

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
Projects roles include
- Physics Teacher Education Coalition (PhysTEC): budget management, engaging multiple cohorts of sites funded by PhysTEC, organizing Site Visits, analyzing and publishing data about the physics teacher shortage
 - Effective Practices for Physics Programs (EP3): facilitating collaborator meetings, developing marketing strategies and materials for EP3 products
 - Education & Diversity Statistics: collating, analyzing, and visualizing data on physics and STEM degree recipient demographics
 - Contributing to proposals: writing text, drafting and negotiating budgets
- 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

Grants Received

- 09/2023 - 08/2024 **"PhysTEC: Community Models that Transform Physics Teacher Education"**
NSF (Physics Directorate) | \$3,408,562 | PI: Wittmann; Co-PIs: Cunningham, Hilborn, O'Donnell, & Roti Roti

Selected Service & Leadership

- 09/2022 - 07/2023 **Founding Chair, Equity & Education Special Interest Group (SIG)**
Professional & Organizational Development (POD) Network
- Volunteered from 12/2021-09/2022 to lead the founding of a new SIG focused on equity, diversity, and inclusion topics; included drafting a mission statement and leadership plan incorporating input from 30+ POD members
 - Led SIG Business Meeting and session at the 2022 POD Network Conference
- 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

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 workshops for K-12 Navajo Nation teachers
- 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

- 09/2021 "A new model for culturally responsive citizen science-based curriculum"
Zooniverse webinar [Virtual]
- 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 & Posters

- 06/2023 "Supporting first- and second-order departmental change with the Effective Practices for Physics Programs (EP3) Guide" (O'Donnell & Chasteen) | Poster
ASCN 2023 Transforming Institutions Conference | Minneapolis, MN
- 04/2023 "Strengthening STEM and Humanities departments with the Effective Practices for Physics Programs (EP3) Guide"
X-DBER 2023 [virtual conference] | University of Nebraska-Lincoln
- 11/2022 "From reflection towards loving self-critique: Centering DEI in consultations" (O'Donnell, Whitteck, Madeltort, Cardamone, Utschig, Caulkins, Dentith, & White)
47th Annual POD Network Conference | Seattle, WA
- 11/2021 "Culturally Responsive Citizen Science Curricula for ASTR 101"
ASP2021: A Virtual Conference | Astronomical Society of the Pacific

- 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]

Selected Publications

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

Selected Refereed

O'Donnell, C. & Chasteen, S.V. (in press), "Supporting first- and second-order departmental change with the Effective Practices for Physics Programs (EP3) Guide", 2023 PER Conference Proceedings [Sacramento, CA, July 19-20, 2023]

Phillips, A.M. & **O'Donnell, C.** (2021), "A critical examination of "expert-like" in physics education research", 2021 PER Conference Proceedings [Virtual Conference, August 4-5, 2021], edited by M. B. Bennett, B. W. Frank, and R. E. Vieyra, doi:10.1119/perc.2021.pr.Phillips

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.; Browdin, 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

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