

Dr. Christine O'Donnell

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Science education professional 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 Professional Experience

- 11/2021 - present **Education & Diversity Program Manager** | American Physical Society
- 07/2021 - 11/2021 **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

- 12/2021 **Guest Lecturer** (2 class sessions; Phys 103: Graduate Teaching Seminar)
Tufts University | *Facilitated discussions and activities about culturally responsive & relevant education*
- 03/2019 **Guest Lecturer** (2 class sessions; ASTR 170B1: The Physical Universe)
University of Arizona | *Facilitated a new lecture-tutorial on gravitational wave science*
- 06/2017, 07/2018 **Teaching Assistant** (STEM week)
Warrior-Scholar Project | University of Arizona

Selected Service & Leadership

- 09/2022 **NSF Panel Reviewer**
- 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
- 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

Selected 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 (Selected)

- 07/2022 **Session Speaker: Astronomy**
Culturally Responsive STEM Summer Learning Institute for K-12 Teachers| Bureau of Indian Education | two 3-hour workshop sessions for K-6 and 7-12 grade teachers from the Navajo Nation
- 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

Selected 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

- 11/2021 “Culturally Responsive Citizen Science Curricula for ASTR 101”
ASP2021: A Virtual Conference | Astronomical Society of the Pacific
- 11/2021 “Collaborative Facilitation of Diversity, Equity, and Inclusion Conversations in STEM”
(O'Donnell, Whitteck, Cardamone, Utschig, Yasuhara, Wacker, White, Dentith, & Caulkins)
46th Annual POD Network Conference [virtual conference]
- 11/2021 “A new model for culturally responsive citizen science-based curriculum”
2021 Virtual Conference on Transforming STEM Higher Education | American Association of Colleges & Universities (AAC&U) [virtual conference]
- 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

Selected Publications

(see http://bit.ly/CODonnell_publications or http://bit.ly/CODonnell_ADS for a more complete list)

Selected 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. (2022), "Observing Correlations Between Dark Matter Accretion and Galaxy Growth: II. Testing the Impact of Galaxy Mass, Star Formation Indicator, and Neighbour Colours", *Monthly Notices of the Royal Astronomical Society*, 509, 3

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

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

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

Selected Non-refereed

O'Donnell, C. (2022), "Culturally Relevant and Responsive Education: A Re-Examination of the ISEE Equity & Inclusion Theme", pp. 73–90 in S. Seagroves, A. Barnes, A.J. Metevier, J. Porter, L. Hunter (Eds.), *Leaders in effective and inclusive STEM: Twenty years of the Institute for Scientist & Engineer Educators*. UC Santa Cruz: Institute for Scientist & Engineer Educators. https://escholarship.org/uc/isee_pdp20yr

O'Donnell, C., Smith, P., & Simon, M. N. (2022), "A new model for culturally responsive citizen science-based curriculum" [proceedings paper] in Schultz, G., Jensen, J. B., Shore, L. (Eds.), *ASP 2021: Sharing Best Practices – Astronomy Teaching and Public Engagement*

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