fall 2018 – present)
- Independent research projects on analyzing radio interferometric observations of galaxy clusters to measure scaling relations between cluster properties (advisor: Prof. Dan Marrone; Fall 2014 – present)
- Worked with multiple collaborations, including the Massive Distant Clusters of WISE Survey (MaDCOWS) and the Local Cluster Substructure Survey (LoCuSS)

EDUCATION RESEARCH

Research Assistant, University of Arizona, *Tucson,AZ* Spring 2019 – present
- Conducting research on a general-education (200-level) cosmology course (Spring 2019) to assess the effects of newly designed curriculum on students' views of science & society (advisor: Prof. Ed Prather)

Course Reform Project, *University of Arizona* Fall 2018 – Spring 2019
- Participated in an NSF-funded project to encourage professors to incorporate active learning techniques
- Observed participating courses with the Classroom Observation Protocol for Undergraduate STEM (COPUS)
- Collaborated on a general education cosmology course (Spring 2019; Profs. Ed Prather & Peter Behroozi)

SELECTED SERVICE

Associate Graduate Council for the College of Science (AGCCS), *University of Arizona* Fall 2017 – present
- Elected to AGCCS Vice President (Fall 2017 – Spring 2018) and President (Fall 2018 – Spring 2019)

Early Career Focus Session for the Astro2020 Decadal Survey, *Washington, D.C.* October 2018

Committee Member, *Steward Observatory Five-Year Review of Director Dr. Buell Januzzi* Fall 2017 – present
- Served as the graduate student representative on the committee to review the Director

American Association of Physics Teachers (AAPT) Executive Office Intern, *College Park, MD* Summer 2013
- Created resources on advocating for science education policies; presented at the AAPT 2013 Summer Meeting (July 2013) to Section Chairs and at the American Astronomical Society 223rd Meeting (Jan. 2014)

SELECTED COLLEGE-LEVEL TEACHING

Teaching Assistant, *University of Arizona* Fall 2018 – Spring 2019

- TA for a 200-level general-education introductory astronomy course for non-majors (∼40 students)
- Graded ∼daily in-class writings, weekly homeworks, and monthly quizzes; held office hours weekly
- Created and facilitated a lecture-tutorial on gravitational wave detection

Institute for Scientist & Engineer Educators (ISEE) Professional Development Program (PDP), *UCSC* 2018

- Attended 3 workshops on effective inquiry activities that incorporate principles of equity and inclusiveness
- Created an inquiry with iterative assessment-driven design with a team (4 members) on Bayesian inference
- Facilitated the activity at the UC Santa Cruz (UCSC) Workshops for Engineering & Science Transfers (WEST) program for learners transferring from 2-year community colleges to UCSC (September 2018)

Teaching Assistant, Warrior Scholar Project (WSP), *University of Arizona* June 2017, June 2018

- Participated in the STEM week of WSP, an academic "bootcamp" for veterans returning to school
- Designed and led a hands-on activity on digital imaging concepts (June 2018)
- Co-led an exoplanet research lab session (5 students) using conceptual activities, online interactive tools, and basic Python programming, including modules to model planetary orbits (June 2017)

INSTRUCTOR DEVELOPMENT

STEM on the Range (Professional Development Workshop Series) March – April 2019

- Facilitated sessions to provide teachers with resources and activities designed for Arizona science standards, including distance scales of the Solar System, planetary motions, lunar phases, and seasons
- Worked with both high school (March 2019) and K-8 teachers (April 2019)

College of Science Teaching Assistant Training, *University of Arizona* Aug. 2017, Aug. 2018

- Organized the 2018 College of Science Teaching Assistant Training (Aug. 2018); contacted speakers to develop sessions on grading, teaching, diversity, and classroom management
- Coordinated registration for the 2017 College of Science Teaching Assistant Training (Aug. 2017)

K-12 EDUCATION OUTREACH

University of Arizona Sky School, *Tucson, AZ* December 2018 – March 2019

- Facilitated groups of 6-8 students working on a scientific inquiry project over the course of 3 days; projects were motived by student observations and questions about the school's environment

National Optical Astronomy Observatory (NOAO) Teen Astronomy Cafe, *Tucson, AZ* April – May 2018

- Volunteered at a monthly series to introduce high school students to astronomy research

Independent Contractor, *Sonoran Glass School, Tucson, AZ* Spring 2018 – present

- Provided instructional assistance at glassworking classes for middle school students and summer camps

Project ASTRO, *NOAO, Tucson, AZ* Fall 2017 – Spring 2018

- Volunteered for an outreach program that pairs astronomers with local school teachers
- Led astronomy activities on size and distance scales of our solar system (December 2017) and scales of the galaxy and universe (May 2018) with a local 6th grade Gifted & Talented class

PUBLIC OUTREACH

Science Speakeasy, *Tucson, AZ* Spring 2019

- Organized 2 informal science cafes (∼10 scientists each) to promote dialog between scientists & the public
- Partnered with the March for Science of Southern Arizona, a local non-profit, to host the events

Public Talks 2017 – present

- Sonora Astronomical Society (Green Valley, AZ; March 2018)
- Splendido Senior Community (Tucson, AZ; February 2018)
- University of Arizona Family Weekend: Wildcat Family Conference (Tucson, AZ; October 2017)

SELECTED CERTIFICATIONS & WORKSHOPS

Leader in Classroom Diversity & Inclusion (Certificate), *University of Arizona* — November 2018

Certificate in Inclusive Inquiry STEM Education, *Institute for Scientist & Engineer Educators* — November 2018

Safe Zone Certification, *University of Arizona* — 2018

Alan Alda Center Science Communication Workshop, *University of Arizona* — February 2017

AAS Astronomy Ambassadors Workshop, *AAS DPS Meeting, Tucson AZ* — November 2014

SELECTED PUBLICATIONS – full list available at http://bit.ly/CODonnell_publications

- Decker, B,; et al.; **O'Donnell, C.** (2019), **"The Massive and Distant Clusters of WISE Survey VI: Stellar Mass Fractions of A Sample of High-Redshift Infrared-Selected Clusters"**, *accepted*
- Gonzalez; A.; et al.; **O'Donnell, C.** (2019), **"The Massive and Distant Clusters of WISE Survey. I: Survey Overview and a Catalog of >2000 Galaxy Clusters at z$\sim$1"**, *Astrophysical Journal Supplement Series*, 240,2
- Mulroy, S.; et al.; **O'Donnell, C.** (2019), **"LoCuSS: Galaxy Cluster Scaling Relations"**, *Monthly Notices of the Royal Astronomical Society*, 484,1
- Abdulla, Z.; et al.; **O'Donnell, C.** (2018), **"Constraints on the Thermal Contents of the X-ray Cavities of Cluster MS 0735.6+7421 with Sunyaev-Zel'dovich Effect Observations"**, *The Astrophysical Journal*, 871, 2
- Schindler, J.-T.; et al.; **O'Donnell, C.** (2018), **"The Extremely Luminous Quasar Survey in the Sloan Digital Sky Survey Footprint. II. The North Galactic Cap Sample"**, *The Astronomical Journal*, 843, 2
- Zasowski, G.; et al.; **O'Donnell, C.** (2013), **"Target Selection for the Apache Point Observatory Galactic Evolution Experiment (APOGEE)"**, *The Astronomical Journal*, 146, 4

SELECTED CONFERENCE PRESENTATIONS

- *"Estimating Redshifts for Ultra-Diffuse Galaxies in DESI Pre-imaging Surveys"* [poster], May 2018, DECam Community Science Workshop 2018 (Tucson, AZ)
- *"Women in Physics: Reducing the Gender Gap at the College Level"* [poster presentation & "pop" talk], Aug. 2014, 5th International Conference on Women in Physics (Waterloo, Canada)
- *"Science Education & Advocacy: Tools to Support Better Education Policies"* [oral presentation #224.01], Jan. 2014, AAS 223rd Meeting (Washington, D.C.)
- *"American Association of Physics Teachers & Advocacy"* [oral presentation to AAPT section chairs], July 2013, American Association of Physics Teachers 2013 Summer Meeting (Portland, OR)
- *"Finding Exo-Earths: A WISE Search for Excess Mid-Infrared Emission around 100,000 Nearby M dwarfs"* [oral presentation], April 2013, UVa Undergraduate Research Network Symposium (UVa, Charlottesville, VA)
  - Awarded **1st Place Science Presentation, *Spectra* Science Prize, and Student Council Innovation Award in the Sciences**

SELECTED COMPETITIVELY OBTAINED TELESCOPE TIME

- **Green Bank Telescope 2018B**, "MUSTANG-2 Observations of MaDCoWS, the Most Massive Galaxy Clusters at z $>$ 1" (PI: M. Brodwin)
- ***Spitzer* DDT Sept. 2017**, "MaDCoWS: The Most Massive Galaxy Clusters at z $\sim$ 1" (PI: M. Brodwin)
- **ALMA Cycle 5**, "ALMA Observations of the Most Massive Galaxy Clusters at z $>$ 1" (PI: M. Brodwin)
- **Apache Point Observatory 2013 Q2**, "Are Mid-Infrared Excesses a Means to Identify M dwarf Exoplanet Hosts?" (PI: **C. O'Donnell**, 2 half-nights)

ART EXHIBITIONS

Student Showcase: New Beginnings, *Sonoran Glass School, Tucson AZ* — September 2017

The Art of Planetary Science, *Lunar & Planetary Lab, University of Arizona, Tucson AZ* — February 2018