

Ricardo O. Alarcón

President's Professor, Honors Faculty, Department of Physics, Arizona State University,
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Education

- University of Illinois, Urbana, IL, Post-Doctoral Research Associate in nuclear physics (mentors: Robert Eisenstein and Alan Nathan), 1985-88.
- Ohio University, Athens, OH, Ph.D. in physics (advisor: Jack Rapaport), 1985.
- University of Chile, Santiago, Chile, M.S. in physics (advisor: Carlos Graham), 1980.
- University of Chile, Santiago, Chile, B.S. in physics, 1978.

Professional Positions

- President's Professor, Arizona State University, 2013- present.
- Associate Chair, Department of Physics, Arizona State University, 2009-2018.
- Professor of Physics, Arizona State University, 2000-present.
- Visiting Professor, Massachusetts Institute of Technology, 1999-2001.
- Associate Professor of Physics, Arizona State University, 1995-2000.
- Visiting Associate Professor, Massachusetts Institute of Technology, 1996-97.
- Visiting Research Scientist, MIT-Bates Linear Accelerator Center, 1995-96.
- Assistant Professor of Physics, Arizona State University, 1989-95.
- Research Scientist, University of Illinois, 1988-89.

Significant Professional Activities

- Chair, Topical Group on Few-Body Systems and Multiparticle Dynamics, American Physical Society (2014-2018).
- DOE Technical, Cost, Schedule and Management review of the SBS spectrometer, Panel member, Jefferson Laboratory (2012-2017).
- Committee on Assessment and Outlook for Nuclear Physics, National Academy of Sciences, National Research Council, Member (2010-2012).
- Committee of Visitors, National Science Foundation, 2012.
- Scientific Assessment of Free Electron Laser (FEL) Technology for Naval Applications Committee, National Academy of Sciences, National Research Council, Member, (2007-2009).
- NSF Nuclear Physics Program Panel, 2009 and 2011.
- Committee on Education, American Physical Society, Division of Nuclear Physics, Member (2007-2013).
- Nominating Committee, Chair, American Physical Society, Division of Nuclear Physics, Member, 2011.
- Rare Isotope Science Assessment Committee (RISAC) of the National Academy of Sciences, National Research Council, Member (2005-2007).
- DOE Technical, Cost, Schedule and Management review of the STAR TOF detector, Panel member, Brookhaven National Laboratory (2005-2008).
- Nuclear Science Advisory Committee (NSAC) for the Department of Energy and the National Science Foundation, Member (2001-2005).
- Executive Committee, Topical Group on Few Body Systems and Multiparticle Dynamics, American Physical Society (2004-2007).
- Project Manager, BLAST project at MIT-Bates (1999–2002).
- Scientific Spokesperson, BLAST Collaboration (2000–2005).

- Member, Committee on Minorities, American Physical Society, (2001-2003).
- Proposal Reviewer for National Science Foundation (NSF), Department of Energy (DOE), National Sciences and Engineering Council of Canada (NSERC), French National Research Agency (ANR), Chilean Foundation for Science and Technology (CONICYT).
- Journal Reviewer for Physical Review Letters and Physical Review, Physics Letters B, Nuclear Instruments and Methods in Physics Research.

Awards and Honors

- President's Professor, Arizona State University, 2013.
- Outstanding Teaching Award, Department of Physics, Arizona State University, 2010.
- Fellow, American Physical Society, 2003.
- President, Bates Linear Accelerator Users Group Inc., 1998-2001.

Grants and Contracts

- Experiments in Fundamental Neutron Physics, PI, DOE, 2021-2025, \$457,338
- Experiments in Fundamental Neutron Physics, PI, DOE, 2018-2021, \$424,000
- A novel ionizing beam fluence and position detector array using the Micromegas technology with multi-coordinate readout, PI, DOE-SBIR, Phase I and II subcontract with RDI, 2015-2019, \$309,953
- MRI Consortium: Development of the Phase-I DarkLight Experiment at Jefferson Laboratory, NSF, subcontractor: MIT, 2014-2016; \$48,321.
- Fluence Based Proton Beam Quality Assurance, PI, Mayo Clinic, 2014-2016, \$57,494.
- Proton Range Finder Detector, PI, Mayo Clinic, 2014-2016; \$50,510.
- Research in Fundamental Nuclear Physics, PI, NSF, 2013-2017; \$510,000.
- Research in Fundamental Nuclear Physics, PI, NSF, 2010-2013; \$540,000.
- Design and Implementation of Aerogel Cherenkov Detector Testing, SBIR-DOE with Aspen Aerogels, Phase I and II, PI, 2010-2013; \$210,000.
- MRI Consortium: Development of a Magneto-electrostatic spectrometer for high precision measurements of neutron beta decay, NSF, subcontractor: University of Virginia, PI, 2012-2015, \$ 180,000.
- Research in Fundamental Nuclear Physics, PI, NSF, 2007-2010; \$450,000.
- Research in Intermediate Energy Nuclear Physics, PI, NSF, 2004-2007; \$450,000.
- Medium Energy Nuclear Physics with Electrons at Arizona State University (ASU), PI, NSF, 2001-2004; \$320,729.
- Medium Energy Nuclear Physics with Electrons at Arizona State University, PI, 2003 (ASU Cost-share); \$22,625.
- Construction of BLAST Cerenkov Detectors, PI, MIT-subcontract; 2000-2002; \$480,000.
- Medium Energy Nuclear Physics with Electrons at Arizona State University, PI, NSF, 1998-2000; \$184,000.
- Construction of BLAST Cerenkov Detectors, PI, MIT-subcontract, 1998-99; \$84,359.
- Spin-Oriented Studies in the Nuclear and Nucleon Systems, co-PI with J. Comfort; NSF, 1992-1999; \$1,650,000.
- Electronuclear Physics with Polarized Internal Targets, PI with J. Konijn, NATO Collaborative Research Grant, 1992-1994; \$6,500.
- Particle Detectors; Coalition to Increase Minority Degrees, ASU, 1992; \$1,338.
- Measurement of Nuclear Polarization; ASU Faculty Grant in-Aid, ASU, 1992; \$5,292.

- Fundamental Interactions in the Nuclear Medium, co-PI with J. Comfort and B. G. Ritchie; NSF, 1989-1992; \$645,164.

ASU Mentoring as Thesis Advisor

B.S. Honor Theses

Isaac Saldivar (2012)
Jesse Strycker (2015)
Madison Grayson (2021)
Evrin Gulser (2025)
Arda Gulser (2025)

M.S. Theses

Sam Choi (1994)
Daniel Martinez (1994)

Ph.D. Theses

Edward Six (1999)
Alaine Young (2004)
Eugene Geis (2007)
Septimiu Balascuta (2012)
Benjamin O'Neill (2012)
Lauren Ice (2016)
David Blyth (2017)
Robert Dipert (2019)
Jason Holmes (2019)
Glenn Randall (2021)
Skylar Clymer (current)

Postdoctoral Scholar Sponsor

Joseph Gorgen, ASU/Bates, postdoc, 1992-95.
Steve Dolfini, ASU/Bates, postdoc, 1995-97, (Hugues Corporation)
Edward Six, ASU/Bates, postdoc, 1999-2001, (Department of Defense)
Baris Tonguc, ASU/Bates, postdoc, 2003-2004, (Sakarya University, faculty member)
Libertad Barron, ASU, postdoc, 2005-2007, (UNAM, Mexico, faculty member)
Septimiu Balascuta, ASU, postdoc, 2012-2013 (Scientist, Romanian Institute)
Robert Dipert, ASU, postdoc, 2019-2021.

Citations: <https://scholar.google.com/citations?user=bXEc-SkAAAAJ&hl=en>

Invention Disclosures

1. “Current Generation from Radiation with Diamond-Diode Based Devices for Detectors or Power Generators,” Filing Date: 14-10-2018, Provisional Patent US Application No. 62745414, Jason Holmes, Franz A. Koeck, Maitreya Dutta, Manpuneet Benipal, Raghuraj Hathwar, Ricardo Alarcon, Srabanti Chowdhury, Stephen M. Goodnick, Anna Zaniewski, Robert J. Nemanich.

Edited Proceedings

1. *Electronuclear physics with Internal Targets and the BLAST detector (I)*, R. Alarcon and M. Butler, editors, World Scientific Publishing Co. Pte. Ltd. ISBN 981-02-1126-0, 1993.
2. *Electronuclear physics with Internal Targets and the BLAST detector (II)*, R. Alarcon and R. Milner, editors, World Scientific Publishing Co., 1999.
3. *VII Latin American Symposium on Nuclear Physics and Applications*, R. Alarcon, P. Cole, C. Djalali, F. Umeres (editors), AIP Conference Proceedings, 947 (2007).
4. *VIII Latin American Symposium on Nuclear Physics and Applications*, R. Alarcon, H. Arellano, P. Cole, A. Kreiner (editors), AIP Conference Proceedings, 1265 (2010).
5. *IX Latin American Symposium on Nuclear Physics and Applications*, R. Alarcon, E. Ayala, C. Granja, N. Medina (editors), AIP Conference Proceedings, 1423 (2012).

National Science Reports

1. *Opportunities in Nuclear Science: A Long-Range Plan for the Next Decade*, DOE/NSF Nuclear Science Advisory Committee (NSAC), April 2002.
2. *Scientific Opportunities with a Rare-Isotope Facility in the US*, Rare-Isotope Science Assessment Committee, The National Academies Press, ISBN: 0-309-10408-4, (2007).
3. *Scientific Assessment of High-Power Free-electron Laser Technology*, Committee on a Scientific Assessment of FEL Technology for Naval Applications, The National Academies Press, ISBN: 0-309-12689-4, (2009).
4. *Nuclear Physics: Exploring the Heart of Matter*, Committee on Assessment of and Outlook for Nuclear Physics, Board on Physics and Astronomy; Division on Engineering and Physical Sciences; National Research Council, National Academies Press, ISBN-13: 978-0-309-26040-4 (2012).

Peer-reviewed Publications

1. R. Alarcon *et al.*, *The two-photon exchange experiment at DESY*, Eur. Phys. J. A (2024) 60:81 <https://doi.org/10.1140/epja/s10050-024-01299-2>
2. S. Baessler, H. Acharya, R. Alarcon, L. Broussard, M. Bowler *et al.* *Study of neutron beta decay with the nab experiment*, EPJ Web of Conferences **303**, 05001 (2024)
3. J. Holmes, J. Brown, F. Koeck, H. Johnson, M. Benipal, A. Zaniewski, R. Alarcon (corresponding author), S. Goodnick, and R. Nemanich, *Diamond PIN Thermal Neutron Detectors*, Ciencia y Tecnología, 38(1): 1-5, 2022
4. N. Fomin, R. Alarcon, L. Alonzi, E. Askanazi, S. Baessler, S. Balascuta, L. Barron-Palos, A. Barzilov, D. Blyth *et al.* (NPDGamma Collaboration), *Measurement of the parity-odd angular distribution of γ rays from polarized neutron capture on ^{35}Cl* , Phys. Rev. C **106**, 015504 - 27 July, 2022
5. The DarkLight Collaboration *et al* 2022 *J. Phys.: Conf. Ser.* **2391** 012010; DOI 10.1088/1742-6596/2391/1/012010J

6. A Lopez, S S Romero Gonzales, O Hernandez-Rodrigues, J Holmes and R. Alarcon, *GEANT4 Study of Proton-Body Interactions*, J. Nucl. Phys. Mat. Sci. Rad. A. **8** No.2, 121 (2021).
7. J. C. Bernauer, A. Schmidt, B. S. Henderson, L. D. Ice, D. Khanef, C. O'Connor, R. Russell, N. Akopov, R. Alarcon, O. Ates, A. Avetisyan, R. Beck, S. Belostotski, J. Bessuille, F. Brinker, J. R. Calarco, V. Carassiti, E. Cisbani, G. Ciullo, M. Contalbrigo, R. De Leo, J. Diefenbach, T. W. Donnelly, K. Dow, G. Elbakian, P. D. Eversheim, S. Frullani, Ch. Funke, G. Gavrillov, B. Gläser, N. Görrissen, D. K. Hasell, J. Hauschildt, Ph. Hoffmeister, Y. Holler, E. Ihloff, A. Izotov, R. Kaiser, G. Karyan, J. Kelsey, A. Kiselev, P. Klassen, A. Krivshich, M. Kohl, I. Lehmann, P. Lenisa, D. Lenz, S. Lumsden, Y. Ma, F. Maas, H. Marukyan, O. Miklukho, R. G. Milner, A. Movsisyan, M. Murray, Y. Naryshkin, R. Perez Benito, R. Perrino, R. P. Redwine, D. Rodríguez Piñeiro, G. Rosner, U. Schneckloth, B. Seitz, M. Statera, A. Thiel, H. Vardanyan, D. Veretennikov, C. Vidal, A. Winnebeck, V. Yeganov, *OLYMPUS: First measurement of the charge-averaged elastic lepton-proton scattering cross section*, Phys. Rev. Lett. **126**, 162501 (2021).
<https://doi.org/10.1103/PhysRevLett.126.162501>
8. K. Scheuer, J. Holmes, E. Galyaev, D. Blyth, R. Alarcon, *Radiation Effects on FR4 Printed Circuit Boards*, IEEE Transactions on Nuclear Science, **67**, 1846 (2020).
9. J. Holmes, E. Galyaev, R. Alarcon, R. Acuna, D. Blyth, B. Fox, N. Mullins, K. Scheuer, *A novel approach to building micromegas detectors enabled by precision manufacturing*, Journal of Instrumentation, **15**, T05001 (2020).
10. J A Lopez, S S Romero Gonzales, O Hernandez-Rodrigues, J Holmes and R. Alarcon, *A GEANT4 Study of a Gamma-ray Collimation Array*, J. Nucl. Phys. Mat. Sci. Rad. A. **7**, 217 (2020).
11. J. Holmes, J. Brown, F. Koeck, H. Johnson, M. Benipal, P. Kandlakunta, A. Zaniewski, R. Alarcon, R. Cao, S. Goodnick, R. Nemanich, *Performance of 5 μm PIN diamond diode as thermal neutron detectors*, Nucl. Instr. Meth. Phys. Res. **961**, 163601 (2020).
12. J. Fry, R. Alarcon, et al., *The Nab Experiment: A precision measurement of unpolarized neutron beta decay*, EPJ Web of Conferences **219**, 04002 (2019) <https://doi.org/10.1051/epjconf/201921904002>
13. K. K. H. Leung et al., *The neutron electric dipole moment experiment at the Spallation Neutron Source*, EPJ Web of Conferences **219**, 02005 (2019) <https://doi.org/10.1051/epjconf/201921902005>
14. M.W. Ahmed, R. Alarcon, et al., *A new cryogenic apparatus to search for the neutron electric dipole moment*, Journal of Instrumentation, volume **14**, November 2019.
<https://iopscience.iop.org/article/10.1088/1748-0221/14/11/P11017>
15. S. Lee et al., *Design and operation of a windowless gas target internal to a solenoidal magnet for use with a megawatt electron beam*, Nucl. Instr. Meth. Phys. Res. **939**, 46 (2019)
<https://www.sciencedirect.com/science/article/pii/S0168900219307272?via=ihub>
16. J. Holmes, M. Dutta, F. Koeck, M. Benipal, R. Hathwar, J. Brown, B. Fox, H. Johnson, A. Zaniewski, R. Alarcon, S. Chowdhury, S. Goodnick, R. Nemanich, *Neutralizing the polarization effect of diamond diode detectors using periodic forward bias pulses*, Diamond and Related Materials **94**, 162 (2019).
17. D. Blyth, J. Fry, N. Fomin, R. Alarcon, et al., *First Observation of P-odd γ Asymmetry in Polarized Neutron Capture on Hydrogen*, Phys. Rev. Lett. **121**, 242002 (2018).
<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.121.242002>
18. J. Holmes, M. Dutta, F. Koeck, M. Benipal, J. Brown, B. Fox, R. Hathwar, H. Johnson, M. Malakoutian, M. Saremi, A. Zaniewski, R. Alarcon, S. Chowdhury, S. Goodnick, R. Nemanich, *A 4.5 μm PIN diamond diode for detecting slow neutrons*, Nucl. Instr. Meth. Phys. Res. **903**, 297 (2018).
<https://www.sciencedirect.com/science/article/pii/S0168900218307915>
19. DeGrush, A. Maschinot, T. Akdogan, R. Alarcon, W. Bertozzi, E. Booth, T. Botto, J. R. Calarco, B. Clasio, C. Crawford, K. Dow, M. Farkhondeh, R. Fatemi, O. Filoti, W. Franklin, H. Gao, E. Geis, S. Gilad, D. K. Hasell, P. Karpus, M. Kohl, H. Kolster, T. Lee, J. Matthews, K. McIlhany, N. Meitanis, R. Milner, J. Rapaport, R. Redwine, J. Seely, A. Shinozaki, A. Sindile, S. Širca, E. Six, T. Smith, B. Tonguc, C. Tschalär, E. Tsentalovich, W. Turchinets, Y. Xiao, W. Xu, Z.-L. Zhou, V.

- Ziskin, and T. Zwart, *Measurement of the Vector and Tensor Asymmetries at Large Missing Momentum in Quasielastic Electron Scattering from Deuterium*, Phys. Rev. Lett. **119**, 182501 (2017).
20. B.S. Henderson, L.D. Ice, D. Khanef, C. O'Connor, R. Russell, A. Schmidt, J.C. Bernauer, M. Kohl, N. Akopov, R. Alarcon, O. Ates, A. Avetisyan, R. Beck, S. Belostotski, J. Bessuille, F. Brinker, J.R. Calarco, V. Carassiti, E. Cisbani, G. Ciullo, M. Contalbrigo, R. De Leo, J. Diefenbach, T.W. Donnelly, K. Dow, G. Elbakian, P.D. Eversheim, S. Frullani, Ch. Funke, G. Gavrilo, B. Gläser, N. Görrissen, D.K. Hasell, J. Hauschildt, Ph. Hoffmeister, Y. Holler, E. Ihloff, A. Izotov, R. Kaiser, G. Karyan, J. Kelsey, A. Kiselev, P. Klassen, A. Krivshich, I. Lehmann, P. Lenisa, D. Lenz, S. Lumsden, Y. Ma, F. Maas, H. Marukyan, O. Miklukho, R.G. Milner, A. Movsisyan, M. Murray, Y. Naryshkin, R. Perez Benito, R. Perrino, R.P. Redwine, D. Rodríguez Piñeiro, G. Rosner, U. Schneekloth, B. Seitz, M. Statera, A. Thiel, H. Vardanyan, D. Veretennikov, C. Vidal, A. Winnebeck, V. Yeganov, *Hard Two-Photon Contribution to Elastic Electron-Proton Scattering as determined by the OLYMPUS Experiment*, Phys. Rev. Lett **118**, 092501 (2017).
 21. L. J. Broussard, R. Alarcon *et al.*, *Neutron Decay Correlations in the Nab Experiment*, J. Phys. : Conf. Ser. **876**, 012005 (2017).
 22. J. Fry, R. Alarcon, R. Allen, E. Askanazi, S. Balascuta, L. Barron-Palos, S. Baeßler, A. Barzilov, C. Blessinger, D. Blyth, J. D. Bowman, J. R. Calarco, T. E. Chupp, C. E. Coppola, C. Crawford, K. Craycraft, M. Dabaghyan, D. Evans, J. Favela, C. Fieseler, N. Fomin, W. Fox, S. Freedman, E. Frlež, C. Fu, C. Garcia, I. Garishvili, M. T. Gericke, R. C. Gillis, K. Grammer, G. L. Greene, J. Hamblen, C. Hayes, F. W. Hersman, T. Ino, E. B. Iverson, G. L. Jones, L. Kabir, S. Kucucker, B. Lauss, Y. Li, R. Mahurin, M. Maldonado-Velazquez, M. McCrea, Y. Masuda, J. Mei, R. Milburn, G. S. Mitchell, P. Mueller, S. Muto, M. Musgrave, H. Nann, I. Novikov, S. Page, D. Parsons, D. Počanić, S. I. Penttilä, W. D. Ramsay, A. Salas-Bacci, S. Santra, P.-N. Seo, E. Sharapov, M. Sharma, F. Simmons, T. Smith, W. M. Snow, J. Stuart, E. Tang, Z. Tang, J. Thomison, T. Tong, J. Vanderwerp, S. Waldecker, W. S. Wilburn, W. Xu, V. Yuan, Y. Zhang, *Status of the NPDGamma Experiment*, Hyperfine Interactions **238**:11 (2017).
 23. M.J. Bales, R. Alarcon, C.D. Bass, E.J. Beise, H. Breuer, J. Byrne, T.E. Chupp, K.J. Coakley, R.L. Cooper, M.S. Dewey, S. Gardner, T.R. Gentile, D. He, H.P. Mumm, J.S. Nico, B. O'Neill, A.K. Thompson, and F.E. Wietfeldt, *Precision measurement of the radiative β decay of the free neutron*, Phys. Rev. Lett. **116**, 242501 (2016).
 24. R. Alarcon, D. Blyth, E. Galyaev, J. Holmes, L. Ice, G. Randall, M. Bues, M. Fatyga, *Detectors for in vivo range and dose verification in proton therapy*, International Journal of Modern Physics: Conference Series **44**, 1660217 (2016).
 25. R. Alarcon, L. Ice, *Status of the OLYMPUS Experiment*, Proceedings of Science CD15, 071 (2015).
 26. K. B. Grammer, R. Alarcon, L. Barrón-Palos, D. Blyth, J. D. Bowman, J. Calarco, C. Crawford, K. Craycraft, D. Evans, N. Fomin, J. Fry, M. Gericke, R. C. Gillis, G. L. Greene, J. Hamblen, C. Hayes, S. Kucuker, R. Mahurin, M. Maldonado-Velázquez, E. Martin, M. McCrea, P. E. Mueller, M. Musgrave, H. Nann, S. I. Penttilä, W. M. Snow, Z. Tang, and W. S. Wilburn, *Measurement of the scattering cross section of slow neutrons on liquid parahydrogen from neutron transmission*, Phys. Rev. B, **91**, 180301(R) (2015).
 27. R. Milner, D.K. Hasell, M. Kohl, U. Schneekloth, N. Akopov, R. Alarcon, V.A. Andreev, O. Ates, A. Avetisyan, D. Bayadilov, R. Beck, S. Belostotski, J.C. Bernauer, J. Bessuille, F. Brinker, B. Buck, J.R. Calarco, V. Carassiti, E. Cisbani, G. Ciullo, M. Contalbrigo, N. D'Ascenzo, R. De Leo, J. Diefenbach, T.W. Donnelly, K. Dow, G. Elbakian, D. Eversheim, S. Frullani, Ch. Funke, G. Gavrilo, B. Gläser, N. Görrissen, J. Hauschildt, B.S. Henderson, Ph. Hoffmeister, Y. Holler, L.D. Ice, A. Izotov, R. Kaiser, G. Karyan, J. Kelsey, D. Khanef, P. Klassen, A. Kiselev, A. Krivshich, I. Lehmann, P. Lenisa, D. Lenz, S. Lumsden, Y. Ma, F. Maas, H. Marukyan, O. Miklukho, A. Movsisyan, M. Murray, Y. Naryshkin, C. O'Connor, R. Perez Benito, R. Perrino, R.P. Redwine, D. Rodríguez Piñeiro, G. Rosner, R.L. Russell, A. Schmidt, B. Seitz, M. Statera, A. Thiel, H. Vardanyan, D. Veretennikov, C. Vidal, A. Winnebeck, V. Yeganov, *The OLYMPUS experiment*, Nucl. Instr. Meth. Phys. Res. A, **741**, 1 (2014).

28. R. Alarcon, D. Blyth, *Measurement of the weak nucleon-nucleon interaction by polarized cold neutron capture on protons*, EPJ Web of Conferences, **66**, 05001 (2014).
29. R. Alarcon, S. Balascuta, S.V. Benson, W. Bertozzi, J.R. Boyce, R. Cowan, D. Douglas, P. Evtushenko, P. Fisher, E. Ihloff, N. Kalantarians, A. Kelleher, W.J. Kossler, R. Legg, E. Long, R.G. Milner, G.R. Neil, L. Ou, B. Schmookler, C. Tennant, C. Tschalar, G.P. Williams, S. Zhang, *Measured radiation and background levels during transmission of megawatt electron beams through millimeter apertures*, Nucl. Instr. Meth. Phys. Res. A **729**, 233 (2013).
30. R. Alarcon, S. Balascuta, S. Benson, W. Bertozzi, J. Boyce, R. Cowan, D. Douglas, P. Evtushenko, P. Fisher, E. Ihloff, N. Kalantarians, A. Kelleher, R. Legg, R. G. Milner, G. R. Neil, L. Ou, B. Schmookler, C. Tennant, C. Tschalar, G. P. Williams, and S. Zhang, *Transmission of Megawatt Relativistic Electron Beams through Millimeter Apertures*, Phys. Rev. Lett., **111**, 164801 (2013).
31. C. Tschalar, R. Alarcon, S. Balascuta, S.V. Benson, W. Bertozzi, J.R. Boyce, R. Cowan, D. Douglas, P. Evtushenko, P. Fisher, E. Ihloff, N. Kalantarians, A. Kelleher, R. Legg, R.G. Milner, G.R. Neil, L. Ou, B. Schmookler, C. Tennant, G.P. Williams, and S. Zhang, *Transmission of High-Power Electron Beams Through Small Apertures*, Nucl. Instr. Meth. Phys. Res. A **729**, 69 (2013).
32. R. Alarcon and S. Balascuta, *Status of the NPDGamma Experiment at the SNS*, Hyperfine Interactions, **214**, 149 (2013).
33. R.L. Cooper, R. Alarcon, M.J. Bales, C.D. Bass, E.J. Beise, H. Breuer, J. Byrne, T.E. Chupp, K.J. Coakley, M.S. Dewey, C. Fu, T.R. Gentile, H.P. Mumm, J.S. Nico, B. O'Neill, K. Pulliam, A.K. Thompson, F.E. Wietfeldt, *A gamma- and X-ray detector for cryogenic, high magnetic field applications*, Nucl. Instr. Meth. Phys. Res A **691**, 64 (2012).
34. B. T. Tonguc, S. Citci, M. Bektasoglu, and R. Alarcon, *Invariant Mass Distribution of $D(e, e')$ from BLAST*, Balkan Physics Letters, **20**, 201039 (2012).
35. S. Balascuta, R. Alarcon, S. Baefler, G. Greene, A. Mietke, C. Crawford, R. Milburn, S. Penttila, J. Prince, J. Schaedler, *The Implementation of a Super Mirror Polarizer at the SNS Fundamental Neutron Physics Beamline*, Nucl. Instr. Meth. Phys. Res. A **137**, 671 (2012).
36. J. M. Kirkpatrick, N. F. Sparveris, I. Nakagawa, A. M. Bernstein, R. Alarcon, W. Bertozzi, T. Botto, P. Bourgeois, J. Calarco, F. Casagrande, M. O. Distler, K. Dow, M. Farkondeh, S. Georgakopoulos, S. Gilad, R. Hicks, A. Holtrop, A. Hotta, X. Jiang, A. Karabarounis, S. Kowalski, R. Milner, R. Miskimen, C. N. Papanicolas, A. J. Sarty, Y. Sato, S. Širca, J. Shaw, E. Six, S. Stave, E. Stiliaris, T. Tamae, G. Tsentalovich, C. Tschalaer, W. Turchinets, Z.-L. Zhou, and T. Zwart, *Measurement of the partial cross sections σ_{TT} , σ_{LT} , and $(\sigma_T + \epsilon\sigma_L)$ of the ${}^1H(e, e'\pi^+)n$ reaction in the $\Delta(1232)$ resonance*, Phys. Rev. C **84** 028201 (2011).
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