Stephanie A. Wissel

Education

	The University of Chicago	Chicago, IL USA
Period	September 2004 – June 2010	
Degrees	Ph. D. in Physics, 2010, S. M. in Physics 2005, Advisor: Scott P. Wakely	
Thesis	Ground-Based Observations of Direct Cerenkov Light and the Flux of Iron Nuclei at TeV Energies	
Awards	Graduate Merit Fellowship, Illinois Space Grant Consortium, 2007 & 2009	
	The University of Dallas	Irving, TX USA
Period	June 2000 – May 2004	
Degree	B. S. in Physics with Concentration in Mathematics	
Honors	*magna cum laude*, Clare Boothe Luce Scholar, Cardinal Spellman & Montosorri Awards	

Academic Experience

	Pennsylvania State University	State College, PA USA
	Assistant Professor	Jan. 2020 – present
	Physics and Astronomy & Astrophysics	
	California Polytechnic State University	San Luis Obispo, CA USA
	Assistant Professor	September 2015 – present
	Physics	
	University of California, Los Angeles	Los Angeles, CA USA
	Postdoctoral Scholar	November 2012 – September 2015
	Experimental searches for the highest energy neutrinos and cosmic rays with ANITA, GNO, and T-510 experiments. Advisor: David Saltzberg	
	The Princeton Plasma Physics Laboratory	Princeton, NJ USA
	Postdoctoral Scholar	April 2010 – October 2012
	Topics in science, physics, and plasma physics education and outreach. Advisor: Andrew Zwicker	

Grants

	External Grants
NASA	**APRA** Ultra-high Energy Particle Astrophysics with ANITA-V, Co-I, 2019–2020, $35k
NSF	**CAREER** Advancing the Search for Ultra-High-Energy Tau Neutrinos with High-Elevation Radio Detectors, 2018–2023, $670k
NASA	**APRA** Extreme Energy Particle Astrophysics with ANITA-V, Co-I, 2017–2018, $28k
NASA	**APRA** Subcontract with WashU: Ultra High Energy Particle Astrophysics with ANITA-4, 2016–2017, $25k

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Competitive Internal Grants

Cal Poly	**CP Connect** Interdisciplinary collaboration between Physics & EE, 2015-2019, $5k each year on radio neutrino detectors
Cal Poly	**Frost Fund** Next-Generation Neutrino Telescope, 2016–2017, $60k,
CSU	**RSCA** Developing Calibration Standards at Cal Poly for Neutrino Searches in Antarctica, 2016–2017, $14k

Research Interests

Particle Astrophysics with Radio Detectors **2012–**

Extremely High Energy Neutrinos and Cosmic Rays

BEACON	**Beamforming Elevated Array for COsmic Neutrinos** Concept studies for using an interferometer trained on the horizon to search for Earth-skimming tau neutrinos funded through NSF CAREER grant. Field studies at White Mountain Research Station in California.
ANITA	**ANtarctic Impulsive Transient Antenna** A balloon-borne experiment that measures the radio emission from ultra-high energy neutrinos and cosmic rays. Tau neutrino air shower searches and associated sensitivity. Low frequency antenna extension to ANITA for air showers and calibration stations and analysis. Two flight campaigns at McMurdo, WAIS, and Siple, Antarctica.
RNO, ARA & GNO	**Radio Neutrino Observatory, Askaryan Radio Array, and Greenland Neutrino Observatory** In-ice large scale radio neutrino telescopes in development. Investigations into the use of phased array trigger schemes and improvements with antennas. Field studies of in-ice phased arrays and ice studies at Summit Station in Greenland
T-510	Accelerator experiment to model cosmic ray radio emission. Leading investigator on SLAC beam test T-510 of RF emission in a dielectric in a magnetic field to model radio emission from cosmic ray air showers. Ran follow-up experiments to measure systematics without the electron beam at Cal Poly.

Particle Astrophysics with Cherenkov Telescopes **2004-2010**

TeV Cosmic-Ray Composition

VERITAS	**Very Energetic Radiation Imaging Telescope Array System** Measurement of TeV cosmic ray iron spectrum. Methods for measurement of very high-energy cosmic rays by directly measuring the Cerenkov radiation from the primary particle, which required simulating hadronic air showers and VERITAS detector response.
TrICE	**Track Imaging Cerenkov Experiment** Pathfinding experiment to detect direct Cerenkov emission of cosmic rays. Designed, constructed, maintained and calibrated automated optical system for mirror alignment. Developed tools for calibration and analysis after null detection. Planned and executed observing schedules. Evaluated efficacy of Multi-Anode PMTs in cosmic-ray experiments.

Publications

Summary of Publications

Number of Peer-Reviewed Publications: 44
h-index: 27
For a up-to-date list of publications, see InSpire.

Publications

* indicates a primary author publication
† indicates a student mentored by SAW
‡ indicates a manuscript under review or in preparation

1. Suggestion of Coherent Radio Reflections from an Electron-Beam Induced Particle Cascade S. Prohira, K. D. de Vries, D. Besson, A. Connolly, C. Hast, U. Latif, T. Meures, A. Nozdrina, J. P. Ralston, Z. Riesen†, D. Saltzberg, J. Torres, **S. Wissel**, X. Zuo. *PRD* 100, 072003, 2019.
2. Astrophysics Uniquely Enabled by Observations of High-Energy Cosmic Neutrinos Markus Ackermann et al. *Bull. Am. Astron. Soc.* 51(3), 185, 2019.
*3. Fundamental Physics with High-Energy Cosmic Neutrinos Markus Ackermann et al. *Bull. Am. Astron. Soc.* 51(3), 215, 2019.
* 4. The Next-Generation Radio Neutrino Observatory – Multi-Messenger Neutrino Astrophysics at Extreme Energies J. A. Aguilar et al. *Bull. Am. Astron. Soc.*, 51(7), 218, 2019.
* 5 Expanding the Reach of Tau Neutrino Telescopes with the Beamforming Elevated Array for COsmic Neutrinos (BEACON). S. Wissel et al. *Bull. Am. Astron. Soc.* 51(7), 191, 2019
6. Constraints on the ultrahigh-energy cosmic neutrino flux from the fourth flight of ANITA The ANITA Collaboration. *PRD*, 99, 122001, 2019.
7. Measurement of the real dielectric permittivity ϵ_r of glacial ice The ARA Collaboration. *Astroparticle Physics*, 108, 63, 2019.
* 8. Comprehensive analysis of anomalous ANITA events disfavors a diffuse tau-neutrino flux origin. A. Romero-Wolf, **S. A. Wissel**, H. Schoorlemmer, W. R. Carvalho, Jr., J. Alvarez-Muñiz, E. Zas, and the ANITA Collaboration. *PRD*, 99, 063011, 2019.
9. Design and Performance of an Interferometric Trigger Array for Radio Detection of High-Energy Neutrinos. The ARA Collaboration. *NIM-A*, 930, 112-125, 2019.
* 10. Measurements and modeling of near-surface radio propagation in glacial ice and implications for neutrino experiments. C. Deaconu, A. G. Vieregg, **S. A. Wissel**, J. Bowen, S. Chipman, A. Gupta, C. Miki, R. J. Nichol, and D. Saltzberg *PRD*, 98, 4, 043010, 2018.
* 11. Measurement of the Iron Spectrum in Cosmic Rays by VERITAS. The VERITAS Collaboration *PRD*, 98, 2, 022009, 2018.
12. Observation of an Unusual Upward-going Cosmic-ray-like Event in the Third Flight of ANITA. The ANITA Collaboration. *PRL*, 121, 161102, 2018.
13. Constraints on the diffuse high-energy neutrino flux from the third flight of ANITA. The ANITA Collaboration *PRD*, 98, 2, 02201, 2018.
14. Antarctic surface reflectivity calculations and measurements from the ANITA-4 and HiCal-2 experiments. The ANITA Collaboration. *PRD*, D98, 042004, 2018.
15. Dynamic tunable notch filters for the Antarctic Impulsive Transient Antenna (ANITA), The ANITA Collaboration. *NIM-A*, 894, 47, 2018.
16. Picosecond timing of Microwave Cherenkov Impulses from High-Energy Particle Showers Using Dielectric-loaded Waveguides. P. W. Gorham, *et al. PRAB*, 21, 072901, 2018.
17. Antarctic Surface Reflectivity Measurements from the ANITA-3 and HiCal-1 Experiments. The ANITA Collaboration. *J. Astron. Instr.*, 06, 1740002, 2017.

* 18. Development Toward a Ground-Based Interferometric Phased Array for Radio Detection of High Energy Neutrinos. J. Avva ,...,W. Messino†, **S. A. Wissel** *NIM-A*, 869, 46-55 2017.

19. Characteristics of Four Upward-Pointing Cosmic-Ray-like Events Observed with ANITA. The ANITA Collaboration. *PRL* 117, 071101, 2016.

*20. A lower bound on the number of cosmic ray events required to measure source catalogue correlations. M. Dolci, A. Romero-Wolf, **S. Wissel**. *Journal of Cosmology and Astroparticle Physics*, 2016, 028, 2016.

* 21. Accelerator measurements of magnetically induced radio emission from particle cascades with applications to cosmic-ray air showers. K. Belov, K. Mulrey, A. Romero-Wolf, **S. A. Wissel**, A. Zilles, *et al. PRL*, 116, 141103, 2016.

22. Energy and Flux Measurements of Ultra-High Energy Cosmic Rays Observed During the First ANITA Flight. H. Schoorlemmer, K. Belov, A. Romero-Wolf, D. García-Fernández, V. Bugaev, **S. A. Wissel**, *et al. Astroparticle Physics*, 77, 32-43, Jan. 2016.

23 Observation of Markarian 421 in TeV gamma rays over a 14-year time span. The VERITAS Collaboration. *Astroparticle Physics*, 54, 1, 2014.

*24. The Use of DC Glow Discharges as Undergraduate Education Tools. **S. A. Wissel**, J. L. Ross, S. Gershman, A. Zwicker. *The American Journal of Physics*, 81, 9, 2013.

*25. The Track Imaging Cerenkov Experiment. **S. A. Wissel**, *et al. NIM-A*, 659, 1, 2011.

26. Multi-wavelength Observations of the Flaring Gamma-ray Blazar 3C 66A in 2008 October. The VERITAS Collaboration. *ApJ*, 726, 43, 2011.

26b. Erratum: Multi-wavelength Observations of the Flaring Gamma-ray Blazar 3C 66A in 2008 October. The VERITAS Collaboration.*ApJ*, 731, 77, 2011.

27. Multiwavelength Observations of the Very High Energy Blazar 1ES 2344+514. The VERITAS Collaboration. *ApJ*, 738, 169, 2011.

28. TeV and Multi-wavelength Observations of Mrk 421 in 2006-2008. The VERITAS Collaboration. *738*, 25, 2011.

29. Results from the first two years of VERITAS observations. The VERITAS Collaboration. *NIM-A*, 630, 16, 2011.

30. Discovery of Very High Energy Gamma Rays from PKS 1424+240 and Multiwavelength Constraints on Its Redshift. The VERITAS Collaboration. *ApJ* 708, L100, 2010.

31a. Discovery of Very High Energy γ-ray Emission from the SNR G54.1+0.3. The VERITAS Collaboration. *ApJ*, 719, L69, 2010.

31b. Erratum: Veritas Observations of a Very High Energy γ-ray Flare from the Blazar 3C 66A, The VERITAS Collaboration. *ApJ*, 721, L203, 2010.

32. Observations of the Shell-type Supernova Remnant Cassiopeia A at TeV Energies with VERITAS. The VERITAS Collaboration. *ApJ*, 714, 163, 2010.

33. The Discovery of γ-Ray Emission from the Blazar RGB J0710+591.The VERITAS Collaboration. *ApJ*, 715, L49, 2010.

34. Veritas 2008-2009 Monitoring of the Variable Gamma-ray Source M 87. The VERITAS Collaboration. *ApJ*, 716, 819, 2010.

35. VERITAS Search for VHE Gamma-ray Emission from Dwarf Spheroidal Galaxies. The VERITAS Collaboration. *ApJ*, 720, 1174, 2010.

36. Detection of Extended VHE Gamma Ray Emission from G106.3+2.7 with VERITAS. The VERITAS Collaboration. *ApJ*, 703, L6, 2009.

37. Evidence for Long-Term Gamma-Ray and X-Ray Variability from the Unidentified TeV Source HESS J0632+057. The VERITAS Collaboration. *ApJ*, 698, L94, 2009.
38. Multiwavelength Observations of a TeV-Flare from W Comae. The VERITAS Collaboration. *ApJ*, 707, 612, 2009.
39. Multiwavelength Observations of LS I +61deg 303 with Veritas, Swift, and RXTE, The VERITAS, Swift, and RXTE Collaborations. *ApJ*, 700, 1034, 2009.
40. Observation of Extended Very High Energy Emission from the Supernova Remnant IC 443 with VERITAS. The VERITAS Collaboration. *ApJ*, 698, L133, 2009.
41. Radio Imaging of the Very-High- Energy γ-Ray Emission Region in the Central Engine of a Radio Galaxy. The VERITAS Collaboration, the VLBA 43 GHz M87 Monitoring Team, the H.E.S.S. Collaboration, the MAGIC Collaboration. *Science*, 325, 444, 2009.
42. Simultaneous Multiwavelength Observations of Markarian 421 During Outburst. The VERITAS Collaboration. *ApJ*, 703, 169, 2009.
43. VERITAS Observations of the BL Lac Object 1ES 1218+304. The VERITAS Collaboration. *ApJ*, 695, 1370, 2009.
44. VERITAS Upper Limit on the Very High Energy Emission from the Radio Galaxy NGC 1275. The VERITAS Collaboration. *ApJ*, 706, L275, 2009.
45. Discovery of Very High Energy Gamma-ray Radiation from the BL Lac 1ES 0806+524. The VERITAS Collaboration. *ApJ*, 690, L126, 2009.
46. The June 2008 Flare of Markarian 421 from Optical to TeV Energies. I. Donnarumma, *et. al. ApJ*, 691, L13, 2009.
47. A connection between star formation activity and cosmic rays in the starburst galaxy M82. The VERITAS Collaboration. *Nature*, 462, 770, 2009.
48. Observation of Gamma-Ray Emission from the Galaxy M87 above 250 GeV with VERITAS. The VERITAS Collaboration. *ApJ*, 679, 397, 2008.
49. VERITAS Discovery of >200 GeV Gamma-Ray Emission from the Intermediate-Frequency-Peaked BL Lacertae Object W Comae. The VERITAS Collaboration. *ApJ*, 684, L73, 2008.
50. VERITAS Observations of the γ-Ray Binary LS I +61 303" The VERITAS Collaboration. *ApJ*, 679, 1427, 2008.
51. First results from VERITAS. The VERITAS Collaboration. *NIM-A*, 588, 26, 2008.

Teaching

Cal Poly	**Teaching**	
PHYS-123	General Physics III (lab) Algebra-based electrostatics, circuits, magnetism, hydrogen atom	1 quarter
PHYS-132	General Physics II (studio) Calculus-based vibrations, optics, and thermal physics	2 quarters
PHYS-133	General Physics III (lecture, lab, and studio formats) Calculus-based electrostatics, circuits, magnetism	5 quarters
PHYS-206	Experimental Physics (lab) Analog and digital electronics, instrumentation, experimental labs, and data acquisition	1 quarter
PHYS-341	Quantum Physics Lab II (lab) Advanced physics laboratory on pivotal experiments in physics, technical writing and presentation	1 quarter

PHYS-403	Particle & Nuclear Physics (lecture) Scattering and decays, symmetries, QED, modern particle physics experiments	2 quarters
PHYS-2/400	Independent study for undergrad. physics research projects	9 quarters
PHYS-461/2	Senior thesis in physics	8 quarters
Cal Poly	**Curriculum Development**	
2017-2019	133 and 132 Studio Curriculum Development	
2018	Capstone project in LabView and practical exam for Experimental Physics Course (206)	
2017-2019	Learning Assistant Program Development of learning assistant (LA) program where undergraduates who have recently taken a course facilitate learning of enrolled students through group activities and tutoring.	
Cal Poly	**Professional Development Related to Teaching**	
Sum. 2018	Working Group on Equity in Undergraduate Research in Physics	
Nov. 2017	International Learning Assistant Conference	
Jun. 2017	APS/AAPT/AAS New Physics and Astronomy Faculty Workshop	
Fall 2016	Undocumented Student Training	
Win. 2016	LSAMP-CTLT Undergraduate Research Mentorship Workshop	
UCLA	**Teaching**	
2012	Guest lecturer for Prof. Lindley Winslow's class, "Special Topics in Nuclear Physics: The Neutrino" on Ultra-High-Energy Neutrinos	
PPPL	**Teaching**	
2010-2012	Teaching and curriculum development for workshops on general physics, microgravity, energy, plasmas, and fusion aimed at middle-school, high-school, undergraduate, and K-12 teachers.	
2010-2012	Development of undergraduate laboratory experiments on plasma physics.	
UofC	**Teaching**	
2004-5	Teaching Assistant for Calculus-Based General Physics Series.	

Conferences and External Presentations

	Invited Talks	
Seminar	Expanding the Reach of Cosmic Neutrino Experiments, **IGC Penn State**, February 2020.	
Colloquium	Radio Searches for Neutrinos at the Cosmic & Energy Frontiers, **OSU**, April 2019.	
Seminar	Radio Searches for Neutrinos at the Cosmic & Energy Frontiers, **Penn State**, Jan. 2019.	
Seminar	Radio Searches for Neutrinos at the Cosmic & Energy Frontiers, **MIT**, Jan. 2019.	
Seminar	Radio Searches for Tau Neutrinos at High Altitudes, **Columbia**, Dec. 2018.	
Seminar	Radio Detection of Cosmic Neutrinos. **Caltech**, Pasenda CA, 2018.	
Talk	Cosmic Neutrino Searches at the Highest Energies. Special session on Astroparticle Physics at **APS April Meeting** 2018.	
Talk	Phased arrays: A strategy to lower the energy threshold for neutrinos. **ARENA** 2016	
Seminar	High-energy Particle Astrophysics using the Radio Technique. **UCSB** 2016.	
Talk	Implications for the Radio Detection of Cosmic Rays from Accelerator Measurements of Particle Showers in a Magnetic Field. **UHEAP Workshop, Univ. of Chicago**, 2016.	

Colloquium	Chasing Astroparticles to the Ends of the Earth. **Univ. Dallas**, 2015.
Seminar	Towards Precision Radio Detection of Cosmic Ray Showers with ANITA-3. **UC Davis**, 2014.
Colloquium	Chasing Astroparticles to the Ends of the Earth. **Cal Poly**,2014.
Seminar	Towards Precision Radio Detection of Cosmic Ray Showers with ANITA-3. **Univ. of Chicago**, 2014.
Talk	Lifting Up Young Women at the Princeton Plasma Physics Laboratory, **New Jersey Women in Science and Technology 5th Annual Workforce Summit**
Seminar	Toward a more direct measurement of the composition of cosmic rays at TeV energies **Columbia**, 2011
Seminar	The Direct Cherenkov Technique **Delaware**, 2011
Seminar	Pursuing the origin of cosmic rays with VERITAS **Iowa**, 2010
	Chaired Sessions
ARENA	Analysis Tools: Radio Detection 2, 2018
APS April	Ultra-high energy neutrinos, 2018
ARENA	Radio Detection of Neutrinos, 2016
	Selected Conference Talks and Proceedings
ICRC	Concept Study for the Beamforming Elevated Array for Cosmic Neutrinos (BEACON), *PoS*, 358, 1033, 2019.
ICRC	Comprehensive estimate of the sensitivity of ANITA to tau neutrinos, *PoS*, 358, 1034, 2019.
ARENA	A New Concept for High-Elevation Radio Detection of Tau Neutrinos, *EPJ Web Conf*, 216 04007, 2018
TeVPA	Radio Detection of Neutrino-Induced Tau Lepton Air Showers at Altitude, 2017
ARENA	Phased Arrays: A strategy to lower the energy threshold for neutrinos, *EJP Web Conf.*, 135, 2016
ICRC	Measurements, system response, and calibration of the SLAC T-510 Experiment, *PoS*, 236, 342, 2015
ICRC	Overview of the Third Flight of the ANITA Long Duration Balloon Payload, *PoS*, 236, 1111, 2015
ICRC	Site Characterization and Detector Development for the Greenland Neutrino Observatory, *PoS*, 236, 1150, 2015
APS April	Radio Emission from an Electron Shower in a Dielectric in the Presence of a Magnetic Field, 2014
TAUP	Development of a Low-Frequency Horizontally-Polarized Antenna for Detection of Ultra-High Energy Cosmic Rays with ANITA-III, 2013
URSI	Dust Acoustical Waves Under Microgravity and Microgravity-Like Conditions, 2011
APS-DPP	Making a Splash in Microgravity with Teachers, 2011
APS-DPP	Longitudinal Study of the Impact of attending the PPPL NUF/SULI Program on Undergraduates' Careers, 2011
ISCRA	The Direct Cerenkov Method of Detecting VHE Cosmic Rays with Ground-Based Detectors, International School of Cosmic Ray Astrophysics, 2008
ICRC	The Status of the Track Imaging Cerenkov Experiment, 2007
ICRC	Studies of Direct Cherenkov Emission with VERITAS, 2007
TeVPA-II	The track imaging Cerenkov experiment, *J. of Physics: Conf*, 60, 306, 2007

	Penn State
2020	**HEPAP Seminar Committee** Organized seminar speakers for seminar series in high-energy physics & astroparticle physics and through the Center for Particle and Gravitational Astrophysics
2020	**Astronomy Graduate Admissions Committee**
2020–	**CAMPARE** Established Penn State as a site for research internships for underrepresented students through the CAMPARE program
	Cal Poly
2019	**STEM NET Affiinity Group Webcast** Web presentation on CAREER grants for full CSU community
2017–	**Committee on New Building for Science and Agriculture** Represented the physics department in design of computational spaces and laboratories for new $120 M building.
2017-2019	**CAMPARE** Liaison to support internships in astronomy and physics for undergraduates from underrepresented backgrounds.
2016/7, 2018/9	**First Year Experience**. Development of required course to build community and identity among first-year physics majors, thereby improving retention.
2015–	**Colloquium Committee** (chair 2016-2017, co-chair 2017-2019). Advertised strongly to physics majors, working closely with student clubs to increase student attendance. Hosted workshop on using 3D printer and professional development for students.
	U of C
2005-6	Member of the Graduate Admissions Committee
	Conference Organization
TeVPA	Mini-workshop on the Radio Detection of Cosmic Rays and Neutrinos 2017
ANITA	Collaboration Meeting hosted at Cal Poly 2017
YWC	Young Women's Conference 2010-2012
IMPACT	KICP IMPACT Workshops 2008
	Referee
2019–	French National Research Agency
2018–	Physical Review D
2018–	NSF CAREER Grants
2018–	Cambridge University Press Books
2018–	Netherlands Organisation for Scientific Research (NWO), Research Foundation - Flanders (FWO), European Research Council ERC Advance Grants
2016–	Deutsche Forschungsgemeinshaft (German Research Foundation) Grants
2014–	American Journal of Physics
	Non-Refereed Invited Articles
NASA	**S. Wissel.** Above the Earth, a Neutrino View of the High-Energy Universe, *NASA Physics of the Cosmos Newsletter*, 2017.

	Press
Gizmodo	R. Mandelbaum. Astronomers Propose Huge New Telescope System to Understand the Most Energetic Particles Ever Detected, 2018
ScienceNews	E. Conover. Hints of weird particles from space may defy physicists' standard model, 2018
NewScientist	C. Whyte. Weird signals in Antarctica could be hints of a new realm of physics, 2018
KCBX	G. Mart, Issues & Ideas, 2018
Physics World	E. Cartlidge. Mysterious radio signals could be from new type of neutrino, 2018.
Symmetry	A. Anderson. High adventure physics, 2015.
Symmetry	L. A. White. Cosmic rays on demand, 2014.

Mentoring and Outreach

Cal Poly	**Undergraduate Research Opportunities and Professional Development**
2019–	**Blast Off with Computing for Research** Series of workshops aimed to introduce early career undergraduates to research and computing for research.
2016-2018	Graduate thesis committee member for Peng Cao, University of Delaware
2017–	Mentor and liaison for CAMPARE at Cal Poly, an internship program that pairs students from underrepresented minority groups (URMs) at Cal. State Univ.'s with internships at major research centers
2016–	Regular workshops for physics students on personal statements, resumes, career exploration, 3D printers, computational physics projects through the colloquium and local Frost undergraduate research program.
2015–	Mentorship of ∼5-10 undergraduates on research projects related to the radio detection of ultra-high-energy neutrinos. Interdisciplinary research group with EE Prof. Dean Arakaki.

UCLA	**Outreach for Women in Science**
2012-2015	Mentor for subgroup of Women in Physics and Astronomy at UCLA for postdocs, grad. students and undergrads
2012	Presenter at PPPL Young Women's Conference

PPPL	**Topics in Science Education and Outreach**
2011-12	**CLOμDs**: Mentored high-school students from underrepresented minority groups in building experiment flown on microgravity flights.
2010-12	**CLOμDs**: Led 4 teams of K-12 teachers and museum educators on zero-gravity flights to investigate science topics that could translate into curricula, including fluid dynamics of splashes, the Rayleigh-Taylor instability, and rocket fuel. Worked with teacher groups for months in preparing for flights and developing curricula.
2011	**Director of PPPL's outreach to female students.** Director of Young Women's Conference in which 200-400 young women in grades 7-10 meet professional female scientists, placing special emphasis on underrepresented minorities and diverse career paths. Doubled student and scientist participation at YWC. Several lectures and invited talks on women in physics.
2010-2012	**Mentorship** of high-school and undergraduate students in research in complex plasmas and laboratory astrophysics.
2010-2012	**Longitudinal assessment** of science education programs

UofC	**Outreach and Workshops**
2009-10	**Astro Conversations** lecturer at the Adler Planetarium SVL Lab
2008-10	**Women in Physics Chat & Chow** Co-founder: Organized events for graduate students and undergraduates to increase visibility among female physics graduate students
2007-8	**Adler Planetarium Teen Astronomers Camp** introducing gifted middle school students to the basics of high-altitude ballooning by launching a weather balloon with a scientific payload
2008-10	**S.T.O.M.P.** Weekly after-school program for elementary-school students which required designing activities that emphasized experimentation and scientific inquiry.