Dr. Christine O'Donnell

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Science education researcher with a proven record of developing and assessing innovative & equitable evidence-based education materials and techniques

Education

08/2014 - 08/2020	**Ph.D.**, Astronomy & Astrophysics University of Arizona Dissertation: "Building Relationships: (1) Unifying Observations and Simulations to Measure Dark Matter Accretion & (2) Inclusivity-Driven Designs for General-Education Astronomy Courses" [UArizona repository] *Relevant non-astronomy coursework: Whiteness & Education (HED 629) | Fall 2018*
08/2014 - 12/2017	**Master of Science,** Astronomy & Astrophysics University of Arizona
08/2012 - 05/2014	**Master of Public Policy** Frank Batten School of Leadership & Public Policy | University of Virginia *Capstone Policy Analysis: "Women in Physics: Reducing the Gender Gap at the College Level"*
08/2010 - 05/2013	**Bachelor of Arts (Highest Distinction)**, Astronomy/Physics University of Virginia *Member of Honors Program (Echols Scholar)*

Selected Fellowships, Honors, & Awards

10/2020	**Graduate Student, Professional Student, and Postdoctoral Scholar Development (GPPD) Career Development Award** Professional and Organizational Development (POD) Network
03/2019	**College of Science Award for Excellence in Service** University of Arizona

Selected Trainings & Certifications

05/2021	**Diversity, Equity and Inclusion in the Workplace Certificate** | USF Corporate Training and Professional Education
03/2021	**Getting On-the-Spot Feedback from Your Audience** | Astronomical Society of the Pacific
11/2018	**Leader in Classroom Diversity & Inclusion** | University of Arizona
11/2018	**Certificate in Inclusive Inquiry STEM Education** | Institute for Scientist & Engineer Educators

Selected Academic Positions

Selected Research Positions

07/2021 - present — **Postdoctoral Research Scholar** | School of Earth & Space Exploration
Arizona State University
Curriculum Author:

- **Planet Four**: culturally responsive curricular materials based on the Planet Four project on the Zooniverse for general-education (non-science majors) introductory college astronomy and geoscience courses (two 50-75 minute class sessions + one 30-45 minute out-of-class assignment)

08/2020 - 06/2021 — **Postdoctoral Research Scholar** | Center for Gender Equity in Science & Technology and the School of Earth & Space Exploration | Arizona State University
Curriculum Author:

- **Culturally Responsive Astronomy**: intended for 11-12th grade high school students in Hawaii (five 1-1.5 hour lessons) [available on PhysPort]
- **CompuGirls: Cybersecurity**: culturally responsive cybersecurity curriculum on cryptography and ciphers for 11-12th grade high school students in Hawaii (three 2-hour lessons); also facilitated three 1.5-hour professional development sessions for 5 teachers in Hawaii

Selected College-Level Teaching

03/2019 — **Guest Lecturer** (2 class sessions; ASTR 170B1: The Physical Universe)
University of Arizona | *Facilitated a new lecture-tutorial on gravitational wave science*

01/2019 - 05/2019 — **Graduate Teaching Assistant** (ASTR 201: Introductory Cosmology)
University of Arizona | Instructor: Prof. Peter Behroozi

06/2017, 07/2018 — **Teaching Assistant** (STEM week)
Warrior-Scholar Project | University of Arizona

Selected Service & Leadership

08/2021 - present — **Co-Chair of Inclusive Community Committee**
School of Earth & Space Exploration | Arizona State University

06/2021 - 08/2021 — **Co-Chair of Organizing Committee for Inaugural School of Earth & Space Exploration (SESE) Internal Symposium |** Arizona State University

01/2021 - 06/2021 — **URGE [Unlearning Racism in Geoscience] Pod Co-Leader**
School of Earth & Space Exploration | Arizona State University

08/2020 - present — **Contributor (curated journal articles and resources) and Co-Facilitator (for diversity, equity, and inclusion [DEI]-focused events)**
POD STEM SIG DEI Working Group

05/2013 - 08/2013 — **Executive Office Intern |** American Association of Physics Teachers

Education & Outreach

K-12 Students (Selected)

03/2021, 06/2020	**Presenter at Teen Astronomy Cafe (NSF NOIRLab)** | *Cafe title: "Breaking the Solar System (and Other Ways Simulations Help Us Understand Our Universe)"*
12/2018 - 10/2020	**Equity & Inclusion Intern** | Vera C. Rubin Observatory Legacy Survey of Space and Time (LSST) Education & Public Outreach
03/2018 - present	**Independent Contractor (school field trips & summer camps)** Sonoran Glass School (arts education non-profit) | Tucson, AZ
12/2018 - 05/2019	**Instructor (science inquiry activities for 4th-7th Grade Students)** University of Arizona Sky School

General Public (Selected)

05/2021	**Public Research Talk** | *Tucson Amateur Astronomy Association*
02/2019 - 05/2019	**Science Speakeasy |** *Organized pilot testing for a "flipped" science cafe format*

Instructor Development

9/2019	**Facilitator/Subject Matter Expert** (Earth-Moon system) STEMAZing Workshop for kindergarten teachers in Marana Unified School District
06/2019	**Facilitator/Subject Matter Expert** (light pollution) LIGHT (secondary science teachers) | Biosphere 2 | Tucson, AZ
03/2019 - 04/2019	**Facilitator** (Solar System activities: planetary orbits, lunar phases, constellations) STEM on the Range (professional development workshops for K-12 teachers)
08/2017, 08/2018	**Organizer for College of Science Teaching Assistant Training |** University of Arizona

Presentations

Invited Talks

03/2021	"Making Science Personal & Culturally Responsive: Strategies Towards Equity in Astronomy Education" | Yale Astronomy Virtual Colloquium | Yale University
09/2020	"Making Science Personal: Designing Inclusive General Education Courses" High Energy Physics Division Seminar | Argonne National Lab
03/2020	"Making Science Personal: Designing Inclusive General Education Courses" Center for Gender Equity in Science and Technology | Arizona State University, Tempe, AZ

Selected Local Talks & Presentations

03/2021 "Science for Everyone: Empowering Students with Citizen Science"
SESE Research Symposium | Arizona State University, Tempe, AZ

02/2021 "Culturally Responsive Astronomy Education: Using a Critical Lens to Promote Equity and Social Justice"
FLASH | NSF NOIRLab, Tucson, AZ

10/2019 "Making Science Personal: Designing Inclusive General Education Courses"
FLASH | NOAO, Tucson, AZ

12/2018 "The Thirty Meter Telescope (TMT) Conflict: A Case Study of Institutional Discrimination"
Steward Observatory Diversity Journal Club | University of Arizona

Selected Conference Presentations

08/2021 "A critical examination of "expert-like" in physics education research" (Phillips & O'Donnell)
Physics Education Research Conference (PERC) 2021 [virtual conference]

08/2021 "Culturally Responsive Astronomy Education: Using a Critical Lens to Promote Equity and Social Justice" [talk]
American Association of Physics Teachers Summer Meeting 2021 [virtual conference]

03/2021 "Culturally Responsive Astronomy Education: Using a Critical Lens to Promote Equity and Social Justice" [poster]
X-DBER 2021 [virtual conference] | University of Nebraska-Lincoln

Publications

Refereed

Phillips, A.M. & **O'Donnell, C.** (*in press*), "A critical examination of "expert-like" in physics education research", 2021 PER Conference Proceedings

O'Donnell, C.; Scott, K. (***submitted*** *04/2021 to Cultural Studies of Science Education*), "Culturally Responsive Astronomy Education: Using a Critical Lens to Promote Equity and Social Justice"

O'Donnell, C.; Behroozi, P.; More, S. (***submitted*** *05/2021 to Monthly Notices of the Royal Astronomical Society*), "Observing Correlations Between Dark Matter Accretion and Galaxy Growth: II. Testing the Impact of Galaxy Mass, Star Formation Indicator, and Neighbour Colours"

O'Donnell, C.; Behroozi, P.; More, S. (**2021**), "Observing Correlations Between Dark Matter Accretion and Galaxy Growth: I. Recent Star Formation Activity in Isolated Milky Way-Mass Galaxies", *Monthly Notices of the Royal Astronomical Society*, 501, 1

O'Donnell, C.; Prather, E.; Behroozi, P. (**2021**), "Making Science Personal: Inclusivity-Driven Design for General Education Courses", *Journal of College Science Teaching*, 50, 3

Decker, B.; Browdin, M.; Abdulla, Z.; Gonzalez, A. H.; Marrone, D. P.; **O'Donnell, C.**; Stanford, S. A.;

Wylezalek, D.; et al. (**2019**), "The Massive and Distant Clusters of WISE Survey VI: Stellar Mass Fractions of A Sample of High-Redshift Infrared-Selected Clusters", *The Astrophysical Journal*, 878, 72

Gonzalez; A. H.; Gettings, D. P.; Brodwin, M.; Stanford, A.; Wylezalek, D.; Decker, B.; Eisenhardt, P. R. M.; Marrone, D. P.; **O'Donnell, C.**; Stalder, B.; Stern, D.; et al. (**2019**), "The Massive and Distant Clusters of WISE Survey. I: Survey Overview and a Catalog of >2000 Galaxy Clusters at $z \sim 1$", *The Astrophysical Journal Supplement Series*, 240, 2

Mulroy, S.; Farahi, A.; Evrard, A.; Smith, G. P.; Finoguenov, A.; **O'Donnell, C.**; Marrone, D. P.; Abdulla, Z.; Bourdin, H.; Carlstrom, J. E.; Démoclès, J.; Haines, C. P.; Martino, R.; Mazzotta, P.; McGee, S. L.; Okabe, N. (**2019**), "LoCuSS: Galaxy Cluster Scaling Relations", *Monthly Notices of the Royal Astronomical Society*, 484, 1

Abdulla, Z.; Carlstrom, J. E.; Mantz, A. B.; Marrone, D. P.; Greer, C. H.; Lamb, J. W.; Leitch, E. M.; Muchovej, S.; **O'Donnell, C.**; Plagge, T. J.; Woody, D. (**2019**), "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

Moravec, E.; Gonzalez, A. H.; Stern, D.; Brodwin, M.; Clarke, T.; Decker, B.; Eisenhardt, P. R. M.; Mo, W.; **O'Donnell, C.**; Pope, A.; Stanford, S. A.; Wylezalek, D. (**2019**), "The Massive and Distant Clusters of WISE Survey V: Extended Radio Sources in Massive Galaxy Clusters at $z \sim 1$", *The Astrophysical Journal*, 871, 2

Farahi, A.; Mulroy, S.; Evrard, A.; Smith, G. P.; Finoguenov, A.; Abdulla, Z.; Bourdin, H.; Carlstrom, J. E.; Démoclès, J.; Haines, C. P.; Marrone, D. P.; Martino, R.; Mazzotta, P.; **O'Donnell, C.**; Okabe, N. (**2018**), "Nearby Massive Galaxy Clusters are Reservoirs of Cosmic Baryons", *Nature Communications*, 10

Schindler, J.-T.; Fan, X.; McGreer, I. D.; Yang, J.; Wang, F.; Green, R.; Garavito-Camargo, N.; Huang, Y.-H.; **O'Donnell, C.**; Patej, A.; Pucha, R.; Rees, J. M.; Spalding, E. (**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.; Johnson, Jennifer A.; et al. (incl. **O'Donnell, C.**) (**2013**), "Target Selection for the Apache Point Observatory Galactic Evolution Experiment (APOGEE)", *The Astronomical Journal*, 146, 4

Bovy, J.; Allende Prieto, C.; et al. (incl. **O'Donnell, C.**) (**2012**), "The Milky Way's Circular-velocity Curve between 4 and 14 kpc from APOGEE data", *The Astrophysical Journal*, 759, 2

Selected Non-refereed

O'Donnell, C. (**2021**), "How can I create an inclusive and equitable classroom with culturally responsive education?", PhysPort Expert Recommendation [link]

McConnell, N. J.; et al. including **O'Donnell, C.** (**2019**), "Preparing an Inclusive Astronomy Community through Effective Professional Development", Astro2020 Decadal Survey white paper

Bauer, A.; et al. including **O'Donnell, C**. (**2019**), "A Need for Dedicated Outreach Expertise and Online Programming," Astro 2020 Decadal Survey white paper

Moravec, E.; et al. including **O'Donnell, C.** (**2019**), "The Early Career Perspective on the Coming Decade, Astrophysics Career Paths, and the Decadal Survey Process", Astro2020 Decadal Survey white paper