

Bradley Plaster (he/him/his)
University of Kentucky
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Personal Data

Citizenship: U.S.A.
Date of Birth: December 15, 1976
Family Status: Married (Tritia Yamasaki, M.D., Ph.D., Assistant Professor of Neurology,
Department of Neurology, College of Medicine, University of Kentucky), one daughter

Academic Preparation

Valley City, North Dakota, Public School System, 1982–1995
Massachusetts Institute of Technology, B.S. in Physics, June 1999
Massachusetts Institute of Technology, Ph.D. in Physics, February 2004
Advisor: Prof. Stanley Kowalski
Thesis: “The Neutron Electric Form Factor to $Q^2 = 1.45 \text{ (GeV}/c)^2$ ”
California Institute of Technology, Postdoctoral Scholar in Physics, November 2003 – July 2008
Advisor: Prof. Bradley W. Filippone

Appointments

Chair, Department of Physics and Astronomy, University of Kentucky, July 2021 –
Joint Faculty Appointee, Oak Ridge National Laboratory, June 2021 –
Level-1 Deputy Project Manager, Oak Ridge National Laboratory Neutron Electric Dipole Moment
Experiment, May 2020 –
Professor of Physics, University of Kentucky, July 2018 –
Associate Chair, Department of Physics and Astronomy, University of Kentucky, July 2017 – June 2021
Associate Professor of Physics, University of Kentucky, July 2012 – June 2018
Visiting Associate in Physics, California Institute of Technology, 2011 – 2012
Assistant Professor of Physics, University of Kentucky, July 2007 – June 2012

Awards and Honors

University of Kentucky, Provost Outstanding Teaching Award, 2018 (university-wide)
University of Kentucky, College of Arts and Sciences, Award for Innovative Teaching, 2016
University of Kentucky, College of Arts and Sciences, Outstanding Teaching Award, 2012
Department of Energy, Outstanding Junior Investigator in Nuclear Physics, 2008 – 2013

Scientific Community Service

Member, Scientific Advisory Committee, Fundamental Symmetries, Neutrons, and Neutrinos Town
Meeting, 2022
Member, Selection Committee for the American Physical Society Francis M. Pipkin Award,
2020, 2022
Co-Organizer (with V. Cirigliano, C.-Y. Liu, H. P. Mumm, and W. M. Snow), Workshop on “Theoretical
Issues and Experimental Opportunities in Searches for Time-Reversal Invariance Using Neutrons”,
University of Massachusetts, December 6–8, 2018.
Co-Organizer (with V. Cianciolo), Mini-Symposium on “Nuclear and Neutron Physics Tests of CKM
Unitarity”, Division of Nuclear Physics Meeting, Vancouver, BC, October 13–16, 2016.
Referee: Physical Review Letters, Physical Review C, Physical Review D, Review of
Scientific Instruments, Journal of Applied Physics, IEEE Transactions on Magnetism,
IEEE Transactions on Industrial Electronics, European Physical Journal Applied Physics,
Nuclear Instruments and Methods in Physics Research
Reviewer of Grant Proposals: Department of Energy, National Science Foundation,

NSERC (Canada), National Science Centre (Poland), Swiss National Science Foundation

Funded External Grants

1. Principal Investigator, Oak Ridge National Laboratory Award, “UK/ORNL Joint Appointment Research”, \$110,512, July 2021 – December 2022.
2. Principal Investigator (C. Crawford and W. Korsch, Co-PIs), Department of Energy Office of Nuclear Physics Grant, “A Program of Fundamental Symmetry Tests with Neutrons at the University of Kentucky”, \$1,560,000, November 2020 – November 2023.
3. Co-Principal Investigator, National Science Foundation Major Research Instrumentation Program, “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”, \$2,200,000, September 2018 – August 2023. Lead Principal Investigator: C.-Y. Liu (Indiana University). Other Co-Principal Investigators: T. Chupp (University of Michigan), J. Long (Indiana University), W. M. Snow (Indiana University). Share to the University of Kentucky: \$179,390.
4. Principal Investigator, National Science Foundation Experimental Nuclear Physics, “Methods for Data Analysis and Systematic Corrections in the Fermilab E989 Muon $g-2$ Experiment”, \$228,693, October 2017 – April 2023.
5. Principal Investigator (C. Crawford and W. Korsch, Co-PIs), Department of Energy Office of Nuclear Physics Grant, “A Program of Fundamental Symmetry Tests with Neutrons at the University of Kentucky”, \$1,525,000, August 2017 – November 2020.
6. Principal Investigator on Subcontract to U. Kentucky (C. Crawford and W. Korsch, Co-PIs), “Collaborative Research: nEDM: A Search for the Electric Dipole Moment of the Neutron”, National Science Foundation, \$162,934, June 2014 – May 2019.
7. Principal Investigator, Department of Energy Office of Nuclear Physics Grant, “Precision Measurements with Neutrons”, \$384,463, August 2015 – July 2017.
8. Principal Investigator, Department of Energy Office of Nuclear Physics OJI Grant, “Neutrons and Fundamental Symmetries”, \$610,000, April 2011 – April 2015.
9. Principal Investigator, Department of Energy Office of Nuclear Physics OJI Grant, “Fundamental Electroweak and Hadronic Physics Studies of the Neutron”, \$315,000, July 2008 – April 2011.

Papers Published in Peer-Reviewed Journals

1. “Magnetic field mapping of inaccessible regions using physics-informed neural networks”, U. H. Coskun, B. Sel, and B. Plaster, *Scientific Reports (Nature)*, **12**, 12858 (2022).
2. “Projection imaging with ultracold neutrons”, K. Kuk *et al.*, *Nucl. Instrum. Methods Phys. Res. A* **1003**, 165306 (2021).
3. “Beam dynamics corrections to the Run-1 measurement of the muon anomalous magnetic moment at Fermilab”, T. Albahri *et al.*, *Phys. Rev. Accel. Beams* **24**, 044002 (2021).
4. “Magnetic-field measurement and analysis for the Muon $g-2$ Experiment at Fermilab”, T. Albahri *et al.*, *Phys. Rev. A* **103**, 042208 (2021).
5. “Measurement of the anomalous precession frequency of the muon in the Fermilab Muon $g-2$ Experiment”, T. Albahri *et al.*, *Phys. Rev. D* **103**, 072002 (2021).
6. “Measurement of the Positive Muon Anomalous Magnetic Moment to 0.46 ppm”, B. Abi *et al.*, *Phys. Rev. Lett.* **126**, 141801 (2021).
7. “Effect of Thomas rotation on the Lorentz transformation of electromagnetic fields”, L. Malhotra, R. Golub, E. Kraegeloh, N. Nouri, and B. Plaster, *Scientific Reports (Nature)* **10**, 5522 (2020).

8. “Improved limits on Fierz interference using asymmetry measurements from the UCNA experiment”, X. Sun *et al.*, Phys. Rev. C **101**, 035503 (2020).
9. “A new cryogenic apparatus to search for the neutron electric dipole moment”, M. W. Ahmed *et al.*, JINST **14**, P11017 (2019).
10. “Search for neutron dark decay: $n \rightarrow \chi + e^+e^-$ ”, X. Sun *et al.*, EPJ Web Conf. **219**, 05008 (2019).
11. “Final results for the neutron β -asymmetry parameter A_0 from the UCNA experiment”, B. Plaster *et al.*, EPJ Web Conf. **219**, 04004 (2019).
12. “The neutron electric dipole moment experiment at the Spallation Neutron Source”, K. K. H. Leung *et al.*, EPJ Web Conf. **219**, 02005 (2019).
13. “Search for dark matter decay of the free neutron from the UCNA experiment: $n \rightarrow \chi + e^+e^-$ ”, X. Sun *et al.*, Phys. Rev. C **97**, 052501 (2018).
14. “Search for the neutron decay $n \rightarrow X + \gamma$ where X is a dark matter particle”, Z. Tang *et al.*, Phys. Rev. Lett. **121**, 022505 (2018).
15. “New result for the neutron β -asymmetry parameter A_0 from UCNA”, M. A.-P. Brown *et al.*, Phys. Rev. C **97**, 035505 (2018).
16. “First direct constraints on Fierz interference in free neutron β decay”, K. P. Hickerson *et al.*, Phys. Rev. C **96**, 042501(R) (2017).
17. “Cryogenic magnetic coil and superconducting magnetic shield for neutron electric dipole moment searches”, S. Slutsky, C. M. Swank, A. Biswas, R. Carr, J. Escribano, B. W. Filippone, W. C. Griffith, M. Mendenhall, N. Nouri, C. Osthelder, A. Pérez Galván, R. Picker, and B. Plaster, Nucl. Instrum. Methods Phys. Res. A **862**, 36 (2017).
18. “Detection system for neutron β decay correlations in the UCNB and Nab experiments”, L. J. Broussard *et al.*, Nucl. Instrum. Methods Phys. Res. A **849**, 83 (2017).
19. “A prototype vector magnetic field monitoring system for a neutron electric dipole moment experiment”, N. Nouri, A. Biswas, M. A. Brown, R. Carr, B. Filippone, C. Osthelder, B. Plaster, S. Slutsky, and C. Swank, JINST **10**, P12003 (2015).
20. “Sensitivity requirements for accessing interior magnetic field vector components in neutron electric dipole moment experiments via exterior boundary-value measurements”, N. Nouri and B. Plaster, JINST **9**, P11009 (2014).
21. “Beta decay measurements with ultracold neutrons: A review of recent measurements and the research program at Los Alamos National Laboratory”, A. R. Young, S. Clayton, B. W. Filippone, P. Geltenbort, T. M. Ito, C.-Y. Liu, M. Makela, C. L. Morris, B. Plaster, A. Saunders, S. J. Seestrom, and R. B. Vogelaar, J. Phys. G: Nucl. Part. Phys. **41**, 114007 (2014).
22. “Systematic optimization of exterior measurement locations for the determination of interior magnetic field vector components in inaccessible regions”, N. Nouri and B. Plaster, Nucl. Instrum. Methods Phys. Res. A **767**, 92 (2014).
23. “Framework for maximum likelihood analysis of neutron β decay observables to resolve the limits of the $V - A$ law”, S. Gardner and B. Plaster, Phys. Rev. C **87**, 065504 (2013).
24. “Comparison of magnetic field uniformities for discretized and finite-sized standard $\cos \theta$, solenoidal, and spherical coils”, N. Nouri and B. Plaster, Nucl. Instrum. Methods Phys. Res. A **723**, 30 (2013).
25. “Precision measurement of the neutron beta-decay asymmetry”, M. P. Mendenhall *et al.*, Phys. Rev. C **87**, 032501(R) (2013).

26. “Performance of the Los Alamos National Laboratory spallation-neutron driven solid deuterium ultra-cold neutron source”, A. Saunders *et al.*, Rev. Sci. Instrum. **84**, 013304 (2013).
27. “Overlap technique for end-cap seals on cylindrical magnetic shields”, S. Malkowski, R. Adhikari, J. Boissevain, C. Daurer, B. W. Filippone, B. Hona, B. Plaster, D. Woods, and H. Yan, IEEE Trans. Magnetics **49**, 651 (2013).
28. “Measurement of the neutron β -asymmetry parameter A_0 with ultracold neutrons”, B. Plaster *et al.*, Phys. Rev. C **86**, 055501 (2012).
29. “High uniformity magnetic coil for search of neutron electric dipole moment”, A. Pérez Galván, B. Plaster, J. Boissevain, R. Carr, B. W. Filippone, M. P. Mendenhall, R. Schmid, R. Alarcon, and S. Balascuta, Nucl. Instrum. Methods Phys. Res. A **660**, 147 (2011).
30. “Technique for high axial shielding factor performance of large-scale, thin, open-ended, cylindrical Metglas magnetic shields”, S. Malkowski, R. Adhikari, B. Hona, C. Mattie, D. Woods, H. Yan, and B. Plaster, Rev. Sci. Instrum. **82**, 075104 (2011).
31. “Impact of motion along the field direction on geometric-phase-induced false electric dipole moment signals”, H. Yan and B. Plaster, Nucl. Instrum. Methods Phys. Res. A **642**, 84 (2011).
32. “Sealed drift tube cosmic ray veto counters”, R. Rios *et al.*, Nucl. Instrum. Methods Phys. Res. A **637**, 105 (2011).
33. “Determination of the axial-vector weak coupling constant with ultracold neutrons”, J. Liu *et al.*, Phys. Rev. Lett. **105**, 181803 (2010).
34. “Flavor physics in the quark sector”, M. Antonelli *et al.*, Phys. Rept. **494**, 197 (2010).
35. “First measurement of the neutron β asymmetry with ultracold neutrons”, R. W. Pattie, Jr. *et al.*, Phys. Rev. Lett. **102**, 012301 (2009).
36. “Multi-wire proportional chamber for ultra-cold neutron detection”, C. L. Morris *et al.*, Nucl. Instrum. Methods Phys. Res. A **599**, 248 (2009).
37. “A solenoidal electron spectrometer for a precision measurement of the neutron β -asymmetry with ultracold neutrons”, B. Plaster, R. Carr, B. W. Filippone, D. Harrison, J. Hsiao, T. M. Ito, J. Liu, J. W. Martin, B. Tipton, and J. Yuan, Nucl. Instrum. Methods Phys. Res. A **595**, 587 (2008).
38. “Motional spin relaxation in large electric fields”, R. Schmid, B. Plaster, and B. W. Filippone, Phys. Rev. A **78**, 023401 (2008).
39. “A multiwire proportional chamber for precision studies of neutron β -decay angular correlations”, T. M. Ito, R. Carr, B. W. Filippone, J. W. Martin, B. Plaster, G. Rybka, and J. Yuan, Nucl. Instrum. Methods Phys. Res. A **571**, 676 (2007).
40. “The ratio of proton electromagnetic form factors via recoil polarimetry at $Q^2 = 1.13$ (GeV/c)²”, G. MacLachlan *et al.*, Nucl. Phys. A **764**, 261 (2006).
41. “Measurements of the neutron electric to magnetic form factor ratio G_{En}/G_{Mn} via the ${}^2\text{H}(\vec{e}, e'\vec{n}){}^1\text{H}$ reaction to $Q^2 = 1.45$ (GeV/c)²”, B. Plaster *et al.*, Phys. Rev. C **73**, 025205 (2006).
42. “New measurements and quantitative analysis of electron backscattering in the energy range of neutron beta-decay”, J. W. Martin, J. Yuan, M. J. Betancourt, B. W. Filippone, S. A. Hoedl, T. M. Ito, B. Plaster, and A. R. Young, Phys. Rev. C **73**, 015501 (2006).
43. “Evidence for strange-quark contributions to the nucleon’s form factors at $Q^2 = 0.108$ (GeV/c)²”, F. E. Maas *et al.*, Phys. Rev. Lett. **94**, 152001 (2005).
44. “Measurement of strange-quark contributions to the nucleon’s form factors at $Q^2 = 0.230$ (GeV/c)²”, F. E. Maas *et al.*, Phys. Rev. Lett. **93**, 022002 (2004).

45. “Parity-violating electron deuteron scattering and the proton’s neutral weak axial vector form factor”, T. M. Ito *et al.*, Phys. Rev. Lett. **92**, 102003 (2004).
46. “Measurements of G_{En}/G_{Mn} from the ${}^2\text{H}(\vec{e}, e'\vec{n}){}^1\text{H}$ reaction to $Q^2 = 1.45 \text{ (GeV}/c)^2$ ”, R. Madey, A. Yu. Semenov, S. Taylor, B. Plaster *et al.*, Phys. Rev. Lett. **91**, 122002 (2003).

Reports and White Papers

1. “Electric dipole moments and the search for new physics”, R. Alarcon *et al.*, 2203.08103.
2. “Fundamental symmetries, neutrinos, neutrons, and astrophysics: A White Paper on progress and prospects”, A. Aprahamian *et al.*
3. “Discovering the new Standard Model: Fundamental symmetries and neutrinos”, V. Cianciolo *et al.*, [arXiv:1212.5190](https://arxiv.org/abs/1212.5190).

Invited Conference and Workshop Talks

1. “Progress towards the development of the nEDM@SNS experiment”, Physics of Fundamental Symmetries and Interactions Workshop (PSI 2022), Paul Scherrer Institut, Villigen, Switzerland, October 16–21, 2022.
2. “Angular correlation measurements with ultracold neutrons”, Institute for Nuclear Theory Workshop on “Fundamental Symmetries Research with Beta Decay”, Seattle, WA, November 4–8, 2019.
3. “Neutron β -decay angular correlations”, Fundamental Neutron Physics Summer School, North Carolina State University, July 16–20, 2018.
4. “Result for the neutron β -asymmetry parameter A from the UCNA experiment”, International Workshop on Particle Physics at Neutron Sources 2018, Grenoble, France, May 24–26, 2018.
5. “Angular Correlations and Spectroscopy”, Physics Review of the LANSCE UCN Source, Los Alamos National Laboratory, March 14, 2018.
6. “Recent advances and future prospects in fundamental symmetries”, Division of Nuclear Physics Meeting, Pittsburgh, PA, October 25–28, 2017.
7. “Status of the UCNA experiment”, Mainz Institute for Theoretical Physics Workshop on “Low-Energy Probes of New Physics”, Johannes Gutenberg-Universität, Mainz, Germany, May 2–24, 2017.
8. “The quest for the neutron electric dipole moment”, Physics Symposium, Korean-American Scientists and Engineers Association Conference, Dallas, TX, August 10–13, 2016.
9. “Precision measurements in neutron β -decay”, XXXIX Symposium on Nuclear Physics, Morelos, Mexico, January 6–9, 2016. (Declined invitation due to family/personal reasons.)
10. “Ultracold neutron research at LANSCE”, LANSCE User Group Meeting, Santa Fe, NM, November 2–3, 2015.
11. “Neutron decay correlations”, Institute for Nuclear Theory Workshop on “QCD for New Physics at the Precision Frontier”, Seattle, WA, September 28 – October 2, 2015.
12. “Fundamental physics with cold and ultracold neutrons”, Division of Nuclear Physics Meeting, Waikoloa, HI, October 8–11, 2014.
13. “Facilities and infrastructure for fundamental symmetries and neutrinos”, Nuclear Science Advisory Committee Fundamental Symmetries, Neutrinos, Neutrons, and Related Astrophysics Long-Range Plan Town Meeting, Chicago, IL, September 28–29, 2014.
14. “Status of the UCNA and nEDM experiments”, ECT* Workshop on Nucleon Matrix Elements for New Physics Searches, Trento, Italy, July 22–26, 2013. (Declined invitation due to family/personal reasons.)

15. “Survey of facilities for fundamental symmetries and neutrinos”, Nuclear Science Advisory Committee Workshop on Fundamental Symmetries and Neutrinos, Chicago, IL, August 10–11, 2012.
16. “High-precision measurements of g_A and g_V in neutron and nuclear β -decay”, Fermilab 2012 Project X Physics Study, Batavia, IL, June 14–23, 2012.
17. “Neutrons and fundamental symmetries”, Division of Nuclear Physics Meeting, Workshop on Neutrinos and Fundamental Symmetries, Santa Fe, NM, November 2–3, 2010.
18. “Precision neutron β -decay studies with ultracold neutrons”, American Conference on Neutron Scattering, Ottawa, Canada, June 26–30, 2010.
19. “Search for the neutron electric dipole moment”, Conference Plenary Talk, VIII Latin American Symposium on Nuclear Physics and Applications, Santiago, Chile, December 15–19, 2009.
20. “Measurements of electron-proton coincidences with UCN and the neutrino asymmetry B ”, Workshop on Research Opportunities with Ultracold Neutrons in the U.S., Santa Fe, NM, November 6–7, 2009.
21. “Recent neutron β -decay results”, Gordon Research Conference on Nuclear Physics, Bryant University, Smithfield, RI, July 12–17, 2009.
22. “Fundamental symmetry tests with ultracold neutrons”, Southeastern Section of the American Physical Society meeting, Raleigh, NC, October 30–November 1, 2008.
23. “ V_{ud} from neutron β -decay: status and perspectives”, Fifth International Workshop on the CKM Unitarity Triangle, Università degli Studi di Roma “La Sapienza”, Rome, Italy, September 9–13, 2008.
24. “A new search for the neutron electric dipole moment at the Spallation Neutron Source”, Southeastern Section of the American Physical Society meeting, Nashville, TN, November 8–10, 2007.
25. “SNS neutron EDM experiment”, Institute for Nuclear Theory Workshop on Electric Dipole Moments and CP Violation, University of Washington, Seattle, WA, March 19–23, 2007.
26. “The neutron electric form factor via recoil polarimetry to $Q^2 = 1.45 \text{ (GeV}/c)^2$ ”, Fifth European Research Conference on Electromagnetic Interactions with Nucleons and Nuclei, Pre-Conference Workshop on Nucleon Form Factors and Parity Violation, Athens, Greece, October 6, 2003.

Seminars and Colloquia

1. “Precision Measurements of Asymmetries and Spectra in Neutron β -Decay”, Particle Physics Seminar, Brookhaven National Laboratory, March 15, 2018.
2. “Status of and Future Prospects in Neutron β -Decay”, PRISMA Cluster of Excellence seminar, Johannes Gutenberg-Universität, Mainz, Germany, November 5, 2013.
3. “Prospects for resolving the limits of the $V - A$ law through β -decay observables”, Nuclear Physics seminar, University of Kentucky, October 10, 2013 (given jointly with Prof. S. Gardner).
4. “Precision Measurements in Neutron β -Decay: Status of the UCNA Experiment and Interpretation of Future Observables”, Physikalisches Institut seminar, University of Heidelberg, Heidelberg, Germany, May 13, 2013.
5. “Precision Measurements in Neutron β -Decay: Status of the UCNA Experiment and Interpretation of Future Observables”, Nuclear Physics seminar, Paul Scherrer Institute, Villigen, Switzerland, May 8, 2013.
6. “Precision Measurements in Neutron β -Decay: Status of the UCNA Experiment and Interpretation of Future Observables”, Nuclear Physics seminar, Institut Laue-Langevin, Grenoble, France, May 6, 2013.

7. “Recent results from tests of fundamental symmetries with ultracold neutrons”, Physics Colloquium, University of Kentucky, September 2, 2011.
8. “Precision tests of fundamental symmetries with ultracold neutrons”, High Energy Physics seminar, University of Maryland, April 20, 2011.
9. “Precision tests of fundamental symmetries with neutrons”, Subatomic Physics Division (P-25) seminar, Los Alamos National Laboratory, February 22, 2011.
10. “Precision tests of fundamental symmetries with neutrons”, Nuclear and Particle Physics Colloquium, Massachusetts Institute of Technology, February 14, 2011.
11. “Determination of the axial-vector weak coupling constant with polarized ultracold neutrons”, Nuclear Physics seminar, University of Kentucky, September 2, 2010.
12. “The search for the neutron electric dipole moment”, High Energy and Astro-Particle seminar, University of California, Los Angeles, April 21, 2010.
13. “Status of the UCNA experiment”, Nuclear Physics seminar, Indiana University, December 4, 2009.
14. “First results from the UCNA experiment”, Subatomic Physics Division (P-25) seminar, Los Alamos National Laboratory, November 5, 2008.
15. “Neutron β -decay and the value of V_{ud} ”, Nuclear Physics seminar, University of Kentucky, April 1, 2008.
16. “Neutron β -decay and the value of V_{ud} ”, Experimental High Energy Physics seminar, California Institute of Technology, February 5, 2008.
17. “Probing Standard Model symmetries with ultracold neutrons”, Subatomic Physics Division (P-25) seminar, Los Alamos National Laboratory, March 14, 2007.
18. “Probing Standard Model symmetries with ultracold neutrons”, Laboratory for Nuclear Science seminar, Massachusetts Institute of Technology, February 28, 2007.
19. “Ultracold neutrons: from nano-eV to TeV”, Department of Physics and Astronomy colloquium, University of Kentucky, February 8, 2007.
20. “Ultracold neutrons: from nano-eV to TeV”, Physics Division seminar, Argonne National Laboratory, Argonne, IL, November 27, 2006.
21. “The neutron electric form factor”, Subatomic Physics Division (P-25) seminar, Los Alamos National Laboratory, July 1, 2003.
22. “The neutron electric form factor”, W. K. Kellogg Radiation Laboratory seminar, California Institute of Technology, February 21, 2003.
23. “The electric form factor of the neutron via recoil polarimetry from the $d(\vec{e}, e'\vec{n})p$ quasielastic reaction”, Institute for Nuclear Physics seminar, Johannes Gutenberg-Universität, Mainz, Germany, June 18, 2001.

Other Major Talks

1. “Re-Inventing Introductory Physics at UK: The TEAL Approach”, presentation to College of Arts and Sciences “Dean’s Circle” Donors, October 19, 2018.
2. “Re-Inventing Introductory Physics at UK: The TEAL Approach”, presentation to the Board of Trustees, President, Provost, Executive Vice Presidents, and others, October 22, 2015.

Contributed Conference Talks

1. “Progress towards a room temperature neutron electric dipole moment search at the Los Alamos Neutron Science Center”, Division of Nuclear Physics meeting, Waikoloa, HI, October 23–27, 2018.
2. “Plans for the Fall 2015 debut of a TEAL version of PHY 211”, STEM Teaching Enhancement Workshop, University of Kentucky, April 25, 2015.
3. “Framework for maximum likelihood analysis of neutron β -decay observables to resolve the limits of the $V - A$ law”, Division of Nuclear Physics meeting, Newport News, VA, October 23–26, 2013.
4. “Accessing interior vector magnetic field components in neutron EDM experiments via boundary value techniques”, Division of Nuclear Physics meeting, Newport Beach, CA, October 24–27, 2012.
5. “Status of the UCNA experiment: A measurement of the neutron β -asymmetry with ultracold neutrons”, Division of Nuclear Physics meeting, Newport News, VA, October 11–13, 2007.
6. “First neutron β -decay results from the UCNA experiment”, American Physical Society meeting, Jacksonville, FL, April 14–17, 2007.
7. “A new search for the neutron electric dipole moment at the Spallation Neutron Source”, Fourteenth International Conference on Supersymmetry and the Unification of Fundamental Interactions, University of California, Irvine, CA, June 12–17, 2006.
8. “Performance of the β -spectrometer for a precision measurement of the neutron β -decay asymmetry”, American Physical Society meeting, Dallas, TX, April 22–25, 2006.
9. “Precision measurement of the neutron β -decay asymmetry using ultracold neutrons”, Gordon Research Conference on Nuclear Physics, Bates College, Lewiston, ME, July 11–15, 2005.
10. “A new search for a neutron electric dipole moment”, Division of Particles and Fields meeting, University of California, Riverside, CA, August 26–31, 2004.
11. “The electric form factor of the neutron via recoil polarimetry to $Q^2 = 1.47 \text{ (GeV}/c)^2$ ”, Fifteenth International Spin Physics Symposium and Workshop on Polarized Electron Sources and Polarimeters, Brookhaven National Laboratory, Upton, New York, September 9–13, 2002.
12. “The electric form factor of the neutron at $Q^2 = 1.15 \text{ (GeV}/c)^2$ ”, American Physical Society meeting, Albuquerque, NM, April 20–23, 2002.

Invited Conference and Workshop Talks by Group Members

1. D. Schaper, “Precision Measurements of Parity Violation in Neutron-Nucleus Resonance States for Future Time-Reversal Violation Experiments”, American Physical Society Four Corners Section Meeting, Albuquerque, NM (Virtual), October 23–24, 2020.
2. A. Aleksandrova, “A cryogenic search for the neutron electric dipole moment at the Spallation Neutron Source”, Southeastern Section of the American Physical Society Meeting, Knoxville, TN, November 8–10, 2018.
3. D. Schaper, “A precision measurement of the parity violation present in the 0.734 eV p -wave resonance in ^{139}La in preparation for the NOPTREX time reversal experiment”, LANSCE User Group Meeting, Santa Fe, NM, November 5–6, 2018.

Seminars and Colloquia by Group Members

1. A. Aleksandrova, “Magnetic Field Monitoring in the SNS Neutron EDM Experiment”, Nuclear Physics seminar, University of Kentucky, October 24, 2019.
2. A. Aleksandrova, “A Cryogenic Search for the Neutron Electric Dipole Moment at the Spallation Neutron Source”, East Tennessee State University, Physics/Astronomy Seminar, September 30, 2019.

3. D. Schaper, “NOPTREX: A Search for Beyond the Standard Model (BSM) T-Violation Present in Neutron-Nucleon Scattering Interactions”, Subatomic Physics Division (P-25) seminar, Los Alamos National Laboratory, November 14, 2018.

Contributed Conference and Workshop Talks by Group Members

1. R. Gupta, “Simulations of Electron Detection Systematic Errors for the UCNA+ Experiment”, Division of Nuclear Physics Meeting, New Orleans, LA, October 27–30, 2022.
2. A. Lorente Campos, “Beam Dynamics Simulations for the Fermilab E989 Muon $g - 2$ Experiment”, American Physical Society April Meeting, New York, NY, April 9–12, 2022.
3. J. Brewington, “Design of the Holding Field and Spin-Transport Coil System for the LANL nEDM Experiment”, Division of Nuclear Physics Meeting, Boston, MA (Virtual), October 11–14, 2021.
4. U. Coskun, “Cryogenic Magnetic Field Monitor System in the SNS Neutron EDM Experiment”, Division of Nuclear Physics Meeting, Boston, MA (Virtual), October 11–14, 2021.
5. P. A. Palamure, “LANL nEDM Half Scale B_0 Prototype Design and Test of the Field Gradient Inside a MSR at LANL”, Division of Nuclear Physics Meeting, Boston, MA (Virtual), October 11–14, 2021.
6. J. Brewington, “ B_0 Magnetic Field Coil Design and Fabrication for the LANL nEDM Experiment”, nEDM2021 Workshop, Les Houches School of Physics (Virtual), February 14–19, 2021.
7. M. Behzadipour, “Fitting strategies for the SNS nEDM experiment in the presence of time-varying magnetic fields”, Division of Nuclear Physics Meeting, New Orleans, LA (Virtual), October 29–November 1, 2020.
8. J. Brewington, “Magnetic Coil System for the LANL nEDM Experiment”, Division of Nuclear Physics Meeting, New Orleans, LA (Virtual), October 29–November 1, 2020.
9. P. A. Palamure, “Field Gradient Cancellation Technique for the LANL nEDM Experiment”, Division of Nuclear Physics Meeting, New Orleans, LA (Virtual), October 29–November 1, 2020.
10. D. Schaper, “NOPTREX: A Precision Measurement of the Parity Violation in the 0.7 eV Resonance in ^{139}La ”, Division of Nuclear Physics Meeting, New Orleans, LA (Virtual), October 29–November 1, 2020.
11. J. Brewington, “Design of the magnet system for the LANL nEDM experiment”, American Physical Society April Meeting, Washington, DC (Virtual), April 18–21, 2020.
12. D. Schaper, “NOPTREX: A neutron optics time-reversal violation experiment in forward-scattering neutron-nucleus reactions”, American Physical Society April Meeting, Washington, DC (Virtual), April 18–21, 2020.
13. A. Aleksandrova, “Magnetic field monitoring in the SNS neutron EDM experiment”, Division of Nuclear Physics Meeting, Crystal City, VA, October 13–17, 2019.
14. M. Behzadipour, “Simulation of time dependent magnetic field variations in the SNS nEDM experiment”, Division of Nuclear Physics Meeting, Crystal City, VA, October 13–17, 2019.
15. J. Brewington, “Preliminary design of the magnet system for the LANL nEDM experiment”, Division of Nuclear Physics Meeting, Crystal City, VA, October 13–17, 2019.
16. A. Lorente Campos, “Spin tracking for the Fermilab E989 Muon $g - 2$ experiment”, Division of Nuclear Physics Meeting, Crystal City, VA, October 13–17, 2019.
17. D. Schaper, “A precision measurement of the parity violation present in the 0.734 eV p -wave resonance in ^{139}La using the “Double Lanthanum” technique: Preliminary results and analysis”, Division of Nuclear Physics Meeting, Crystal City, VA, October 13–17, 2019.

18. A. Aleksandrova, “Magnetic field monitoring in the SNS neutron EDM experiment”, Division of Nuclear Physics Meeting, Waikoloa, HI, October 23–27, 2018.
19. J. Brewington, “In situ magnetic field mapping system for the LANL neutron EDM experiment”, Division of Nuclear Physics Meeting, Waikoloa, HI, October 23–27, 2018.
20. L. Malhotra, “Relativistic treatment of frequency shifts for spin-1/2 particles in electromagnetic fields”, Division of Nuclear Physics Meeting, Waikoloa, HI, October 23–27, 2018.
21. D. Schaper, “A precision measurement of the parity violation present in the 0.734 eV p -wave resonance in ^{139}La using the “Double Lanthanum” technique: Preliminary results and analysis”, Division of Nuclear Physics Meeting, Waikoloa, HI, October 23–27, 2018.
22. A. Aleksandrova, “Magnetic field monitoring in the SNS and LANL neutron EDM experiments”, Division of Nuclear Physics Meeting, Pittsburgh, PA, October 25–28, 2017.
23. M. Brown, “New result for the β -decay asymmetry parameter A_0 from the UCNA experiment”, Division of Nuclear Physics Meeting, Pittsburgh, PA, October 25–28, 2017.
24. R. Dadisman, “Magnetic field design for the LANL nEDM experiment”, Division of Nuclear Physics Meeting, Pittsburgh, PA, October 25–28, 2017.
25. D. Schaper, “A current-mode detector for use in NOPTREX time reversal experiment”, Division of Nuclear Physics Meeting, Pittsburgh, PA, October 25–28, 2017.
26. D. Schaper, “NOPTREX: A Search for Time Reversal Violation; Detector Development and Nuclear Spectroscopy on the 0.734 eV p -wave resonance in ^{139}La ”, American Physical Society Meeting, Washington, DC, January 28–31, 2017.
27. M. Brown, “UCNA 2011–2013 data update”, Division of Nuclear Physics Meeting, Vancouver, BC, October 13–16, 2016.
28. D. Schaper, “NOPTREX: A search for time reversal violation using polarized epithermal neutron transmission through a polarized nuclear target”, Summer School on “The principles of dynamic nuclear polarization”, Tramelan, Switzerland, August 22–26, 2016.
29. N. Nouri, “Interior vector magnetic field monitoring via external measurements for the SNS neutron EDM experiment”, Division of Nuclear Physics Meeting, Santa Fe, NM, October 28–31, 2015.
30. M. Brown, “Status of the UCNA experiment”, American Physical Society Meeting, Baltimore, MD, April 11–14, 2015.
31. N. Nouri, “Interior vector magnetic field monitoring for the SNS neutron EDM experiment”, Division of Nuclear Physics Meeting, Waikoloa, HI, October 8–11, 2014.
32. M. Brown, “Status of analysis for the UCNA experiment’s 2011–2012 and 2012–2013 data sets”, Division of Nuclear Physics Meeting, Waikoloa, HI, October 8–11, 2014.
33. S. Hasan, “Status of the UCNB Experiment at LANSCE”, Division of Nuclear Physics Meeting, Newport Beach, CA, October 24–27, 2012.
34. S. Malkowski, “Magnetic shielding studies for the nEDM Experiment at the SNS”, Division of Nuclear Physics Meeting, Santa Fe, NM, November 2–6, 2010.

Teaching Record

Semester	Course	Enrollment	Course Evaluation
Spring 2023	Chair		
Fall 2022	ORNL Buyout		
Spring 2022	Chair		
Fall 2021	ORNL Buyout		
Spring 2021	ORNL Buyout		
Fall 2020	ORNL Buyout		
Spring 2020	PHY 213 TEAL, General Physics II	54	4.9/5.0
Fall 2019	PHY 211 TEAL, General Physics I	54	5.0/5.0
Spring 2019	PHY 213 TEAL, General Physics II	54	4.9/5.0
Fall 2018	PHY 211 TEAL, General Physics I	53	4.9/5.0
Spring 2018	PHY 213 TEAL, General Physics II	54	4.9/5.0
Fall 2017	Release		
Spring 2017	PHY 213 TEAL, General Physics II	54	4.8/5.0
Fall 2016	PHY 211 TEAL, General Physics I	54	4.8/5.0
Spring 2016	PHY 213 TEAL, General Physics II	54	3.9/4.0
Fall 2015	PHY 211 TEAL, General Physics I	53	3.9/4.0
Spring 2015	TEAL Course Development		
Fall 2014	Sabbatical		
Spring 2014	PHY 232, General University Physics II	311	3.2/4.0
Fall 2013	Release		
Spring 2013	PHY 231, General University Physics I	107	3.7/4.0
Fall 2012	PHY 151, Introduction to Physics	80	3.7/4.0
	PHY 611, Electromagnetic Theory I	13	3.8/4.0
Spring 2012	Release		
Fall 2011	PHY 151, Introduction to Physics	109	3.6/4.0
	PHY 611, Electromagnetic Theory I	21	3.5/4.0
Spring 2011	Release		
Fall 2010	PHY 151, Introduction to Physics	136	3.6/4.0
	PHY 211, General Physics I	138	3.5/4.0
Spring 2010	PHY 213, General Physics II	85	3.7/4.0
Fall 2009	PHY 151, Introduction to Physics	125	3.8/4.0
Spring 2009	PHY 535, Advanced Physics Laboratory	7	3.7/4.0

Mentoring

Postdoctoral Scholars

Alec Tewsley-Booth, November 2021 –

Mark McCrea, December 2017 – December 2019 (Postdoc, University of Winnipeg)

Haiyang Yan, January 2009 – February 2011 (Staff Scientist, China Academy of Engineering Physics)

Graduate Students

Prakash Adhikari, May 2022 –

Rajan Bhattarai, May 2022 –

Dillon Buskirk, May 2021 –

David Bowles, May 2019 – December 2019

Umit Coskun, January 2019 – October 2022 (M.S. November 2019, Ph.D. October 2022), Industry)

Joseph Bates, January 2019 – June 2020 (M.S. June 2020)

Rashika Gupta, September 2018 – (M.S. November 2020, Ph.D. in progress)

Grant Forbes, May 2018 – May 2019 (M.S. May 2019)

Mojtaba Behzadipour, January 2018 – (M.S. November 2019, Ph.D. in progress)

Jared Brewington, May 2017 – (M.S. November 2018, Ph.D. in progress)

Abel Manuel Lorente Campos, May 2017 – (M.S. November 2018, Ph.D. in progress)

Piya Amara Palamure, May 2017 – (M.S. November 2019, Ph.D. in progress)
 Lakshya Malhotra, May 2016 – April 2021 (M.S. May 2017, Ph.D. April 2021,
 Postdoc, University of Wisconsin)
 Alina Aleksandrova, May 2015 – December 2019 (M.S. December 2017, Ph.D. December 2019,
 Postdoc, California Institute of Technology)
 Subash Nepal, May 2015 – (M.S. December 2016, Ph.D. July 2020)
 Danielle Schaper, May 2015 – December 2021 (M.S. May 2017, Ph.D. December 2021, Postdoc,
 Los Alamos National Laboratory)
 Ryan Dadisman, May 2015 – April 2018 (M.S. December 2015, Ph.D. April 2018, Postdoc,
 Oak Ridge National Laboratory)
 Michael Brown, January 2012 – January 2018 (M.S. December 2013, Ph.D. January 2018,
 Data Scientist at Humana Military)
 Nima Nouri, January 2012 – August 2016 (M.S. December 2013, Ph.D. August 2016,
 Postdoc, Yale University)
 Syed Hasan, May 2010 – May 2014 (M.S. May 2011)
 Susan Malkowski, May 2009 – December 2011 (M.S. December 2011, Public School Teacher)
 Binita Hona, January 2009 – August 2010

Undergraduate Students

Kimi Medina-Castellano, June 2021 – August 2021
 Honor Hare, January 2019 – December 2020 (Ph.D., Physics, University of Rochester)
 Grant Forbes, August 2016 – August 2017 (M.S., University of Kentucky)
 Allyn Goatley, August 2015 – December 2015
 Brian Allgeier, January 2015 – May 2016
 David Bowles, May 2014 – May 2015 (University of Kentucky)
 Tristan Root, May 2011 – August 2011
 Cameron Mattie, May 2010 – April 2011
 Daniel Woods, May 2009 – December 2010 (Ph.D., Mechanical Engineering, Purdue University)
 Ramesh Adhikari, May 2009 – August 2009 (Ph.D., Physics, University of Massachusetts)

High School Students

Nedjma Kalliney, June 2021 –
 Lohith Tummala, September 2019 – May 2021 (Carnegie Mellon University)
 Eli Carter, November 2017 – May 2019 (University of Tennessee)
 Mingxi Mao, November 2016 – May 2018 (Massachusetts Institute of Technology)

Department Service

Year	Committee
2022–2023	Department Council (chair), Building/Safety Committee (co-chair), Computing and Webpages Committee (co-chair)
2021–2022	Department Council (chair), Building/Safety/Renovation Committee (co-chair), Computing and Webpages Committee (co-chair)
2020–2021	Building/Safety/Renovation Committee (chair), Accelerator Futures Committee (chair), Department Council, Honors/Awards Committee
2019–2020	Shops Committee (chair), Nuclear Experiment Faculty Search Committee (chair), Department Council, Outreach Committee
2018–2019	Promotion and Tenure Committee (chair), Alumni/Development Committee, Department Council
2017–2018	Departmental Planning Committee (chair), Alumni/Development Committee (chair)
2016–2017	Departmental Futures Committee, Undergraduate Program and Curriculum Committee, Huffaker Graduate Student Travel Awards (administrator)
2015–2016	Instructional Labs and TEAL Committee (co-chair), Huffaker Graduate Student Travel Awards (administrator), Undergraduate Program and Curriculum Committee, Nuclear Theory Faculty Search Committee,

	High Energy Experiment Faculty Search Committee, Instructional Staff Search Committee
2014–2015	Graduate Admissions Committee (acting chair), TEAL Committee, Huffaker Graduate Student Travel Awards (administrator), Undergraduate Recruitment and Scholarships, Instructional Staff Search Committee
2013–2014	Graduate Admissions Committee, Graduate Recruiting Committee, Space Committee, Huffaker Graduate Student Travel Awards (administrator)
2012–2013	Departmental Graduate Research Symposium and Poster Session (organizer), Department Chair Search Committee, Graduate Recruiting Committee, Promotion and Tenure Committee, Shops Committee
2011–2012	Departmental Poster Session (organizer), Graduate Recruiting Committee, Graduate Program and Curriculum Committee
2010–2011	Graduate Recruiting Committee (chair), Departmental Poster Session (organizer), Graduate Admissions Committee, Graduate Program and Curriculum Committee
2009–2010	Graduate Recruiting Committee (chair), Departmental Poster Session (organizer), Graduate Admissions Committee, Graduate Program and Curriculum Committee
2008–2009	Graduate Recruiting Committee (chair), Graduate Admissions Committee, Graduate Program and Curriculum Committee

College and University Service

Year	Committee
2022–2023	College of Arts and Sciences International Advisory Committee
2021–2022	College of Arts and Sciences International Advisory Committee
2020–2021	Search Committee for Dean of the College of Arts and Sciences (search suspended)
2019–2020	University Graduate Council Committee on Fellowships and Traineeships
2018–2019	University Graduate Council Committee on Fellowships and Traineeships, College of Arts and Sciences Faculty-Staff Capital Campaign Committee, Provost Outstanding Teaching Awards Selection Committee
2017–2018	University Graduate Council Committee on Fellowships and Traineeships
2016–2017	College of Arts and Sciences Teaching Awards Selection Committee
2012–2013	College of Arts and Sciences Teaching Awards Selection Committee, Associate Professor representative to College of Arts and Sciences External Review

Public Outreach Talks

University of Kentucky Society of Physics Students “Cosmic Lunch” on “Tests of Fundamental Physics with Ultracold Neutrons”, March 27, 2015.

University of Kentucky Public Relations video: “Under Review: Physics of an Anthony Davis Blocked Shot”, filmed March 2012, released June 2012 prior to 2012 NBA Draft. YouTube.

Kentucky SkyTalk (public science talk), “Why is there more matter than anti-matter in the universe?”, November 10, 2011.

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