Anna Y. Q. Ho

(Last updated: October 2024)

Dept. of Astronomy, Cornell University
Ithaca NY 14850

Email: annayqho@cornell.edu
Homepage: annayqho.github.io

PRIMARY RESEARCH INTERESTS

Stellar death (supernovae, gamma-ray bursts), transients, time-domain astronomy, high-energy astrophysics, radio and sub-millimeter observations, large surveys

EDUCATION & APPOINTMENTS

2022–Present	Assistant Professor, Astronomy Department, Cornell
2020–2022	Miller Postdoctoral Fellow, Astronomy Department, U.C. Berkeley
2020–2022	Affiliate, Lawrence Berkeley National Laboratory
2020	Ph.D., California Institute of Technology, Astrophysics
	• Thesis: *The Landscape of Relativistic Stellar Explosions*
	• Advisor: Shri Kulkarni
2017	M.S., California Institute of Technology, Astrophysics
2014–2015	Fulbright Scholar, Max Planck Institute for Astronomy, Heidelberg, Germany
	• Host: Hans-Walter Rix
2014	B.S., Massachusetts Institute of Technology, Physics

AWARDS & HONORS

2024	Packard Fellowship for Science and Engineering
	Awarded annually to 20 early-career scientists and engineers in the U.S.
2024	Scialog Fellow, Research Corporation for Science Advancement: *Early Science with the LSST*
2024	Alfred P. Sloan Research Fellow in Physics
	Annual award for early career researchers in recognition of distinguished performance and a unique potential to make substantial contributions to their field.
2021	Springer Thesis Prize
	In recognition of outstanding Ph.D. research in the physical sciences.
2020	AAS Rodger Doxsey Travel Prize
2014–9	National Science Foundation Graduate Research Fellowship
2019	Keck Institute for Space Studies Affiliate
2017	TA Award, Caltech
	For being one of the highest rated TAs for the Spring 2017 term.
2017	France Cordova Graduate Fellowship—Gordon Garmire Scholarship, Caltech
	Annual award for an outstanding graduate student in Physics, Math, and Astronomy.
2014	MIT Karl Taylor Compton Prize
	The highest awards presented by the Institute to students...in recognition of excellent achievements in citizenship and devotion to the welfare of MIT.
2014	MIT Ida M. Green Fellowship (declined)
	For the MIT Graduate Program in Science Writing
2013	First Place, MIT DeWitt Wallace Prize for Science Writing for the Public
2012	MIT Burchard Scholar

SELECTED PUBLICITY

2024 **MIT News**, *Alum first spots cosmic explosion*
2024 **Cornell Chronicle**, *Cornell astronomers on newly approved UVEX NASA mission*
2024 **National Geographic**, *What is causing these massive, mysterious explosions in space?*
2023 **Nature News**, *Mysterious Tasmanian devil space explosion baffles astronomers*
2023 **CNN**, *Stellar corpse called 'Tasmanian devil' reveals phenomenon astronomers have never seen*
2023 **Cornell Chronicle**, *NASA selects Cornell astronomer for ULTRASAT observatory*
2023 **The New York Times**, *A Cow, a Camel and a Finch Exploded in Space. What Is Going On?*
2021 **Quanta**, *New Kind of Space Explosion Reveals the Birth of a Black Hole*
2020 Wrote the **Scientific American** cover article, *Extreme Supernovae*
2020 **Science News**, *A weird cosmic flare called the Cow now has company*
2020 **Science Daily**, *Astronomers discover new class of cosmic explosions*
2020 **Sky & Telescope**, *Two New Beasts for an Explosive Zoo*
2019 Wrote article for the **Submillimeter Array Newsletter**, *SMA Observations of AT2018cow: A Prototype for Millimeter Time-domain Astronomy*
2019 **Science News**, *The cosmic Cow may be a strange supernova*
2019 **The Washington Post**, *Scientists had never seen anything like this supernova*
2019 **WIRED**, *We may have finally spotted a star turning into a black hole*
2018 **Nature News**, *Holy Cow! Astronomers agog at mysterious new supernova*

PUBLICATIONS

h-index: first author 11; total 37
Total # publications: 77

First Author

[1] **Ho, A. Y. Q.** et al. 2023, *Minutes-duration Optical Flares with Supernova Luminosities*, Nature, **623**, 927 (arXiv:2311.10195)

[2] **Ho, A. Y. Q.** et al. 2023, *A Search for Extragalactic Fast Blue Optical Transients in ZTF and the Rate of AT2018cow-like Transients*, ApJ, **949**, 120 (arXiv:2105.08811)

[3] **Ho, A. Y. Q.** et al. 2022, *Cosmological Fast Optical Transients with the Zwicky Transient Facility: A Search for Dirty Fireballs*, ApJ, **938**, 85 (arXiv:2201.12366)

[4] **Ho, A. Y. Q.** et al. 2022, *Luminous Millimeter, Radio, and X-ray Emission from ZTF20acigmel (AT2020xnd)*, ApJ, **932**, 116 (arXiv:2110.05490)

[5] **Ho, A. Y. Q.** et al. 2020, *ZTF20aajnksq (AT 2020blt): A Fast Optical Transient at $z \approx 2.9$ With No Detected Gamma-Ray Burst Counterpart*, ApJ, **905**, 98 (arXiv:2006.10761)

[6] **Ho, A. Y. Q.** et al. 2020, *SN2020bvc: a Broad-lined Type Ic Supernova with a Double-peaked Optical Light Curve and a Luminous X-ray and Radio Counterpart*, ApJ, **902**, 86 (arXiv:2004.10406)

[7] **Ho, A. Y. Q.** et al. 2020, *The Koala: A Fast Blue Optical Transient with Luminous Radio Emission from a Starburst Dwarf Galaxy at $z = 0.27$*, ApJ, **895**, 1 (arXiv:2003.01222)

[8] **Ho, A. Y. Q.** et al. 2020, *The Broad-lined Ic Supernova ZTF18aaqjovh (SN 2018bvw): An Optically-discovered Engine-driven Supernova Candidate with Luminous Radio Emission*, ApJ, **893**, 132 (arXiv:1912.10354)

[9] **Ho, A. Y. Q.** et al. 2019, *Evidence for Late-stage Eruptive Mass-loss in the Progenitor to SN2018gep, a Broad-lined Ic Supernova: Pre-explosion Emission and a Rapidly Rising Luminous Transient*, ApJ, **887**, 169H (arXiv:1904.11009)

[10] **Ho, A. Y. Q.** et al. 2019, *AT2018cow: a luminous millimeter transient*, ApJ, **871**, 73 (arXiv:1810.10880)

[11] **Ho, A. Y. Q.** et al. 2018, *iPTF Archival Search for Fast Optical Transients*, ApJL, **854**, 13 (arXiv:1712.00949)

[12] **Ho, A. Y. Q.** et al. 2017, *Masses and Ages for 230,000 LAMOST Giants, via Their Carbon and Nitrogen Abundances*, ApJ, **841**, 40 (arXiv:1609.03195)

[13] **Ho, A. Y. Q.** et al. 2017, *Label Transfer from APOGEE to LAMOST: Precise Stellar Parameters for 450,000 LAMOST Giants*, ApJ, **836**, 5 (arXiv:1602.00303)

Selected Co-author

[1] Soumagnac, M. T., Nugent, P., Knop, R. A., **Ho, A. Y. Q.** et al. 2024, *The MOST Hosts Survey: spectroscopic observation of the host galaxies of* $\sim$ 40,000 *transients using DESI*, accepted for publication in ApJS (arXiv:2405.03857)

[2] Srinivasaragavan, G. et al. 2024, *Optical and Radio Analysis of Systemically Classified Broad-lined Type Ic Supernovae from the Zwicky Transient Facility*, submitted to ApJ (arXiv:2408.14586)

[3] Perley, D. A., **Ho, A. Y. Q.** et al. 2024, *AT2019pim: A Luminous Orphan Afterglow from a Moderately Relativistic Outflow*, submitted to MNRAS (arXiv:2401.16470)

[4] Hervías-Caimapo et al. 2024, *The Atacama Cosmology Telescope: Flux Upper Limits from a Targeted Search for Extragalactic Transients*, MNRAS, **529**, 3 (arXiv:2301.07651)

[5] Corsi, A., **Ho, A. Y. Q.** et al. 2023, *A search for relativistic ejecta in a sample of ZTF broad-lined Type Ic supernovae*, ApJ, **953**, 179 (arXiv:2210.09536)

[6] Berger, E. et al. 2023, *Millimeter Observations of the Type II SN 2023ixf: Constraints on the Proximate Circumstellar Medium*, ApJL, 951, L31 (arXiv:2306.09311)

[7] Vink, J., Thomas, B. P., Wheeler, J. C., **Ho, A. Y. Q.** et al. 2023, *Searching for Supernovae in HETDEX Data Release 3*, ApJ, **946**, 31V (arXiv:2212.08444)

[8] Andreoni, I. et al. 2022, *A very luminous jet from the disruption of a star by a massive black hole*, Nature, **612**, 7940 (arXiv:2211.16530)

[9] Martsen, A. R. et al. 2022, *Radio Pulse Profiles and Polarization of the Terzan 5 Pulsars*, ApJ, **941**, 22 (arXiv:2204.06158)

[10] Yao, Y., **Ho, A. Y. Q.**, et al. 2022, *The X-ray and Radio Loud Fast Blue Optical Transient AT2020mrf: Implications for an Emerging Class of Engine-Driven Massive Star Explosions*, ApJ, **934**, 104 (arXiv:2112.00751)

[11] Yadlapalli, N., Ravi, V., & **Ho, A. Y. Q.** 2022, *Models of Millimeter and Radio Emission from Interacting Supernovae*, ApJ, **934**, 5 (arXiv:2206.03518)

[12] Margalit, B., Quataert, E., & **Ho, A. Y. Q.** 2022, *Optical to X-Ray Signatures of Dense Circumstellar Interaction in Core-collapse Supernovae*, ApJ, **928**, 122 (arXiv:2109.09746)

[13] Perley, D. A., **Ho, A. Y. Q.** et al. 2021, *Real-time discovery of AT2020xnd: a fast, luminous ultraviolet transient with minimal radioactive ejecta*, MNRAS, **508**, 5138 (arXiv:2103.01968)

[14] Dong, D. Z., et al. 2021, *A transient radio source consistent with a merger-triggered core collapse supernova*, Science, 373, 1125 (arXiv:2109.01752)

[15] Andreoni, I., et al. 2021, *Fast-transient Searches in Real Time with ZTFReST: Identification of Three Optically Discovered Gamma-Ray Burst Afterglows and New Constraints on the Kilonova Rate*, ApJ, 918, 63 (arXiv:2104.06352)

[16] De, K., et al. 2020, *The Zwicky Transient Facility Census of the Local Universe I: Systematic search for Calcium rich gap transients reveal three related spectroscopic sub-classes*, ApJ, **905**, 58 (arXiv:2004.09029)

[17] Perley, D. A., et al. 2020, ApJ, *The Zwicky Transient Facility Bright Transient Survey. II. A Public Statistical Sample for Exploring Supernova Demographics* , ApJ, **904**, 35 (arXiv:2009.01242)

[18] Duffell, P. C. & **Ho, A. Y. Q.** 2020, *How Dense a CSM is Sufficient to Choke a Jet?*, ApJ, **900**, 193

[19] Szkody, P., Dicenzo, B., **Ho, A. Y. Q.**, et al. 2020, *Cataclysmic Variables from the First Year of the Zwicky Transient Facility*, AJ, **159**, 198 (arXiv:2002.08447)

[20] Casey, A.R., **Ho, A. Y. Q.**, et al. 2019, *Tidal interactions between binary stars drives lithium production in low-mass red giants*, ApJ, **880**, 125 (arXiv:1902.04102)

[21] Graham, M. J. et al. 2019, *The Zwicky Transient Facility: Science Objectives*, PASP, 131, 078001 (arXiv:1902.01945)

[22] Bellm, E. C. et al. 2019, *The Zwicky Transient Facility: System Overview, Performance, and First Results*, PASP, 131, 018002 (arXiv:1902.01932)

[23] Ness, M., et al. 2015, *The Cannon: A data-driven approach to stellar label determination*, ApJ, **808**, 16 (arXiv:1501.07604)

FUNDING

2024–2029	Packard Fellowship for Science and Engineering (**$875,000**)
2024	PCCW Frank H.T. Rhodes Leadership Grant and Mission Grant (**$5,000**)
2024–2026	HST Cycles 31 & 32 (**$37,593**)
2024–2026	Sloan Fellowship (**$75,000**)
2023–2026	NASA Ultraviolet Transient Astronomy Satellite Participating Scientists Program (PI; **$210,000**)
2023–2024	NASA *Swift* Cycle 19 (PI; **$36,000**)
2023	Cornell Roger and Mary Lou West Undergraduate Research Fellowship (for undergraduate mentee Maggie Li; **$6,500**)

PRINCIPAL INVESTIGATOR TELESCOPE PROPOSALS

Millimeter	26 proposals: 11 SMA (444 hr), 9 NOEMA (135.1 hr), 6 ALMA (22.4 hr) • SMA Regular: eight (18B, 19A&B, 20A&B, 21A&B, 22A&B), 38 tracks (≈ 228 hrs) • SMA DDT: three (2×18A, 21B), 36 tracks (≈ 216 hrs) • NOEMA Regular: seven (19B, 20B, 21A&B, 22B, 23A, 23B), 123.1 hrs • NOEMA DDT: two (2×20A), 12.0 hrs • ALMA Regular: one (Cycle 7), 9.7 hr; one (Cycle 10), 6.9 hr through joint VLA • ALMA DDT: four (Cycles 5 & 9×3), 2.6 hr, 5.6 hr, 2.4 hr, 2.4 hr
Radio	23 proposals: 19 VLA (212 hr), 2 VLBA (48 hr), 1 GMRT (3 hr), 1 ATCA (40 hr) • VLA Regular: 11 (13A, 19A, 2x20A, 20B, 21A, 21B, 22B, 23A, 23B, 24B) totaling 187.33 hrs • VLA DDT: 8 (17A, 17B, 19B, 23A×3, 24A×2) totaling 24 hrs • VLBA DDT: 2 (18A, 20A) totaling 48 hrs • GMRT DDT: 1 (Cycle 36), totaling 3 hrs
Optical	8 proposals: 5 Gemini (20.9 hrs), 2 P60 (11.95 hrs), 1 P48 (3 nights) • Gemini: five (21A, 22A, 22B, 24A, 24B), 20.5 hr GMOS-S & 10.6 hr GMOS-N • Palomar 60-inch (P60): two (2019, 2020), totaling 11.95 hrs

	• P48: 3-night high-cadence observations of ULTRASAT high-cadence field
X-ray	*Swift* GI proposal (Cycle 19, 42 ks)
	52 *Swift* ToO observations (each 3–5 ks; total $\approx$ 200 ks)
	3 *Chandra* DDT proposals (Cycle 21, 22, 23) totaling 80 ksec

LEADERSHIP & PROFESSIONAL SERVICE

Scientific leadership and membership roles

2024–Present	Africa Millimetre Telescope (Science Team Member)
2024–Present	South Pole Telescope (Provisional Senior Member)
2023–Present	Ultraviolet Transient Astronomy Satellite (ULTRASAT; Participating Scientist)
	• (2023–Present) Co-chair, Gamma-ray Bursts (GRB) Working Group
2023–Present	Atacama Cosmology Telescope (Senior Member)
2023–Present	Simons Observatory (Senior Member)
2022–Present	CCAT Observatory
	• (2022–Present) Co-lead, Time-domain astrophysics working group
2022–Present	CMB-S4 (Senior Member)
	• (2021–2023) Co-chair, Sources & Transients Working Group
2021–Present	UltraViolet EXplorer (UVEX) Mission (Co-I). *NASA MIDEX: launch 2030*
2020–2023	Dark Energy Spectroscopic Instrument (DESI; member 2020–2022; continuing collaborator 2022–2023)
2018–Present	Zwicky Transient Facility (ZTF; Member)

Invited positions for service external to Cornell

2023–Present	Member, ZTF Publication Board
2023–Present	Member, ZTF Science Steering Committee
2022–Present	Member, Science Advisory Council, DSA-2000
2019–Present	Referee/reviewer for ApJ, ApJL, MNRAS, Nature Astronomy, A&A
2023–2024	Member, SOC, Workshop on Fast Extragalactic Transients, Bormio, Italy
2023	Co-author, Gamma-ray Transient Network Science Analysis Group Report
2023	Co-author, CfA Decadal White Paper, *Time-domain Astrophysics with the Submillimeter Array*
2023	Co-author, PRIMA General Observer Science Book
2023	Review Panelist, NASA ROSES Program
2023	Reviewer, James Webb Space Telescope DD proposal
2023	Reviewer, Hubble Space Telescope DD proposal
2023	Member, SOC, CMB-S4 Collaboration Meeting
2022–2023	Member, Science Organizing Committee, "Scientific Frontiers and Synergies for the DSA-2000 Radio Camera" Conference
2022	Member, Miller Annual Symposium Organizing Committee
2022	Member, SOC, CMB-S4 Collaboration Meeting
2022	Member, SOC, Workshop on "Astrophysics with the CMB-S4 Survey"

Other external service

2021–2022	Co-organizer, Theoretical Astrophysics Center Seminar Series, UC Berkeley
2021–2022	Organizer, Explosive Astronomy Seminar Series, UC Berkeley
2021	Co-organizer, Session on Transients with CMB-S4, CMB-S4 Summer Workshop
2021	Reviewer, NASA FINESST Program
2021	Time Allocation Committee: Gemini, Chandra
2021	Peer Reviewer, ALMA proposals
2021	Co-organizer, Cal-URSA Research Program
2021	Organizer, Workshop on Status of Millimeter-Transient Searches (virtual)

TEACHING: CLASSROOM & WORKSHOPS

Fall 2024	ASTRO 2211: Stars, Galaxies, and Cosmology (undergraduate course)
	• 35 students.
Spring 2024	ASTRO 6530: Astrophysical Processes (graduate course)
	• 10 students. Course rating: 5.00/5. Instructor rating: 4.90/5
	ASTRO 4940: Independent Study (undergraduate; 1 student)
	PHYS 4499: Senior Thesis (undergraduate; 1 student)
Fall 2023	ASTRO 2211: Stars, Galaxies, and Cosmology (undergraduate course)
	• 41 students. Course rating: 4.79/5. Instructor rating: 4.87/5
	PHYS 2298: Independent Study (undergraduate; 1 student)
	PHYS 4498: Senior Thesis (undergraduate; 1 student)
Spring 2023	ASTRO 7683: Seminal Papers in Astronomy and Planetary Science (graduate course)
	• 10 students. Course rating: 5.00/5. Instructor rating: 5.00/5
	ASTRO 4940: Independent Study (undergraduate; 2 students)
Fall 2022	ASTRO 4940: Independent Study (undergraduate; 2 students)
2018	Instructor, ZTF Summer School
2016	Lead Instructor, Gemini Observatory Workshop on Data-Driven Modeling of Spectra

ADVISING AND MENTORING

Postdoctoral Associates

Fall 2024–	Genevieve Schroeder: radio observations of GRBs and engine-driven supernovae

Graduate Students

Fall 2023–	Jason Sevilla (2nd year): fast blue optical transients with ZTF & ULTRASAT
Fall 2024–	Michael Camilo (1st year): synchrotron modeling for trans-relativistic explosions

Undergraduate Students

2024–	Harlan Phillips (REU student): A catalog of all ZTF extragalactic transients
2024–	Marquice Sanchez-Fleming (Cornell sophomore, physics): SN mm-wave counterparts
2024–	Jack Pope (Cornell junior, physics & data science): SN cm-wave counterparts
2023–	Jada Vail (Cornell senior, math & physics): Ic-BL supernova optical light curves
	• McNair Scholar; 2023 Nexus Scholar
2022–2024	Maggie Li (Cornell physics → PhD student at Caltech): orphan afterglow modeling
	• 2023 Roger & Mary Lou West Fellow; 2024 AAS Chambliss Award; 2024 Shelley Undergraduate Research Award in Astronomy; 2024 Bethe Thesis Prize in Physics
Summer 2023	Joshua Grajales (REU student, Columbia senior): ML identification of FBOTs
2022–2023	Kailai Wang (Cornell physics): photometry of early GRB optical afterglows
2022–2023	William Hohensee (UC Berkeley astrophysics): DESI observations of ZTF host galaxies
Summer 2022	Mary Gerhart (UC Berkeley astrophysics): FBOT identification in survey data
Summer 2021	Alexis Andersen, Autumn Awbrey, Ruby Wong (UC Berkeley physics/astrophysics): DESI observations of transient host galaxies (co-advised with Peter Nugent)
Summer 2021	Caitlin King (Northern Arizona University): orphan afterglow model predictions DOE Science Undergraduate Laboratory Internship (SULI) program

SELECTED RECENT INVITED TALKS

2024	Colloquium, Pennsylvania State University, College Park PA
2024	Colloquium, Aspen Center for Physics, Aspen CO (recording)
2024	Plenary Talk, Current Themes Workshop, Niels Bohr Institute, Copenhagen
2024	Plenary Talk, "Cosmic Transients in the Era of Large Surveys" Symposium, Swedish

	Royal Academy of Sciences, Stockholm
2024	Plenary on Transient Science, CMB-S4 Spring Collaboration Meeting (virtual)
2024	Colloquium, Princeton/IAS, Princeton NJ
2023	Plenary Talk, 32nd Texas Symposium on Relativistic Astrophysics, Shanghai
2023	Colloquium, MIT Astrophysics, Cambridge MA
2023	Colloquium, UVA/NRAO, Charlottesville VA
2023	Plenary Talk, The Transient and Variable Universe Conference, UIUC, Illinois
2023	Talk, CMB-S4 Spring Collaboration Meeting (virtual)
2023	Colloquium, Columbia University, New York NY
2023	Review Talk on X-ray and Radio Observations of LFBOTs, MIAPbP "Interacting Supernovae" Workshop, Garching, Germany
2023	Colloquium, University of Toronto, Toronto ON
2022	Colloquium, Caltech, Pasadena CA
2022	Talk, Time Domain and Multi-Messenger Astrophysics NASA Workshop
2022	Plenary Talk for the Sources & Transients Working Group, CMB-S4 Collab. Meeting
2022	Talk, AAS Special Session on "An Update on Astrophysics and Cosmology from Cosmic Microwave Background Measurements in the Next Decade"
2022	Colloquium, Radboud University, Nijmegen, Netherlands
2022	Colloquium, Carnegie Observatories, Pasadena CA
2022	Talk, APS April Meeting, Cecilia Payne-Gaposchkin Dissertation Award Finalist
2022	CCAT-Prime/FYST Collaboration Meeting (virtual)
2022	Tor Vergata Astrophysics Seminar (virtual)
2022	Special Physics & Astronomy Seminar, Northwestern University, Evanston IL
2022	Colloquium, U.T. Austin, Austin TX
2022	Colloquium, Cornell University, Ithaca NY
2021	Colloquium, Max Planck Institute for Astronomy, Heidelberg, Germany (virtual)
2021	Colloquium, U.C. Santa Cruz
2021	Talk, SuperVirtual (virtual)
2021	Seminar, Kavli Institute for Cosmological Physics, U. Chicago
2021	Astro Seminar, Center for Cosmology and Particle Physics, NYU
2021	Colloquium, Jodrell Bank Centre for Astrophysics (virtual)
2021	Seminar, Princeton Gravity Initiative (virtual)
2021	Colloquium, Centre of Astrophysics and Supercomputing, Swinburne University of Technology (virtual)
2021	Talk, BigBoom, University of Arizona (virtual)

COMMUNITY ENGAGEMENT

2024	Interviewed for class project, Irvine Valley College
2024	Lecture for Cornell Friends of Astronomy
2024	Lecture for North Jersey Astronomical Society (recording)
2023	Interviewed for Hotel Mars CBS Eye On The World podcast
2023	Interviewed for Science Review magazine, American School in London
2023	Member, Career Panel, 4-H Camp at Cornell
2023	Interviewed for graduate student podcast *Cosmos Crusaders*
2022	Keynote Speaker, Annual Cray User Group Meeting, Monterey CA
2017–2022	Interviewer, MIT Admissions
2021	Compass Lecture, UC Berkeley
2021	Speaker, Riverside Astronomical Society (virtual)
2019	Speaker, Greenway Talk Series, Palomar Observatory
2019	Speaker, Owens Valley Radio Observatory Lecture Series
2019	Speaker, Caltech Graduate Research Spotlight
2019	Speaker, Ventura County Astronomical Society

2019	Speaker, Greenway Talk Series, Palomar Observatory
2018	Contributing Writer, Caltech Letters
2018	Speaker, College of the Canyons Star Party
2018	Visitor, 8th-grade class, St. Philip the Apostle School, Pasadena CA
2017	Volunteer, Orbit Deep Learning Days, Huntington Library, Pasadena CA
2017	Speaker, Astro on Tap, Pasadena CA
2017	Speaker, Riverside Astronomical Society
2017	Speaker, Ventura County Astronomical Society
2017	Speaker, High School Summer Camp, Culver City CA
2016	Speaker, Santa Monica Astronomy Club
2016	Volunteer, Field Trip, iChicas After-school Program
2015	Speaker, St. Philip Reverse Science Fair, Pasadena CA
2015	Volunteer, Webster Elementary Science and Stargazing Night, Pasadena CA
2015-2020	Volunteer, Caltech Astronomy Outreach program
2014–2015	Volunteer, Center for Astronomy Education and Outreach, Heidelberg, Germany
2014	AAS Astronomy Ambassadors Workshop, AAS 223rd Meeting
2012–2013	Volunteer, McCormick Public Observatory, Charlottesville VA