

Bradley Plaster
University of Kentucky
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Professional Preparation

Massachusetts Institute of Technology, B.S. in Physics, June 1999
Massachusetts Institute of Technology, Ph.D. in Physics, February 2004
Advisor: Prof. Stanley Kowalski
California Institute of Technology, Postdoctoral Scholar in Physics, November 2003 – July 2008
Advisor: Prof. Bradley W. Filippone

Appointments

Associate Professor of Physics (with tenure), University of Kentucky, July 2012 –
Assistant Professor of Physics, University of Kentucky, July 2007 – June 2012
Visiting Associate in Physics, California Institute of Technology, 2011 – 2012

Awards and Honors

Department of Energy Outstanding Junior Investigator in Nuclear Physics, 2008 – 2013
College of Arts and Sciences Outstanding Teaching Award, 2012–2013

Professional Activities

Member, American Physical Society
Referee, Physical Review Letters, Physical Review C, Review of Scientific Instruments
Reviewer, Department of Energy Office of Nuclear Physics Grant Proposals
Elected Member of the Neutron EDM Experiment Executive Committee, 2009 – 2011

Funded Grants

1. Principal Investigator (sole), Department of Energy OJI Grant (Renewal), “Neutrons and Fundamental Symmetries”, \$450,000, April 2011 – April 2014
2. Principal Investigator (sole), Department of Energy OJI Grant, “Fundamental Electroweak and Hadronic Physics Studies of the Neutron”, \$315,000, July 2008 – April 2011

Papers Published in Refereed Journals

1. “Measurement of the neutron β -asymmetry A_0 with spin-polarized ultracold neutrons”, B. Plaster *et al.*, to be submitted to Phys. Rev. C.
2. “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, submitted to IEEE Trans. Magnetics.
3. “Performance of the Los Alamos National Laboratory spallation-neutron driven solid deuterium ultracold neutron source”, A. Saunders *et al.*, submitted to Rev. Sci. Instrum.
4. “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).
5. “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).

6. “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).
7. “Sealed drift tube cosmic ray veto counters”, R. Rios *et al.*, Nucl. Instrum. Methods Phys. Res. A **637**, 105 (2011).
8. “Determination of the axial-vector weak coupling constant with ultracold neutrons”, J. Liu *et al.*, Phys. Rev. Lett. **105**, 181803 (2010).
9. “First measurement of the neutron β asymmetry with ultracold neutrons”, R. W. Pattie, Jr. *et al.*, Phys. Rev. Lett. **102**, 012301 (2009).
10. “Multi-wire proportional chamber for ultra-cold neutron detection”, C. L. Morris *et al.*, Nucl. Instrum. Methods Phys. Res. A **599**, 248 (2009).
11. “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).
12. “Motional spin relaxation in large electric fields”, R. Schmid, B. Plaster, and B. W. Filippone, Phys. Rev. A **78**, 023401 (2008).
13. “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).
14. “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).
15. “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).
16. “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).
17. “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).
18. “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).
19. “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).
20. “Measurements of G_{En}/G_{Mn} from the ${}^2\text{H}(\vec{e}, e'\vec{n}){}^1\text{H}$ reaction to $Q^2 = 1.45$ (GeV/c)²”, R. Madey, A. Yu. Semenov, S. Taylor, B. Plaster *et al.*, Phys. Rev. Lett. **91**, 122002 (2003).

Invited Conference Talks

1. “Neutrons and fundamental symmetries”, Division of Nuclear Physics Fall Meeting, Workshop on Neutrinos and Fundamental Symmetries, Santa Fe, NM, November 2–3, 2010.
2. “Precision neutron β -decay studies with ultracold neutrons”, American Conference on Neutron Scattering, Ottawa, Canada, June 26–30, 2010.
3. “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.
4. “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.

5. “Recent neutron β -decay results”, Gordon Research Conference on Nuclear Physics, Bryant University, Smithfield, RI, July 12–17, 2009.
6. “Fundamental symmetry tests with ultracold neutrons”, Southeastern Section of the American Physical Society meeting, Raleigh, NC, October 30–November 1, 2008.
7. “ 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.
8. “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.
9. “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.
10. “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. “Recent results from tests of fundamental symmetries with ultracold neutrons”, Physics Colloquium, University of Kentucky, September 2, 2011.
2. “Precision tests of fundamental symmetries with ultracold neutrons”, High Energy Physics seminar, University of Maryland, April 20, 2011.
3. “Precision tests of fundamental symmetries with neutrons”, Subatomic Physics Division (P-25) seminar, Los Alamos National Laboratory, February 22, 2011.
4. “Precision tests of fundamental symmetries with neutrons”, Nuclear and Particle Physics Colloquium, Massachusetts Institute of Technology, February 14, 2011.
5. “Determination of the axial-vector weak coupling constant with polarized ultracold neutrons”, Nuclear Physics seminar, University of Kentucky, September 2, 2010.
6. “The search for the neutron electric dipole moment”, High Energy and Astro-Particle seminar, University of California, Los Angeles, April 21, 2010.
7. “Status of the UCNA experiment”, Nuclear Physics seminar, Indiana University, December 4, 2009.
8. “First results from the UCNA experiment”, Subatomic Physics Division (P-25) seminar, Los Alamos National Laboratory, November 5, 2008.
9. “Neutron β -decay and the value of V_{ud} ”, Nuclear Physics seminar, University of Kentucky, April 1, 2008.
10. “Neutron β -decay and the value of V_{ud} ”, Experimental High Energy Physics seminar, California Institute of Technology, February 5, 2008.
11. “Probing Standard Model symmetries with ultracold neutrons”, Subatomic Physics Division (P-25) seminar, Los Alamos National Laboratory, March 14, 2007.
12. “Probing Standard Model symmetries with ultracold neutrons”, Laboratory for Nuclear Science seminar, Massachusetts Institute of Technology, February 28, 2007.
13. “Ultracold neutrons: from nano-eV to TeV”, Department of Physics and Astronomy colloquium, University of Kentucky, February 8, 2007.
14. “Ultracold neutrons: from nano-eV to TeV”, Physics Division seminar, Argonne National Laboratory, Argonne, IL, November 27, 2006.

15. “The neutron electric form factor”, Subatomic Physics Division (P-25) seminar, Los Alamos National Laboratory, July 1, 2003.
16. “The neutron electric form factor”, W. K. Kellogg Radiation Laboratory seminar, California Institute of Technology, February 21, 2003.
17. “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.

Contributed Conference Talks

1. “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.
2. “First neutron β -decay results from the UCNA experiment”, American Physical Society meeting, Jacksonville, FL, April 14–17, 2007.
3. “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.
4. “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.
5. “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.
6. “A new search for a neutron electric dipole moment”, Division of Particles and Fields meeting, University of California, Riverside, CA, August 26–31, 2004.
7. “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.
8. “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.

Teaching

Semester	Course	Course Evaluation
Spring 2009	PHY 535, Advanced Physics Laboratory	3.7/4.0
Fall 2009	PHY 151, Introduction to Physics	3.8/4.0
Spring 2010	PHY 213, General Physics II, Electromagnetism	3.7/4.0
Fall 2010	PHY 151, Introduction to Physics	3.6/4.0
	PHY 211, General Physics I, Mechanics	3.5/4.0
Spring 2011	Release	
Fall 2011	PHY 151, Introduction to Physics	3.6/4.0
	PHY 611, Electromagnetic Theory I	3.5/4.0
Spring 2012	Release	

Mentoring

Postdoctoral Scholars

Haiyang Yan, January 2009 – February 2011 (now at Indiana University)

Graduate Students

Michael Brown, January 2012 –

Nima Nouri, January 2012 –

Syed Hasan, May 2010 – (M.S. awarded May 2011; Ph.D. in progress)
Susan Malkowski, May 2009 – December 2011 (M.S. awarded December 2011)
Binita Hona, January 2009 – August 2010

Undergraduate Students

Tristan Root, May 2011 – August 2011
Cameron Mattie, May 2010 – April 2011
Daniel Woods, May 2009 – December 2010
Ramesh Adhikari, May 2009 – August 2009

Department Service

Graduate Recruiting Committee, 2008–2009 (chair), 2009–2010 (chair), 2010–2011 (chair), 2011–2012
Graduate Admissions Committee, 2008–2009, 2009–2010, 2010–2011
Graduate Program and Curriculum Committee, 2008–2009, 2009–2010, 2010–2011, 2011–2012
Organizer, Departmental Poster Session, 2009, 2010, 2011

Public Outreach

University of Kentucky Public Relations film on the “Physics of Basketball”, March 2012.
Kentucky SkyTalk (public science talk), November 10, 2011.