Chen-Yu Liu

Curriculum Vitae

Indiana University
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Education:

1997–2002	Ph.D., Physics, Princeton University, Princeton, NJ
1994–1997	B.S., Physics, National Taiwan University, Taipei, Taiwan

Professional Appointments:

2021–present	Adjunct Professor of Physics, University of Illinois at Urbana-Champaign
2019–present	James H. Rudy Professor of Physics, Indiana University
2017–present	Professor, Indiana University
2012–2017	Associate Professor, Indiana University
2005–2012	Assistant Professor, Indiana University
2002–2005	Director's Funded Post-Doctoral Fellow, Los Alamos National Laboratory

Collaboration/Experiment Participation:

2020–present	Neutron Beam Lifetime Experiment (BL3) experiment
2014–present	LANL neutron electric dipole moment (nEDM@LANL) experiment (co-spokesperson, 2017-present)
2009–present	UCNτ, Neutron lifetime in a Magneto-Gravitational Trap (co-spokesperson, 2011-2017)
2002–present	SNS neutron EDM experiment
2002–2020	Solid-State electron EDM experiment & 5^{th} force searches
2005–2011	Solid-O_2 UCN Source
1997–present	UCNA, measurement of the β asymmetry of the Neutron β-decay

Awards & Honors:

2019	James H. Rudy Professor, Indiana University.
2018	Fellow, American Physics Society.
2016–2017	Rosen Scholar, Los Alamos Neutron Science Center, Los Alamos National Laboratory.

2009	Outstanding Contributions to Teaching, selected by undergraduate physics students, Indiana University.
2008	Joseph and Sophia Konopinski Prize, awarded in recognition of excellence in teaching of physics, Indiana University.
2008	Trustees Teaching Excellence Recognition Award, Indiana University.
2007–08	Sloan Research Fellow, Alfred P. Sloan Foundation.
2003	19^{th} Louis Rosen Prize, outstanding thesis completed at LANSCE, Los Alamos Neutron Science Center (LANSCE) User Group.

Grants:

2021–2024	"Mid-scale RI-1 (M1:IP): BL3 Neutron Lifetime Apparatus," invited for submission, Co-PI ($7,679,479), National Science Foundation (PHY-2114760).
2019–2022	"Studies in Nuclear Physics and Fundamental Interactions at Indiana University," Co-PI ($5.48M), National Science Foundation (PHY-1913789).
2018–2021	"MRI Consortium: Development of a Room-Temperature Apparatus to Measure the Electric Dipole Moment of the Neutron, for a fast-track ten-fold improvement in sensitivity," PI ($2M), National Science Foundation (PHY-1828512).
2018-2021	"Collaborative Research: Axion Resonant InterAction DetectioN Experiment (ARIADNE) - a continuation proposal," Co-PI ($144,744) National Science Foundation (PHY-1806757).
2017–2018	"Collaborative Fellowship Award," PI ($10K), Institute for Advanced Study, Indiana University.
2016–2017	"Rosen Scholar—Ultra Cold Neutron Research," PI ($236,757), Los Alamos Neutron Science Center.
2016-2018	"Collaborative Research: Axion Resonant InterAction DetectioN Experiment (ARIADNE)," Co-PI ($102,248.00), National Science Foundation (PHY-1509176).
2016–2019	"Experimental Nuclear Physics and Fundamental Interactions at Indiana University," Co-PI ($5.38M), National Science Foundation (PHY-1614545).
2015–2018	"A Measurement of the Neutron Lifetime in a Magneto-Gravitational Bottle," PI ($150K), NIST Precision Measurement Grant.
2013–2016	"Experimental Nuclear Physics and Fundamental Interactions at Indiana University," Co-PI ($3.79M), National Science Foundation (PHY-1306942).
2013–2014	"Precision Measurement of the Neutron beta-decay Lifetime," Faculty Research Support Program, PI ($50K), Indiana University.
2011–2013	"Studies in Nuclear Physics and Fundamental Interactions at Indiana University," Co-PI ($4.18M), National Science Foundation (PHY-1068712).
2008–2010	"Studies in Nuclear Physics and Fundamental Interactions at Indiana University," Co-PI ($2.44M), National Science Foundation (PHY-0969490).

2008–2012	"Neutron Electric Dipole Experiment at SNS," Co-PI ($879K), National Science Foundation.
2009–2010	"Investigation of Superconducting Quantum Interference (SQUID) Operation in an HV Environment for the Neutron EDM experiment," PI ($66K), Los Alamos National Lab/DOE Office of Science.
2008–2009	"Development of a Novel Ultracold Neutron Source," Faculty Research Support Program, PI ($75K), Indiana University.
2007–2008	Sloan Research Fellowship ($45K), Alfred P. Sloan Foundation.
2005–2008	"Studies in Experimental Nuclear Physics at Indian University," Co-PI($6M), National Science Foundation (PHY-0758018).
2006	Ralph E. Powe Junior Faculty Enhancement Award ($10K), Oak Ridge Associated Universities.

Publications:

[1] Nancy Aggarwal et al. *Characterization of magnetic field noise in the ARIADNE source mass rotor*. 2020. arXiv: 2011.12617 [physics.ins-det].

[2] F. M. Gonzalez et al. "Improved Neutron Lifetime Measurement with UCNτ". *Phys. Rev. Lett.* 127 (16 Oct. 2021), p. 162501. DOI: 10.1103/PhysRevLett.127.162501.

[3] Yun Chang Shin et al. "Compact ultracold neutron source concept for low-energy accelerator-driven neutron sources". *The European Physical Journal Plus* 136.8 (Aug. 2021), p. 882. DOI: 10.1140/epjp/s13360-021-01740-1.

[4] Stefan Döge et al. "Incoherent approximation for neutron up-scattering cross sections and its corrections for slow neutrons and low crystal temperatures". *Phys. Rev. C* 103 (5 May 2021), p. 054606. DOI: 10.1103/PhysRevC.103.054606.

[5] K. Kuk et al. "Projection imaging with ultracold neutrons". *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 1003 (2021), p. 165306. DOI: 10.1016/j.nima.2021.165306.

[6] Z. Tang et al. "Ultracold neutron properties of the Eljen-299-02D deuterated scintillator". *Review of Scientific Instruments* 92.2 (2021), p. 023305. DOI: 10.1063/5.0030972.

[7] X. Sun et al. "Improved limits on Fierz interference using asymmetry measurements from the Ultracold Neutron Asymmetry (UCNA) experiment". *Phys. Rev. C* 101 (3 Mar. 2020), p. 035503. DOI: 10.1103/PhysRevC.101.035503.

[8] M.W. Ahmed et al. "A new cryogenic apparatus to search for the neutron electric dipole moment". *Journal of Instrumentation* 14.11 (Nov. 2019), P11017–P11017. DOI: 10.1088/1748-0221/14/11/p11017.

[9] Leung, K.K.H. et al. "The neutron electric dipole moment experiment at the Spallation Neutron Source". *EPJ Web Conf.* 219 (2019), p. 02005. DOI: 10.1051/epjconf/201921902005.

[10] Nathan Callahan et al. "Monte Carlo simulations of trapped ultracold neutrons in the UCNτ experiment". *Phys. Rev. C* 100 (1 July 2019), p. 015501. DOI: 10.1103/PhysRevC.100.015501.

[11] Z. Tang et al. "Search for the Neutron Decay $n \to X + \gamma$, Where X is a Dark Matter Particle". *Phys. Rev. Lett.* 121 (2 July 2018), p. 022505. DOI: 10.1103/PhysRevLett.121.022505.

[12] X. Sun et al. "Search for dark matter decay of the free neutron from the UCNA experiment: $n \to \chi + e^+e^-$". *Phys. Rev. C* 97 (5 May 2018), p. 052501. DOI: 10.1103/PhysRevC.97.052501.

[13] R. W. Pattie Jr. et al. "Measurement of the neutron lifetime using a magneto-gravitational trap and in situ detection". *Science* 360.6389 (2018), pp. 627–632. DOI: 10.1126/science.aan8895.

[14] M. A.-P. Brown et al. "New result for the neutron β-asymmetry parameter A_0 from UCNA". *Phys. Rev. C* 97 (3 Mar. 2018), p. 035505. DOI: 10.1103/PhysRevC.97.035505.

[15] T. M. Ito et al. "Performance of the upgraded ultracold neutron source at Los Alamos National Laboratory and its implication for a possible neutron electric dipole moment experiment". *Phys. Rev. C* 97 (1 Jan. 2018), p. 012501. DOI: 10.1103/PhysRevC.97.012501.

[16] K. P. Hickerson et al. "First direct constraints on Fierz interference in free-neutron β decay". *Phys. Rev. C* 96 (4 Oct. 2017), p. 042501. DOI: 10.1103/PhysRevC.96.042501.

[17] C. L. Morris et al. "A new method for measuring the neutron lifetime using an in situ neutron detector". *Review of Scientific Instruments* 88.5 (2017), p. 053508. DOI: 10.1063/1.4983578.

[18] R.W. Pattie et al. "Evaluation of commercial nickel–phosphorus coating for ultracold neutron guides using a pinhole bottling method". *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 872 (2017), pp. 64–73. DOI: 10.1016/j.nima.2017.07.051.

[19] L.J. Broussard et al. "Detection system for neutron β decay correlations in the UCNB and Nab experiments". *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 849 (2017), pp. 83–93. DOI: 10.1016/j.nima.2016.12.030.

[20] S. J. Seestrom et al. "Total cross sections for ultracold neutrons scattered from gases". *Phys. Rev. C* 95 (1 Jan. 2017), p. 015501. DOI: 10.1103/PhysRevC.95.015501.

[21] D.G. Phillips et al. "Neutron-antineutron oscillations: Theoretical status and experimental prospects". *Physics Reports* 612 (2016). Neutron-Antineutron Oscillations: Theoretical Status and Experimental Prospects, pp. 1–45. DOI: 10.1016/j.physrep.2015.11.001.

[22] S. J. Seestrom et al. "Upscattering of ultracold neutrons from gases". *Phys. Rev. C* 92 (6 Dec. 2015), p. 065501. DOI: 10.1103/PhysRevC.92.065501.

[23] Zhehui Wang et al. "A multilayer surface detector for ultracold neutrons". *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 798 (2015), pp. 30–35. DOI: 10.1016/j.nima.2015.07.010.

[24] P.-H. Chu et al. "Search for exotic short-range interactions using paramagnetic insulators". *Phys. Rev. D* 91 (10 May 2015), p. 102006. DOI: 10.1103/PhysRevD.91.102006.

[25] Y. J. Kim et al. "New experimental limit on the electric dipole moment of the electron in a paramagnetic insulator". *Phys. Rev. D* 91 (10 May 2015), p. 102004. DOI: 10.1103/PhysRevD.91.102004.

[26] J. David Bowman et al. *Determination of the Free Neutron Lifetime*. 2014. arXiv: 1410.5311 [nucl-ex].

[27] A R Young et al. "Beta decay measurements with ultracold neutrons: a review of recent measurements and the research program at Los Alamos National Laboratory". *Journal of Physics G: Nuclear and Particle Physics* 41.11 (Oct. 2014), p. 114007. DOI: 10.1088/0954-3899/41/11/114007.

[28] D. J. Salvat et al. "Storage of ultracold neutrons in the magneto-gravitational trap of the UCNτ experiment". *Phys. Rev. C* 89 (5 May 2014), p. 052501. DOI: 10.1103/PhysRevC.89.052501.

[29] C.-Y. Liu, D. Salvat, and E. Adamek. "Phase Space Evolution in Neutron Traps for Measurements of the Neutron Beta-Decay Lifetime". *Next Generation Experiments to Measure the Neutron Lifetime*, pp. 37–57. DOI: 10.1142/9789814571678_0005.

[30] E. I. Sharapov et al. "Measurements of ultracold neutron upscattering and absorption in polyethylene and vanadium". *Phys. Rev. C* 88 (3 Sept. 2013), p. 037601. DOI: 10.1103/PhysRevC.88.037601.

[31] C.M. Lavelle, C.-Y. Liu, and M.B. Stone. "Toward a new polyethylene scattering law determined using inelastic neutron scattering". *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 711 (2013), pp. 166–179. DOI: 10.1016/j.nima.2013.01.048.

[32] D. J. Salvat et al. "Investigating solid α-15N2 as a new source of ultra-cold neutrons". *EPL (Europhysics Letters)* 103.1 (July 2013), p. 12001. DOI: 10.1209/0295-5075/103/12001.

[33] E. I. Sharapov et al. "Upscattering of ultracold neutrons from the polymer $[C_6H_{12}]_n$". *Phys. Rev. C* 88 (6 Dec. 2013), p. 064605. DOI: 10.1103/PhysRevC.88.064605.

[34] A. Saunders et al. "Performance of the Los Alamos National Laboratory spallation-driven solid-deuterium ultra-cold neutron source". *Review of Scientific Instruments* 84.1 (2013), p. 013304. DOI: 10.1063/1.4770063.

[35] M. P. Mendenhall et al. "Precision measurement of the neutron β-decay asymmetry". *Phys. Rev. C* 87 (3 Mar. 2013), p. 032501. DOI: 10.1103/PhysRevC.87.032501.

[36] D.J. Salvat et al. "A boron-coated ionization chamber for ultra-cold neutron detection". *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 691 (2012), pp. 109–112. DOI: 10.1016/j.nima.2012.06.041.

[37] A. T. Holley et al. "A high-field adiabatic fast passage ultracold neutron spin flipper for the UCNA experiment". *Review of Scientific Instruments* 83.7 (2012), p. 073505. DOI: 10.1063/1.4732822.

[38] T. M. Ito et al. "Effect of an electric field on superfluid helium scintillation produced by α-particle sources". *Phys. Rev. A* 85 (4 Apr. 2012), p. 042718. DOI: 10.1103/PhysRevA.85.042718.

[39] Young Jin Kim et al. "A high dynamic range data acquisition system for a solid-state electron electric dipole moment experiment". *Review of Scientific Instruments* 83.1 (2012), p. 013502. DOI: 10.1063/1.3676163.

[40] J. L. Hewett et al. "Fundamental physics at the intensity frontier. Report of the workshop held December 2011 in Rockville, MD." (June 2012). DOI: 10.2172/1042577.

[41] F. Atchison et al. "Production of ultracold neutrons from cryogenic 2H2, O2 and C2H4 converters". *EPL (Europhysics Letters)* 95.1 (June 2011), p. 12001. DOI: 10.1209/0295-5075/95/12001.

[42] Y J Kim et al. "Experimental search for the electron Electric Dipole Moment using solid state techniques". *Journal of Physics: Conference Series* 312.10 (Sept. 2011), p. 102009. DOI: 10.1088/1742-6596/312/10/102009.

[43] J. Liu et al. "Determination of the Axial-Vector Weak Coupling Constant with Ultracold Neutrons". *Phys. Rev. Lett.* 105 (18 Oct. 2010), p. 181803. DOI: 10.1103/PhysRevLett.105.181803.

[44] C. M. Lavelle et al. "Ultracold-neutron production in a pulsed-neutron beam line". *Phys. Rev. C* 82 (1 July 2010), p. 015502. DOI: 10.1103/PhysRevC.82.015502.

[45] Yunchang Shin et al. "Microscopic model for the neutron dynamic structure factor of solid methane in phase II". *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 620.2 (2010), pp. 382–390. DOI: https://doi.org/10.1016/j.nima.2010.03.109.

[46] R. W. Pattie et al. "First Measurement of the Neutron β Asymmetry with Ultracold Neutrons". *Phys. Rev. Lett.* 102 (1 Jan. 2009), p. 012301. DOI: 10.1103/PhysRevLett.102.012301.

[47] F. Atchison et al. "Erratum: Cold Neutron Energy Dependent Production of Ultracold Neutrons in Solid Deuterium [Phys. Rev. Lett. 99, 262502 (2007)]". *Phys. Rev. Lett.* 101 (18 Oct. 2008), p. 189902. DOI: 10.1103/PhysRevLett.101.189902.

[48] F. Atchison et al. "Cold Neutron Energy Dependent Production of Ultracold Neutrons in Solid Deuterium". *Phys. Rev. Lett.* 99 (26 Dec. 2007), p. 262502. DOI: 10.1103/PhysRevLett.99.262502.

[49] A. Esler et al. "Dressed spin of ^{3}He". *Phys. Rev. C* 76 (5 Nov. 2007), p. 051302. DOI: 10.1103/PhysRevC.76.051302.

[50] C-Y. Liu and A R Young. "Ultra-cold Neutron Production in Anti-ferromagnetic Oxygen Solid" (2004). eprint: https://arxiv.org/abs/nucl-th/0406004.

[51] Roger E. Hill and C.-Y. Liu. "Temperature-dependent neutron scattering cross-sections for polyethylene". *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 538.1 (2005), pp. 686–691. DOI: 10.1016/j.nima.2004.08.125.

[52] C.-Y. Liu and S. K. Lamoreaux. "A new search for a permanent dipole moment of the electron in a solid state system". *Modern Physics Letters A* 19.13n16 (2004), pp. 1235–1238. DOI: 10.1142/S0217732304014628.

[53] C.-Y. Liu et al. "A New Source of Ultracold Neutrons". *Celebrating 60 Years: Los Alamos National Laboratory, 1943-2003* 28 (2003), p. 202.

[54] A Saunders et al. "Demonstration of a solid deuterium source of ultra-cold neutrons". *Physics Letters B* 593.1 (2004), pp. 55–60. DOI: 10.1016/j.physletb.2004.04.048.

[55] C.-Y. Liu et al. "An apparatus to control and monitor the para-D2 concentration in a solid deuterium, superthermal source of ultra-cold neutrons". *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors*

and Associated Equipment 508.3 (2003), pp. 257–267. DOI: 10.1016/S0168-9002(03)01666-8.

[56] C. L. Morris et al. "Measurements of Ultracold-Neutron Lifetimes in Solid Deuterium". *Phys. Rev. Lett.* 89 (27 Dec. 2002), p. 272501. DOI: 10.1103/PhysRevLett.89.272501.

[57] Albert Young et al. "A measurement of the neutron beta-asymmetry using ultra-cold neutrons". *Fundamental Physics with Pulsed Neutron Beams*, pp. 164–180. DOI: 10.1142/9789812811189_0015.

[58] K. Kirch et al. "Status of the new Los Alamos UCN source". *AIP Conference Proceedings* 576.1 (2001), pp. 289–292. DOI: 10.1063/1.1395306.

[59] Roger E Hill et al. "Performance of the prototype LANL solid deuterium ultra-cold neutron source". *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* 440.3 (2000), pp. 674–681. DOI: 10.1016/S0168-9002(99)01060-8.

[60] C.-Y. Liu, A. R. Young, and S. K. Lamoreaux. "Ultracold neutron upscattering rates in a molecular deuterium crystal". *Phys. Rev. B* 62 (6 Aug. 2000), R3581–R3583. DOI: 10.1103/PhysRevB.62.R3581.

Invited Talks:

2021 Munich Physics Colloquium (online), jointly organized by the TUM, LMU and Munich Max-Planck Institutes, "Goldilocks and the three bears or: How we made the most precise neutron lifetime measurement, and why." (Dec. 6, 2021).

2021 Institute of Nuclear and Particle Physics Seminar (online), "Goldilocks and the three bears or: How we made the most precise neutron lifetime measurement, and why." Ohio University, Athens, Ohio (Nov. 30, 2021).

2021 Invited talk (online) in the 11th International Workshop on the CKM Unitarity Triangle (CKM2021), "New results from UCNTau and implication for Vud" hosted by University of Melbourne, Australia (Nov. 23, 2021)

2021 Nuclear and Particle Physics Colloquium, "Fundamental Neutron Physics: Probing TeV Physics with neV neutrons," MIT, Boston (Nov. 8, 2021).

2021 Invited Closing Talk (online), "Highlights of nEDM2021 Workshop—my personal perspectives," International Workshop on Searches for a Neutron Electric Dipole Moment, Les Houches School of Physics, France (Feb. 14–19, 2021).

2020 Invited talk (online), "Probing for BSM physics through Precision Measurements of the Neutron Lifetime and the Neutron Electric Dipole Moment," Workshop on Developing New Directions in Fundamental Physics (DND) 2020, (Vancouver, Nov. 4–6, 2020).

2020 Physics Colloquium (online), "Measuring The Neutron Lifetime: Much Ado About Nothing?" TRIUMF (Vancouver, Canada, Sep. 17, 2020).

2020 Physics Colloquium (online), "The Neutron Lifetime Puzzle," North Carolina State University (Rayleigh, NC, Aug. 31, 2020).

2020 Invited Talk (online), "Magnetic Bottles for Neutrons and Tritium Atoms," Project 8 Collaboration Meeting (May 20, 2020).

2020 Physics Colloquium, "Magnetic Trapping the Ultracold Neutrons and The Neutron Lifetime Puzzle," Illinois Institute of Technology (Chicago, IL, Feb. 27, 2020).

2020 Nuclear Physics Seminar, "A Modern Measurement of the Neutron Lifetime Using Ultracold Neutrons in a Magneto-gravitational Trap," University of Illinois Urbana-

Champaign, (Urbana-Champaign, IL, Feb. 24, 2020).

2020 Review talk, "^{199}Hg as the cohabing and the external magnetometer for the LANL nEDM experiment," LDRD Project Review (Los Alamos, NM, Jan. 30, 2020).

2019 Invited Talk, "Fundamental Physics Research with Neutrons and Neutrinos," BESAC subcommittee meeting (Washington DC, Nov 14–15, 2019).

2019 Invited Talk, "New Experimental Techniques: Magnetic Storage of UCN," INT workshop INT-19-75W Fundamental Symmetries Research with Beta Decay (Seattle, Nov 4–8, 2019).

2019 Plenary Talk, "Current Status and Future Prospects of the EDM measurements," APS DNP annual meeting (Crystal City, VA, October 14–17, 2019).

2019 Physics Seminar, "A Precision Neutron Lifetime Measurement using UCN in a Magneto-Gravitational Trap," Oak Ridge National Laboratory (Oak Ridge, TN, September 12, 2019).

2019 Workshop invited talk, "Measuring the Neutron Electric Dipole Moment using an intense Ultracold Neutron Source at Los Alamos," FRIB Theory Alliance – Topical Program: Hadronic Electric Dipole Moments in the FRIB Era: From Proton to Protactinium (East Lansing, MI, August 12–23, 2019).

2019 Physics Seminar, "Searching for the Electric Dipole Moment of the Neutron to Explain the Matter-Antimatter Imbalance of the Universe," National Central University (Zhongli, Taiwan, June 16, 2019).

2019 Physics Seminar, "Searching for the Electric Dipole Moment of the Neutron to Explain the Matter-Antimatter Imbalance of the Universe," National Tsing Hua University (Hsinchu, Taiwan, June 11, 2019).

2019 Physics Seminar, "Searching for the Electric Dipole Moment of the Neutron to Explain the Matter-Antimatter Imbalance of the Universe," National Taiwan University (Taipei, Taiwan, June 9, 2019).

2019 Physics Colloquium, "Searching for the Electric Dipole Moment of the Neutron to Explain the Matter-Antimatter Imbalance of the Universe," Academia Sinica (Taipei, Taiwan, May 31, 2019).

2019 The Helmut W. Baer Lecture, "A Modern Precision Neutron Lifetime Measurement using a Magneto-Gravitational Trap," University of Michigan (Ann Arbor, MI, April. 10, 2019).

2019 Physics Colloquium, "The Neutron Lifetime Puzzle," University of Toronto, (Toronto, Canada, March. 29, 2019).

2019 Physics Colloquium, "Unresolved Problems in Neutron Decay," Dartmouth College (Hanover, NH, Feb. 8, 2019).

2018 Workshop invited talk, "Neutron Lifetime Experiments," Workshop on Beta-decay as A Probe of New Physics, Amherst Center of Fundamental Interactions (Amherst, MA, Nov. 1–3, 2018).

2018 Keynote speaker, "A Modern Precision Neutron Lifetime Measurement using a Magneto-Gravitational Trap," WE-Heraeus-Seminar on Particle Physics with Cold and Ultra-Cold Neutrons (Physikzentrum Bad Honnef, Germany, Oct. 24–26, 2018).

2018 Physics Colloquium, "Unresolved Problems in Neutron Decay," Carnegie-Mellon University (Pittsburg, PA, Oct. 8, 2018).

2018 Conference invited talk, "Fundamental Physics at the LANSCE Ultracold Neutron

Source," CAARI 25th Conference on Application of Accelerators in Research and Industry (Grapevine, TX, Aug. 16, 2018).

2018 Three invited lectures on "Neutrons and Fundamental Symmetries Experiments," National Nuclear Physics Summer School, Yale University (New Haven, CT, July 2018).

2018 Invited Lecture, "EDMs: an experimental landscape," the Axions and CP violation workshop (Grenoble, France, May 2018).

2018 Review talk, "UCNτ: LANL Neutron Lifetime Experiment using a Magneto-Gravitational Trap," Neutron Science Review, Los Alamos National Laboratory (Los Alamos, NM, Mar. 14, 2018).

2018 Physics Colloquium, "A Modern Precision Neutron Lifetime Measurement using a Magneto-Gravitational Trap," Jefferson Laboratory (Newport News, VA Feb. 7, 2018).

2018 Physics Colloquium, "Unresolved Problems in Neutron Decay," Indiana University (Bloomington, IN, Jan. 10, 2018).

2017 Nuclear Physics Seminar, "A Modern Precision Neutron Lifetime Measurement using a Magneto-Gravitational Trap," Argonne National Laboratory (Chicago, IL, Dec. 18, 2017).

2017 Invited conference talk, "Precision Neutron Lifetime Measurement using a Magneto-Gravitational Trap," SouthEast Section American Physics Society (SESAPS) meeting (Milledgeville, GA, Nov. 18, 2017).

2017 Physics Colloquium, "Unresolved Problems in Neutron Decay," Caltech (Pasadena, CA, Nov. 16, 2017).

2017 Invited conference talk, "Precision Neutron Lifetime Measurement using a Magneto-Gravitational Trap," Institute of Nuclear Theory (INT) Workshop on Neutron-Antineutron Oscillations: Appearance, Disappearance, and Baryogenesis, (Seattle, WA, October 23 - 27, 2017).

2017 Nuclear Physics Seminar, "Precision Neutron Lifetime Measurement using a Magneto-Gravitational Trap," Nortre Dame University (Oct. 2, 2017).

2017 Invited conference talk, "Precision Neutron Lifetime Measurement using a Magneto-Gravitational Trap," EXA2017, ÖAW (Vienna, Austria, September 14, 2017).

2016 Plenary talk, "Searching for the Electric Dipole Moment of the Neutron: the Holy Grail of Precision Measurements," the international SPIN conference (Urbana Champaign, IL, September 26–30, 2016).

2016 Invited conference talk, "Physics of Neutron Beta-decay," the Kavli Institute of Theoretical Physics (KITP) Nuclear Physics Conference on "Symmetry Tests in Nuclei and Atoms" (Santa Barbara, CA, September 19–23, 2016).

2016 Invited meeting talk, "Contemporary Issues in Fundamental Neutron Physics: the Electric Dipole Moment and the Lifetime," in the Jefferson Laboratory Users meeting (Newport News, VA, June 20–22, 2016).

2016 Invited workshop talk, "UCNtau: A Precision Measurement of the Neutron Lifetime using a Magneto-Gravitational Trap," the International Workshop: Probing Fundamental Symmetries and Interactions with UCN (Mainz, Germany, April 10–15, 2016).

2015 Nuclear Physics Seminar, "UCNtau: A Precision Measurement of the Neutron Lifetime," Yale University (New Haven, CT, Dec. 2, 2015).

2015 Physics Colloquium, "Precision Measurements on Neutron Lifetime: Much Ado about 1 second," University of Tennessee (Knoxville, TN, Nov. 23, 2015).

2015 Invited conference talk, "UCNtau: A Precision Measurement of the Neutron Lifetime," the APS Division of Nuclear Physics meeting (Santa Fe, NM, Oct. 29, 2015).
2015 Invited workshop talk, "Overview of the Neutron Lifetime Experiments," the INT Workshop–Intersections of BSM Phenomenoloty and QCD for New Physics Searches (Seattle, WA, October 2, 2015).
2014 Invited workshop talk, "The Next Generation Bottle Experiment to Measure the Free Neutron Lifetime", Amherst Center for Fundamental Interactions (Amherst, MA, Sep 19-21, 2014).
2014 Invited conference talk, "Neutron Trapping using a Magneto-Gravitational Trap", APS April Meeting (Savannah, GA, April 5-8, 2014).
2014 Physics Colloquium, "A New Technique for Measuring the Neutron Lifetime: a lot can happen over one second", IUPUI (Indianapolis, IN, Feb. 6, 2014).
2014 Physics Colloquium, "A New Technique for Measuring the Neutron Lifetime: a lot can happen over one second", Indiana University (Bloomington, IN, Jan. 22, 2014).
2014 Review talk, "The UCNτ Apparatus and Recent Results", DOE meeting with the program directors (Germantown, DC, Jan. 28, 2014).
2013 Physics Colloquium, "Neutron Lifetime: What's the deal?", Argonne National Laboratory (Chicago, IL, Nov. 1, 2013).
2012 Nuclear Physics Seminar, "Neutron Lifetime: What's the deal?", Ohio University (Athens, OH, Oct 16, 2012).
2012 Invited conference talk, "Ultracold Neutron Production using Cryogenic Solids", American Conference on Neutron Scattering (Washington DC, June 25, 2012).
2012 Invited workshop talk, "Cold and Ultracold Neutron Source Development", Project X workshop (Fermilab, IL, June 18, 2012).
2012 Plenary talk, "Review of the Low Energy Precision Frontier parallel sessions", CIPANP 2012 (St. Petersburg, FL, June 1, 2012).
2012 Plenary talk, "Symmetries in Fundamental Physics", Shell Science Seminar, National Teachers Association (Indianapolis, IN, March 2012).
2011 Konopinski Colloquium, "Ultracold Neutrons for Low-Energy Particle Physics Experiments", Physics Department, Indiana University (Bloomington, IN, September 7, 2011).
2011 Physics seminar, "Ultracold Neutrons: a laboratory for low-energy particle physics", Oak Ridge National Laboratory (Oak Ridge, TN, March 10, 2011).
2011 Invited conference talk, "Ultracold Neutrons: a laboratory for low-energy particle physics", XXXIV Symposium on Nuclear Physics, (Cocoyoc, Morelos, Mexico, Jan. 4-7, 2011).
2010 Physics seminar, "First Experimental Limit on the Electric Dipole Moment of the Electron using GGG Paramagnetic Insulator", Physics Division Seminar, Argonne National Laboratory (Chicago, IL, December 20, 2010).
2010 Invited workshop talk, "UCN and SNS neutron EDM", Workshop on Precision Tests of the Standard Model: from Atomic Parity VIolation to Parity-Violating Lepton Scattering, European Center for Theoretical Studies in Nuclear Physics and Related Areas (Trento, Italy, Nov. 8-12, 2010).
2010 Invited conference talk, "Ultracold Neutrons: producing ideal tools for low-energy particle physics experiments", UBC2010, 2^{nd} International Ulaanbaatar Conference on

Nuclear Physics and Applications (Ulaanbaatar, Mongolia, July 26-30, 2010).

2010 Physics Colloquium, "Ultracold Neutrons: producing ideal tools for low-energy particle physics experiments", TRIUMF (Vancouver, Canada, June 17, 2010).

2010 Invited workshop talk, "First Experimental Limit on the Electric Dipole Moment of the Electron using GGG Paramagnetic Insulator", International Workshop on Particle's EDM and Implications (Shanghai, China, June 14-16, 2010).

2010 Invited workshop talk, "Coherent Neutron Scattering and Its Implications to UCN Production", UCN2010 (Osaka, Japan, Apr. 8-9, 2010).

2009 Invited workshop talk, "New Approaches to Ultracold Neutron Production", Workshop on Research Opportunities with Ultracold Neutrons in the US (Santa Fe, NM, Nov 6-7, 2009).

2009 Invited conference talk, "Investigation of New Approaches to Ultra-cold Neutron Production at IUCF", 3rd Joint Meeting of the APS Division of Nuclear Physics and the Physical Society of Japan (Waikoloa, Hawaii, Oct 13, 2009).

2009 Invited conference talk, "Search for the Electric Dipole Moment of the Electron using Solid-state Techniques", The 6th Joint Meeting of Chinese Physicists Worldwide International Conference on Physics Education and Frontier Physics, OCPA6 (Lanzhou, China, August 3-7, 2009).

2009 Lectures, "Cold Neutron and Ultracold Neutron Sources", 2^{nd} Summer School on Fundamental Neutron Physics, NIST (Gaithersburg, VA, June 22-26, 2009).

2009 Invited conference talk, "Searches for the Electric Dipole Moment of the Neutron and the Electron at sub-Kelvin Temperatures", The 4th International Symposium on Symmetries in Sub-atomic Physics, National Taiwan University (Taipei, Taiwan, June 2-5, 2009).

2009 Physics Colloquium, "Understanding Physics of Ultra-cold Neutron Production in Oxygen: a nuclear physicist's struggle to master inelastic magnetic scattering", North Carolina State University (Raleigh, NC, April 27, 2009).

2009 Physics Colloquium, "Ultracold Neutrons: producting ideal tools for low-energy particle physics experiments", University of Rhode Island (Kingston, RI, April 3, 2009).

2008 Nuclear Physics Seminar, "Experimental Results of Ultracold Neutron Production from Solid Oxygen", IUCF (Bloomington, IN, December 5, 2008).

2008 Physics Seminar, "Understanding Ultra-cold Neutron Production in Oxygen – A Nuclear Physicist's Struggle to Master Inelastic Magnetic Scattering" LANSCE (Los Alamos, NM, October 1, 2008).

2008 Invited workshop talk, "Solid Oxygen as an Intense Ultracold Neutron Source", NP08, the 4th International Workshop on Nuclear and Particle Physics at J-PARC (Mito, Ibaraki, Japan, March 5-7, 2008).

2008 Nuclear physics seminar, "Hunting for Evidence of Time Reversal Symmetry Violation: A Search for the Electric Dipole Moment of the Electron," MIT (Boston, MA, Feb 6, 2008).

2007 Physics Colloquium, "Hunting for Evidence of Time Reversal Symmetry Violation: A Search for the Electric Dipole Moment of the Electron," Amherst College (Amherst, MA, November 1, 2007).

2007 Invited talk, "An Overview of the Fundamental Neutron Physics," in the Fundamental Neutron Physics mini-Symposium, DNP07 (Newport News, VA, October 12 2007).

2007 Invited workshop talk, "Solid Oxygen based UCN source," Ultracold Neutron Workshop, TRIUMF (Canada, September 13 2007)

2007 Invited conference talk, "Search for a Permanent Electric Dipole Moment of the Electron using a Paramagnetic Insulator," Gordon Research Conference, Salve Regina University, (Newport, RI, July 18, 2007).

2007 Subatomic Physics Seminar, "Neutron Physics in a Contemporary Perspective," Los Alamos National Laboratory (Los Alamos, NM, May 10, 2007).

2007 Invited workshop talk, "Solid State EDM," EDM & CP Violation Workshop (Institute of Nuclear Theory, Seattle, WA, March 2007).

2006 Physics Colloquium, "Is Time Reversal Symmetry Conserved? A Search for the Electric Dipole Moment of the Electron," Ball State University (Muncie, IN, October 2006).

2006 Invited talk, "Ultra Cold Neutrons," 18^{th} National Nuclear Physics Summer School (Bloomington, IN, July 2006).

2006 Kellog Nuclear Physics Seminar, "A Search for a Permanent Electric Dipole Moment of the Electron in a Solid State System," Caltech (Pasadena, CA, June 2006).

2006 Medium Energy Physics Seminar, "Ultra-cold Neutron Source for Fundamental Physics" University of Illinois (Urbana Champaign, IL, April 2006).

2005 Nuclear Physics Seminar, "A Search for a Permanent Electric Dipole Moment of the Electron in a Solid State System," University of Maryland (College Park, MD, November 2005).

2005 Colloquium, "A Search for a Permanent Electric Dipole Moment of the Electron in a Solid State System," Illinois Institute of Technology (Chicago, IL, October 2005).

2005 Plenary Talk, "A New Search for a Permanent Electric Dipole Moment of the Electron in a Solid Paramagnetic System," The 13th International Conference on Supersymmetry and Unification of Fundamental Interactions (Durham, United Kingdom, July 18-23 2005).

2005 Nuclear Physics seminar, "Progress Report on a New Search for a Permanent Electric Dipole Moment of the Electron in a Solid System," Paul Scherrer Institut (Villigen, Switzerland, July 2005).

2004 Medium Energy Physics Seminar, "A New Search for a Permanent Electric Dipole Moment of the Electron in a Solid State System," University of Illinois at Urbana-Champaign (Urbana, IL, April 2004).

2004 Nuclear physics seminar, "Experimental Particle Physics at Milli-Kelvin Temperatures – Ultra-cold Neutrons and the Electron Electric Dipole Moment," Indiana university (Bloomington, IN, Feb. 2004).

2003 Physics seminar, "A Search for Electric Dipole Moment," the National Center for Theoretical Sciences (Hsinchu, Taiwan, Nov. 2003).

2003 Invited conference talk, "An Electric Dipole Moment Search to Test the CP Violation," 2003 International Symposium on Cosmology and Particle Astrophysics (The Center for Academic Excellence on Cosmology and Particle Astrophysics, Taipei, Taiwan, Nov. 2003).

2003 Physics/Theory colloquium, "Superthermal Ultra-cold Neutron Sources: A Current Overview and Future Prospects," Los Alamos National Laboratory (Los Alamos, NM, Feb. 2003).

2002 Invited conference talk, "A Solid Deuterium UCN Source at LANSCE," n$\bar{n}$ conference

(Bloomington, IN, Sep. 2002).

2001 Atomic physics seminar, "Solid Deuterium UCN Source," Kyoto University (Kyoto, Japan, May 2001).

2001 Nuclear physics seminar, "Superthermal Ultra-cold Neutron Sources: A Current Project and Future Possibilities," Indiana University (Bloomington, IN, Feb. 2001).

2000 Invited talk, "Solid Deuterium UCN Source," UCN workshop (Los Alamos, NM, Sep. 2000).

Contributed Talks:

2020 "Statistical Biases in the UCNtau Experiment," 2020 Fall Meeting of the APS Division of Nuclear Physics (Oct. 29–Nov. 1, 2020)

2020 "^{199}Hg as the cohabing and the external magnetometer for the LANL nEDM experiment," LDRD Project Review Meeting, (LANSCE, Los Alamos, January 30, 2020)

2016 "A Plan for a Ten-fold Improvement of the Neutron Electric Dipole Moment with the LANL UCN Source," DNP meeting (Vancouver, Canada, Oct. 13-16, 2016)

2013 "Systematic Effects of Trapping UCN in the UCNτ Experiment," DNP meeting (Newport News, VA, Oct. 23-26, 2013).

2012 "Towards a 0.1 s Measurement of the Neutron Lifetime in a Magneto-Gravitational Trap," NSAC meeting (Chicago, IL, August 10-11, 2012).

2009 "Magnetic or Not? UCN Production in Solid Oxygen," 7^{th} International Workshop on Ultra Cold and Cold Neutron Physics and Sources (St. Petersburg, Russia, June 8-14, 2009).

2005 "Progress Report on a search on electric dipole moment of electron in a solid state system," 5^{th} International Conference on Ultra Cold & Cold Neutrons – Physics & Source (Peterhof, Russia, July 13-18, 2005).

2005 "Solid Oxygen as an Intense UltraCold Neutron Source," 5^{th} International Conference on Ultra Cold & Cold Neutrons – Physics & Source (Peterhof, Russia, July 13-18, 2005).

2003 "Search for a Permanent Electric Dipole Moment (EDM) of the Electron using a Paramagnetic Crystal," Symposium 2003 (Los Alamos, NM, Aug. 2003).

2002 "Solid Oxygen as a Source of Ultra-Cold Neutrons," The APS April Meeting (Albuquerque, NM, Apr. 2002).

2002 "An Apparatus to Store, Polarize and Spin-Flip Ultra-Cold Neutrons," The APS April Meeting (Albuquerque, NM, Apr. 2002).

2001 "Implementation of an Intense UCN Source Coupled to a Spallation Target at LANSCE," International Nuclear Physics Conference (Berkeley, CA, Aug. 2001).

2001 "Physics of Superthermal Sources," The Third International UCN Workshop (Pushkin, Russia, June 2001).

2001 "A Solid Ortho Deuterium Ultra-cold Neutron Source," The APS April Meeting (Washington, D.C., April 28-May 1, 2001).

2000 "An Apparatus to Convert Para to Ortho Deuterium and Measure the Para Concentration," Division of Nuclear Physics Fall Meeting 2000 (Williamsburg, VA, Oct. 4-7, 2000).

2000 "Anomalous Up-scattering of UCN by Para Impurities in a Deuterium Superthermal

UCN Source at LANSCE," The APS April Meeting (Long Beach, CA, April 29-May 2, 2000).

1999 "Overview of a Solid Deuterium Superthermal UCN Source at LANSCE," The Second International UCN Workshop (Pushkin, Russia, June 1999).

1998 "A Solid Deuterium Superthermal Source of Ultra-Cold Neutrons Coupled to Spallation Targets at LANSCE," Division of Nuclear Physics Fall Meeting 1998 (Santa Fe, NM, Oct. 1998).

Teaching Experiences:

Course Instructor Indiana University

Course Number	**Course Title: semester (# of students)**
P150	Basic Physics of Sounds: Spring 2022 (60)
P202	General Physics II: Spring 2009 (241); Spring 2006 (248); Fall 2005 (167)
P221, P222	General Physics I, II: Spring 2015 (75); Spring 2014 (102); Fall 2013 (134), Spring 2010 (46)
P221H, P222H	General Physics I, II Honors: Spring 2013 (35); Fall 2012 (55)
P301	Physics III: Fall 2019 (34); Fall 2008 (22); Fall 2007 (25)
P441, P442	Classical Mechanics I, II: Spring 2019 (10); Fall 2018 (30); Spring 2018 (14); Fall 2017 (39)
P451/P551	Experiments in Modern Physics: Fall 2021 (10); Fall 2020 (8); Spring 2020 (9); Fall 2009 (9); Spring 2009 (8); Spring 2008 (6); Spring 2007 (7)
P640, P641	Subatomic Physics I, II: Spring 2016 (7); Fall 2015 (9); Spring 2012 (10); Spring 2011 (9); Fall 2010 (8)

Postdoc Supervisor Indiana University

Yi (Jennie) Chen	2019–present
Austin Reid	2018–present, a visiting professor at Trinity College during 2020-2021
Robert Pattie	2017, now a tenure-track assistant professor at the East Tennessee State University
Adam Holley	2012–2014, now a tenured associate professor at the Tennessee Technological University
Chris Lavelle	2007–2010, now a senior staff scientist in the Johns Hopkins University Applied Physics Laboratory
Goverdhan Reddy	2007–2009, now an associate professor in the Department of Pure and Applied Physics, Guru Ghasidas University (Central University), Bilaspur, India

Graduate Student Advisor Indiana University

Ph.D. completed

Francisco Gonzalez Ph.D. 2021 "Precision Measurement of the Neutron Lifetime with the UCNtau Experiment" (2015–2021)
now a postdoc at the Oak Ridge National Laboratory

Nathan Callahan	Ph.D. 2018 "Measurement of the Neutron Beta Decay Lifetime Using Magnetically Trapped Ultracold Neutrons" (2012–2018) now a postdoc at Argonne National Laboratory
Even Adamek	Ph.D. 2017 "Measurement of the Neutron Beta Decay Lifetime Using Magnetically Trapped Ultracold Neutrons" (2011-2017) now a postdoc at the University of Mainz, Germany
Daniel Salvat	Ph.D. 2015 "A Magneto-Gravitational Neutron Trap for the Measurement of the Neutron Lifetime" (2009-2015) `https://scholarworks.iu.edu/dspace/handle/2022/19794` now a research scientist at Indian University
Maciej Karcz	Ph.D. 2014 "Electric Breakdown and Ionization Detection in Normal Liquid and Superfluid 4He for the SNS nEDM experiment" (2007-2014) now a production engineer at Intel
Young Jin Kim	Ph.D. 2011 "An Experimental Search for the Electron Electric Dipole Moment in a Gadolinium Gallium Garnet Crystal" (2006-2011) now a staff scientist at Los Alamos National Laboratory
Yunchang Shin	Ph.D. 2008 "Studies in Neutron Phase Space cooling for Cold and Ultra-Cold Neutron Sources" (2005-2008) now a staff scientist at Korea Advanced Institute of Science and Technology (Kaist), South Korea
Ph.D. in progress	
Douglas Wong	2016–present
Maria Dawid	2020–present

Undergraduate Student Mentor Indiana University

Erin Clark (2020-present); Gregory Gill (2020-present); Alicen Houff (2019–present); Josh Burdine (2018-present); Tyler Horoho (2018-2020, U. Virginia graduate school), Krishna Sai Godavarthi (2018); Aditya Phadnis (2016-2017); Thomasina O'Conner (2015-2018); Bihan Shan (2015–2016); Jenna Stoffel (Cox Research Scholar, 2014–2015); Griffin Page (2014); Bailey Slaughter (2012–2014); Christopher Pease (2011); Mak Hozo (Cox Research Scholar, 2011-2012); Sonya Sawtelle (2010–2011, Yale graduate school); Chris Cude (2010–2013, NCSU physics graduate school), Thomas Nevitt (2010-2012); Alex Jacobs (2009), Tyler Mikev (2009); Greg Manus (2008–2011), Daniel Salvat (2008–2009); Craig Huffer (2006–2008); Patrick McChesney (2006–2008), John Ulman (2006); Ming-Du Kang (Manchester College, REU, 2006) [total: 25]

Student Honors:

2021	**Alicen Houff**, Conference Experience for Undergraduates (CEU) grant to attend DNP2021 (online).
2021	**Gregory Gill**, CEU grant to attend DNP2021 (online).
2020	**Douglas Wong**,U.S. Department of Energy (DOE) Office of Science Graduate Student Research (SCGSR).

2020	**Frank Gonzalez**, Outstanding Graduate Student in Experimental Research, Physics Department, IUB.
2018	**Tyler Horoho**, CEU travel grant to attend DNP2018, Hawaii.
2016	**Nathan Callahan**, Department of Energy Office of Science Graduate Fellowship.
2015	**Evan Adamek**, IUB COAS travel grant.
2015	**Jenna Stoffel**, CEU travel grant to attend DNP2015.
2015	**Daniel Salvat**, Outstanding Graduate Student in Experimental Research, Physics Department, IUB.
2014	**Griffin Pace**, CEU travel grant to attend DNP2014.
2012	**Yun Chang Shin**, Japan Society for the Promotion of Science (JSPS) Postdoctoral Fellowship for Overseas Researchers.
2011	**Young Jin Kim**, Outstanding Graduate Student in Experimental Research, Physics Department, IUB.
2011	**Young Jin Kim**, McCormick Science Grant, College of Arts & Science, Indiana University.
2010	**Chris Cude**, CEU travel grant to attend DNP2010.
2010	**Greg Manus**, CEU travel grant to attend DNP2010.
2010	**Young Jin Kim**, First prize in the best poster, International Nuclear Physics Conference (INPC2010), Vancouver, Canada.
2010–2013	**Daniel Salvat**, Department of Energy Office of Science Graduate Fellowship.
2008	**Patrick McChesney**, CEU travel grant to attend DNP2008.
2007	**Craig Huffer**, CEU travel grant to attend DNP2007.

Professional Service:

2021	Guest Member of the Neutron Advisory Board to advice ORNL's 10-year strategic planning (Sep 27–Oct 30, 2021).
2021	Member of the National Academies Panel to review NIST's Physical Measurement Laboratory (May 17–20, 2021).
2021	Member of the DOE Comparative Review Panel, Fundamental Symmetries Program.
2020–2021	International Advisory Committee, International Workshop on Searches for a Neutron Electric Dipole Moment, Les Houches School of Physics (Feb. 14–19, 2021).
2019–2021	DNP Fellowship Selection Committee, American Physical Society.
2019	Presenter, "Fundamental Physics Research with Neutrons and Neutrinos," BESAC subcommittee meeting (Washington DC, Nov 14–15, 2019). The presented information is incorporated in a DOE report, prepared by the BESAC subcommittee, to assess the Scientific Justification for a U.S. Domestic High-Performance Reactor-Based Research Facility.
2019	Organizing committee, Topical Program on Hadronic Electric Dipole Moments in the FRIB Era: From the Proton to Protactinium (Michigan State University, August 12–23, 2019).

2018	Organizing committee, Workshop on time reversal invariance violation tests using neutrons (Amherst Center for Fundamental Interactions (ACFI), December 6–8, 2018).
2018	Organizing committee, LANSCE User Group Meeting, Santa Fe, NM, November 5-7, 2018.
2018	Lecturer, National Nuclear Physics Summer School (New Haven, CT), June 18–29.
2017–2019	NSF Proposal Review; DOE Proposal Review.
2016–present	LANSCE User Group Executive Committee (UCN representative), the chairperson (2018).
2016	Technical Review Committee on the Möller Experiment, JLab.
2015–2016	Local Program Committee, International SPIN Conference 2016.
2015–2017	Program committee, Division of Nuclear Physics, American Society of Physicists (APS).
2015	Lecturer, Fundamental Neutron Physics Summer School (Knoxville, TN).
2014	Planning committee, "Fundamental Symmetries and Neutrinos" town meeting to discuss and draft the US Nuclear Physics Long Range Plan.
2014	Organizing committee, Neutron Lifetime Workshop (ACFI, Sep. 2014).
2012	Lecturer, TRIUMF summer institute (Vancouver, Canada).
2012	Organizing committee, Neutron Lifetime Workshop (Santa Fe, Nov. 2012).
2012	Co-convenor for the topic on "Low Energy Precision Frontier" in the 11^{th} Conference on the Intersections of Particle and Nuclear Physics (CIPANP2012).
2010–2013	Executive committee, Member-at-large, Topical Group on Precision Measurement and Fundamental Constants, APS.
2010	International Advisory Committee, 2^{nd} International Ulaanbaatar Conference on Nuclear Physics and Applications (July 26-30, 2010, Ulaanbaatar Mongolia).
2009–present	Member of the communication committee, SNS neutron EDM experiment.
2009	Lecturer in the 2^{nd} Fundamental Neutron Physics Summer School, NIST.
2008–present	Organizer of the IU nuclear physics seminars.
2007	Co-organizer, mini-symposium on Fundamental Neutron Physics in the Division of Nuclear Physics meeting.
2006	Lecturer in the Nuclear Physics Summer School, Bloomington.

Campus Service:

2018–2019	Campus Assessment Committee, study the job (non)satisfactions and the status of women faculty on the IUB campus (Office of the Vice Provost for Faculty & Academic Affairs), IUB.
2018–2019	Diversity and Inclusion Faculty Council, Office of the Vice Provost for Diversity, Equity, and Multicultural Affairs, IUB campus.
2018	Panel discussion on Collaborative Research, Institute of Advanced Studies, IUB.

2016	Panel discussion on "Women in Science Panel on Career and Family" in the CeWIT women in science career conference, 2016, IUB.

Outreach:

2019–present	Developing STEM exhibits in the WonderLab, Bloomington, IN.
2018	Interviewed by the National Public Radio on the topic of the electric dipole moment search.
2017–2018	Give physics pedagogy lectures, "Using Smartphones to Teach Physics" and "Youtube Videos for Physics Analysis", to local high school physics teachers in the Advance College Project (ACP) teacher training workshops, IUB.
2017–2018	Setup a telescope to help Grade 1-3 students to view solar eclipse in Bloomington Montessori School.
2014–2016	Faculty mentor in the CEWiT-REUW: research experience for undergraduate women program sponsored by the Center of Excellence for Women in Technology, IUB.
2011	Led Physics Club students to perform 3 public physics demo shows at the WonderLab, Bloomington.
2010–2011	Science review for "A Moment of Science", National Public Radio (NPR) broadcast.
2010–2011	Faculty advisor of the IU Physics Club.
2005–2011	Organized and led IUCF facility tours for general publics, high school participants in the Science Olympiad (2006) and IU undergraduate students in P301 courses.
2005–2016	Faculty advisor for the Taiwanese Student Association (TWSA) at IU, Bloomington.
2008	Designed competition and served as a judge in the Indiana State Science Olympiad.
2008	Physics demonstrations for the "Science Night" at Edgewood Primary School, Ellettsville.
2007	Math & physical science judge in the 9^{th} annual "Women in Science Research Day", Indiana University.
2007	"Graduate Women in Science" selection committee for the IU diversity-building graduate fellowships. This college-level committee reviews minority and women applicants for science fellowship, awarded to incoming graduate students.
2006	Grand awards judge in the Intel International Science and Engineering Fair (ISEF), Indianapolis.

Professional Associations:

2009–present	Oversea Chinese Physics Association
1998–present	American Physical Society (APS); Division of Nuclear Physics; Topical Group on Precision Measurement & Fundamental Constants

Languages:

English	fluent
Chinese	native

Media Coverage:

2021 Lauren Ulrich, the Indiana Daily Student newspaper.

2021 "Physicists make most precise measurement ever of neutron's lifetime. But decades-long mystery of how long the particles live persists." Davide Castelvecchi, 15 October 2021. https://www.nature.com/articles/d41586-021-02812-z

2021 "Measuring the Neutron Lifetime with Record-Breaking Precision," Shannon F. Hoogerheide National Institute of Standards and Technology, October 13, 2021, *Physics* **14**, 142. https://physics.aps.org/articles/v14/142

2021 "IU physicists lead world's most precise measurement of neutron lifetime. The measurement will help put theories about the nature of the universe to the test," Kevin Fryling, October 13, 2021. https://www.eurekalert.org/news-releases/931482; https://news.iu.edu/stories/2021/10/iub/13-physics-neutron-lifetime-measurement-study.html

2020 "The Mystery of the Neutron Lifetime," Shannon Brescher Shea, Office of Science's Office of Communication and Public Affairs, September 2, 2020, https://www.energy.gov/science/articles/mystery-neutron-lifetime

2019 "Why Corned Beef Sandwiches — And The Rest Of The Universe Exist," Joe Palca, National Public Radio, May 25, 2019 8:20 AM ET, Weekend Edition Saturday. https://www.npr.org/2019/05/25/723215836/why-corned-beef-sandwiches-and-the-rest-of-the-universe-exist

2019 "How long do neutrons live? Physicists close in on decades-old puzzle," Alexandra Witze, April 15, 2019, https://www.nature.com/articles/d41586-019-01203-9

2019 "Rudy Professors named in physics and political science," Jennifer Piurek, Feb. 25, 2019, https://news.iu.edu/stories/2019/02/iub/inside/25-rudy-professors-named-physics-political-science.html

2018 "IU physicists awarded $2 million to investigate neutrons," Kevin Fryling, Sept. 12, 2018, https://news.iu.edu/stories/2018/09/iub/12-physicists-awarded-2-million-investigate-neutrons.html

2018 "Using a 'magneto-gravitational trap,' IU physicists measure neutrons with unprecedented precision," Kevin Fryling, May 15, 2018, https://news.iu.edu/stories/2018/05/iub/releases/15-using-magneto-gravitational-trap-physicists-measure-neutrons-with-unprecedented-precision.html

2018 "Levitation yields better neutron-lifetime measurement," Nancy Ambrosiano, May 10, 2018, https://www.lanl.gov/discover/news-release-archive/2018/May/0510-neutron-lifetime-measurement.php

2018 “Despite a new measurement, the neutron’s lifetime is still puzzling,” Emily Conover, May 8, 2018, https://www.sciencenews.org/blog/science-ticker/new-measurement-neutron-lifetime-still-puzzling

2018 “Neutron Lifetime Puzzle Deepens, but No Dark Matter Seen,” Natalie Wolchover, Feb 13, 2018, https://www.quantamagazine.org/neutron-lifetime-puzzle-deepens-but-no-dark-matter-seen-20180213/

2017 “Neutron lifetime measurements take new shape for in situ detection,” American Institute of Physics, May 30, 2017, https://phys.org/news/2017-05-neutron-lifetime-situ.html

2014 “Neutron Death Mystery Has Physicists Stymied,” Clara Moskowitz, May 13, 2014, https://www.scientificamerican.com/article/neutron-lifetime-mystery-new-physics/

2013 “IU physics team will receive $5.4 million for subatomic particle research,” Stephen Chaplin, Sept. 25, 2013, http://archive.news.indiana.edu/releases/iu/university-wide/2013/09/snow-physics-grant.shtml

2010 ”INPC 2010 Student/Young scientist Awards: Young Jin Kim won the best student poster presentation winner”, July 9, 2010, http://inpc2010.triumf.ca/studentwinners.html

2010 “U.S. Department of Energy award goes to first-year master’s student for matter-antimatter research,” Steve Chaplin, May 6, 2010, http://newsinfo.iu.edu/news-archive/14384.html