

CURRICULUM VITAE AND PUBLICATIONS LIST

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Refereed Articles:

1. D.S. Akerib, *et al.* [LUX collaboration], 'First spin-dependent WIMP-nucleon cross-section limits from the LUX experiment', arXiv:1602.03489 (2016), submitted to Phys. Rev. Lett.
2. J.B. Albert, *et al.* [EXO collaboration], 'First search for Lorentz and CPT violation in double beta decay with EXO-200', arXiv:1601.07266 (2016), submitted to Phys. Rev. D.
3. J.B. Albert, *et al.* [EXO collaboration], 'Cosmogenic backgrounds to $0\nu\beta\beta$ in EXO-200', arXiv:1512.06835 (2015), submitted to Journ. Cos. Astropart. Phys.
4. D.S. Akerib, *et al.* [LUX collaboration], 'Improved WIMP scattering limits from the LUX experiment', arXiv:1512.03506 (2015), submitted to Phys. Rev. Lett.
5. D.S. Akerib, *et al.* [LUX collaboration], 'Tritium calibration of the LUX dark matter experiment', arXiv:1512.03133 (2015), submitted to Phys. Rev. D.
6. J.B. Albert, *et al.* [EXO collaboration], 'Search for $2\nu\beta\beta$ decay of ^{136}Xe to the 0_1^+ excited state of ^{136}Ba with EXO-200', arXiv:1511.04770 (2015), accepted for publication in Phys. Rev. C.
7. D.S. Akerib, *et al.* [LUX collaboration], 'FPGA-based trigger system for the LUX dark matter experiment', arXiv:1511.03541 (2015), accepted for publication in Nucl. Instrum. Meth. A.

8. J.B. Albert, *et al.* [EXO collaboration], 'Measurements of the ion fraction and mobility of α and β -decay products in liquid xenon using the EXO-200 detector', Phys. Rev. C **92** 045504 (2015).
9. J.B. Albert, *et al.* [EXO collaboration], 'Investigation of radioactivity-induced backgrounds in EXO-200', Phys. Rev. C **92** 015503 (2015).
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12. D.S. Akerib *et al.* [LUX collaboration], 'Radiogenic and Muon-Induced Backgrounds in the LUX Dark Matter Detector', Astropart. Phys. **62** 33-46 (2015).
13. J.B. Albert, *et al.* [EXO collaboration], 'Search for Majorana neutrinos with the first two years of EXO-200 data', Nature **510** 229-234 (2014).
14. D.S. Akerib, *et al.* [LUX collaboration], 'First results from the LUX dark matter experiment at the Sanford Underground Research Facility', Phys. Rev. Lett. **112** 091303 (2014).
15. J.B. Albert, *et al.* [EXO collaboration], 'An improved measurement of the $2\nu\beta\beta$ half-life of ^{136}Xe with EXO-200', Phys. Rev. C **89** 015502 (2014).
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117. A. A. Affolder *et al.* [CDF Collaboration], “Search for a fourth-generation quark more massive than the Z_0 boson in p anti- p collisions at $s^{**}(1/2) = 1.8\text{-TeV}$,” *Phys. Rev. Lett.* **84**, 835 (2000) [arXiv:hep-ex/9909027].
118. A. A. Affolder *et al.* [CDF Collaboration], “Measurement of the helicity of W bosons in top quark decays,” *Phys. Rev. Lett.* **84**, 216 (2000) [arXiv:hep-ex/9909042].
119. A. A. Affolder *et al.* [CDF Collaboration], “Observation of diffractive beauty production at the Fermilab Tevatron,” *Phys. Rev. Lett.* **84**, 232 (2000).
120. A. A. Affolder *et al.* [CDF Collaboration], “The transverse momentum and total cross section of e^+e^- pairs in the Z boson region from p anti- p collisions at $s^{**}(1/2) = 1.8\text{-TeV}$,” *Phys. Rev. Lett.* **84**, 845 (2000) [arXiv:hep-ex/0001021].
121. A. A. Affolder *et al.* [CDF Collaboration], “Measurement of the B_0 anti- B_0 oscillation frequency using $l^- D^{*+}$ pairs and lepton flavor tags,” *Phys. Rev. D* **60**, 112004 (1999) [arXiv:hep-ex/9907053].
122. A. A. Affolder *et al.* [CDF Collaboration], “Search for the flavor-changing neutral current decays $B^+ \rightarrow \mu^+ \mu^- K^+$ and $B_0 \rightarrow \mu^+ \mu^- K^*0$,” *Phys. Rev. Lett.* **83**, 3378 (1999) [arXiv:hep-ex/9905004].
123. A. A. Affolder *et al.* [CDF Collaboration], “Search for color singlet technicolor particles in $p\bar{p}$ collisions at $\sqrt{s} = 1.8\text{ TeV}$,” *Phys. Rev. Lett.* **84**, 1110 (2000).

Conference Proceedings:

- "After LUX: the LZ program", Proceedings of the APS Division of Particles and Fields meeting (DPF 2011), arXiv:1110.0103.
- "A search for weakly interacting dark matter with the LUX experiment", Proceedings of the 35th International Conference of High Energy Physics (ICHEP 2010), POS (ICHEP 2010), 431 (2011).
- "Status of the EXO double beta decay search", Proceedings of the 35th International Conference of High Energy Physics (ICHEP 2010), POS (ICHEP 2010), 300 (2011).
- "The LUX dark matter search", Proceedings of Topics in Astroparticle and Underground Physics (TAUP 2009), J. Phys. Conf. Ser. **203** 012026 (2010).
- "Status of the LUX dark matter search", Proceedings of the 17th International Conference on Supersymmetry and the Unification of Fundamental Interactions, AIP Conf. Proc. 987-0-7354-0737 (2009).
- "Searching for Double Beta Decay with the Enriched Xenon Observatory", Proceedings of the 9th Conference on the Intersections of Particle and Nuclear Physics (CIPANP 2006), AIP Conf. Proc. 870:532-535, 2006.
- 'EXO: an advanced Enriched Xenon double beta decay observatory', Proceedings of the Eighth International Workshop on Topics in Astroparticle and Underground Physics (TAUP 2003), Nucl. Phys. B (Proc. Suppl.) **138**, 224 (2005).
- 'EXO: a next generation double beta decay experiment', Proceedings of the Fourth International Workshop on Neutrino Oscillations and their Origin (NOON 2003), World Scientific (2004).

Grants awarded:

1. "E-VERIFY: LUX/Zepplin (LZ) Project", Dept. of Energy subcontract through Lawrence Berkeley National Laboratory, \$472,476 for 10/1/15 through 9/30/18.
2. "High energy accelerator and cosmic ray user group at the University of Maryland", Dept. of Energy, \$620,000 for 7/15/16 through 3/31/2019.
3. "Support for LUX, LZ, and Detector R&D at the University of Maryland", Dept. of Energy grant number DESC0012034, \$184,000 for 5/1/2014 through 3/31/2016.
4. "Search for Neutrinoless Double Beta Decay in ^{136}Xe ", NSF Award PHY1307362, \$290,557 for 04/01/2013 through 03/31/2016.
5. "E-VERIFY: Operation of the LUX Experiment", Dept. of Energy subcontract through Lawrence Berkeley National Laboratory, \$38,070 for 03/04/2013 through 12/31/2015.

6. “E-VERIFY: Development of the LZ Dark Matter Experiment”, Dept. of Energy subcontract through Lawrence Berkeley National Laboratory, \$435,450 for 11/20/2013 through 12/31/2015.
7. “Early Career: Search for weakly interacting dark matter with liquid xenon”, Dept. of Energy grant number DE-FG02-11ER41738, \$750,000 for 07/01/11 through 06/30/16.
8. “Search for neutrinoless double beta decay with the EXO-200 experiment”, NSF Award 0969259, \$510,000 for 07/01/10 through 06/30/13.
9. “LZ20 Development: The LUX-ZEPLIN 20 Tonne Dark Matter Experiment Technical Development Plan for DUSEL”, NSF subcontract through Case Western University, NSF award RES504478, \$232,171 for 7/1/09 through 8/31/13.
10. “Search for neutrinoless double beta decay with the EXO-200 experiment”, NSF Award 1115524, \$24,059 for 07/01/10 through 06/30/11.
11. “Search for neutrinoless double beta decay with EXO-200”, NSF Award 1033503, \$25,000 for 07/01/09 through 06/30/10.
12. “Detection of Impurities in Cryogenic Liquids with Extreme Sensitivity”, NSF Award 0810495, \$314,176 for 07/15/08 through 06/30/11.
13. “Construction of the LUX Dark Matter Experiment at the Sanford Underground Science and Engineering Laboratory”, Dept. of Energy subcontract through Brown University, \$20,000 for 07/01/08 through 06/30/10.
14. “Collaborative research for DUSEL: Barium tagging in liquid xenon for EXO”, NSF Award 0652690, \$255,520 for 09/01/07 through 08/30/10.
15. “Search for neutrinoless double beta decay with EXO-200”, NSF Award 0653447, \$389,682 for 07/01/07 through 06/30/10.

Invited conference talks and lectures:

- “Status and outlook for the direct detection of dark matter”, invited session talk at the APS April 2015 meeting, Baltimore, MD.
- “First dark matter search results from LUX”, Mitchell Workshop on Collider and Dark Matter Physics, College Station, TX, May 2014.
- “Searches for Double Beta Decay”, Fermilab Academic Lecture Series, Batavia, IL, February 2014.
- “Prospects for Absolute Neutrino Mass Measurements”, invited plenary talk at Lepton-Photon 2013, San Francisco, CA, June 2013.
- “Status and Future of Double Beta Decay”, invited session talk at the APS April 2013 meeting, Denver, CO.

- “Experimental Overview of $\beta\beta 0\nu$ ”, invited talk at Snowmass Intensity Frontier meeting, Menlo Park, CA, March 2013.
- “Dark matter searches with noble liquids”, invited talk at JSI Workshop: Near Field Cosmology as a Probe of Early Universe, Dark Matter, and Gravity, Annapolis, MD, December 2011.
- “Non-accelerator HEP instrumentation challenges”, invited talk at the 2011 APS Division of Particles and Fields meeting, Providence, RI, August 2011.
- “Dark matter search at LUX”, invited talk at the 2011 Shanghai Particle Physics and Cosmology Symposium, Shanghai, China, June 2011.
- “What nuclear physics tells us about physics beyond the nucleus: Progress in fundamental symmetries and neutrinos since the 2007 long range plan”, plenary talk at the APS Division of Nuclear Physics meeting, Santa Fe, NM, November 2010.
- “Non-accelerator experiments: physics goals and challenges”, invited talk at the Workshop on Detector R&D, Batavia, IL, October 2010.
- “Neutrinoless double beta decay”, lectures presented at the SLAC summer institute, Menlo Park, CA, August 2010.
- “Dark Matter searches with noble liquids”, plenary talk at the 2010 April APS meeting, Washington DC, February 2010.
- “Status of EXO-200”, invited talk at the DUSEL town meeting, Washington DC, November 2007.
- “Neutrinoless double beta decay: a window on the origin of neutrino mass”, invited talk at the Workshop on electroweak and precision physics at the 2007 APS Division of Nuclear Physics meeting, Newport News, VA, October 2007.
- “Probing the origin of neutrino mass with the Enriched Xenon Observatory”, invited talk at the SLAC Users Organization meeting, Menlo Park, CA, September 2005.
- “The future of EXO: ton-scale xenon TPC with barium tagging”, invited talk at the APS-JPS double beta decay workshop, Kapalua, Hawaii, September 2005.
- “Neutrino physics of double beta decay”, invited talk at the Aspen Winter Conference, February 2005.
- “EXO: a next generation double beta decay experiment”, invited talk at the Berkeley TPC symposium, October 2003.
- “Enriched Xenon Observatory for double beta decay”, invited talk at the NOON 2003 conference, Kanazawa, Japan, February 2003.

Contributed conference talks:

- “The LZ WIMP dark matter search”, contributed talk at the APS Division of Particles and Fields conference, Ann Arbor, MI, August 2015.
- “Calibration of the LUX electron recoil band with tritium”, contributed talk at the Workshop on low energy physics with liquid xenon detectors, Moscow, Russia, October 2014.
- “Status of the LUX dark matter search”, contributed talk at 2011 Topics in Astroparticle and Underground Physics (TAUP 2011), Munich, Germany, September 2011.
- “Status of the EXO double beta decay search”, contributed talk at the International Conference on High Energy Physics (ICHEP 2010), Paris, France, July 2010.
- “A search for weakly interacting dark matter with LUX the experiment”, contributed talk at the International Conference on High Energy Physics (ICHEP 2010), Paris, France, July 2010.
- “LUX dark matter search”, Shedding Light on Dark Matter, College Park, MD, April 2009.
- “Searching for Double Beta Decay with the Enriched Xenon Observatory”, 9th Conference on the Intersections of Particle and Nuclear Physics (CIPANP 2006), Puerto Rico, May 2006.

Public lectures and media contacts

- Quoted in “Solution to Long-standing Neutrino Puzzle May Be within Reach”, by Calla Cofield, Scientific American, December 2013.
- Author of “Explain it in sixty seconds: Neutrinoless double beta decay”, Symmetry Magazine, August 2013, <http://www.symmetrymagazine.org/article/august-2013/neutrinoless-double-beta-decay>.
- “LUX dark matter search”, Univ. of Maryland Dept. of Physics staff lecture, December 2010.
- “LUX dark matter search”, public lecture at Maryland Day, College Park MD, April 2009.

Seminars and Colloquia

- “Status of the LUX and LZ dark matter searches”, seminar, University of Virginia, September 2015.
- “Prospects for the direct detection of dark matter”, joint particle theory-experiment Maryland-Hopkins seminar, University of Maryland, December 2014.
- “First dark matter search results from LUX”, seminar, University of Massachusetts, Amherst, April 2014.
- “First dark matter search results from LUX”, University of Maryland Astronomy seminar, November 2013.
- “First dark matter search results from LUX”, University of Maryland HEP/PA seminar, November 2013.

- “Why are neutrinos so light? $\beta\beta 0\nu$ results from EXO-200”, Harvard University Physics Department Colloquium, April 2013.
- “Why are neutrinos so light? $\beta\beta 0\nu$ results from EXO-200”, Case Western Reserve University seminar, March 2013.
- “Why are neutrinos so light? $\beta\beta 0\nu$ results from EXO-200”, University of Maryland HEP-PA seminar, March 2013.
- ”Why are neutrinos so light?”, Brown University Dept. of Physics colloquium, April 2012.
- ”LUX dark matter search”, Univ. of Illinois, Urbana-Champaign Physics department seminar, March 2012.
- “Why are neutrinos so light?”, Univ. of North Carolina - Chapel Hill Dept. of Physics colloquium, November 2011.
- “Why are neutrinos so light?”, Research Progress Meeting, Lawrence Berkeley National Lab, November 2011.
- “Why are neutrinos so light?”, Univ. of Maryland Dept. of Physics colloquium, October 2011.
- “Why are neutrinos so light?”, Virginia Tech Dept. of Physics seminar, October 2011.
- “LUX dark matter search”, High Energy Physics seminar, Indiana University, October 2011.
- “First data from the EXO double beta decay experiment”, University of Washington CENPA colloquium, April 2011.
- “First data from the EXO double beta decay experiment”, University of Maryland HEP/PA seminar, February 2011.
- “LUX dark matter search”, Laurentian University seminar, November 2010.
- “Xe marks the spot: hunting for treasure with the EXO and LUX experiments”, MIT seminar, April 2010.
- “Searching for double beta decay with the Enriched Xenon Observatory”, Harvard University high energy physics seminar, September 2009.
- “LUX dark matter search”, University of Maryland HEP/PA seminar, October 2009.
- “Searching for double beta decay with the Enriched Xenon Observatory” University of Kentucky, Nuclear physics seminar, October 2008.
- “Searching for double beta decay with the Enriched Xenon Observatory” University of Wisconsin, Madison, High energy physics seminar, April 2008.

- “Searching for double beta decay with the Enriched Xenon Observatory” Indiana University Cyclotron Facility seminar, September 2007.
- “Searching for double beta decay with the Enriched Xenon Observatory” University of Chicago high energy physics Colloquium, April 2007.
- “Searching for double beta decay with the Enriched Xenon Observatory” Virginia Tech Dept. of Physics Colloquium, January 2007.
- “Searching for double beta decay with the Enriched Xenon Observatory” University of Maryland high energy physics seminar, December 2006.
- “Searching for double beta decay with the Enriched Xenon Observatory” Case Western Reserve University seminar, September 2006.
- “Searching for double beta decay with the Enriched Xenon Observatory” NIST seminar, Gaithersburg, MD, July 2006.
- “Probing the origin of neutrino mass with double beta decay”, Texas A&M Physics Dept. Colloquium, April 2006.
- “Probing the origin of neutrino mass with double beta decay”, Colorado State University Physics Dept. Colloquium, April 2006.
- “Probing the origin of neutrino mass with double beta decay”, University of Massachusetts, Amherst, seminar, March 2006.
- “Probing the origin of neutrino mass with double beta decay”, University of North Carolina, Chapel Hill, Physics Dept. Colloquium, February 2006.
- “Probing the origin of neutrino mass with double beta decay”, University of Maryland seminar, February 2006.
- “Probing the origin of neutrino mass with double beta decay”, University of Washington Physics Dept. Colloquium, January 2006.
- “Searching for double beta decay with the Enriched Xenon Observatory”, Research Progress Meeting at LBNL, November 2005.
- “Probing the origin of neutrino mass with double beta decay”, University of Maryland seminar, March 2005.
- “EXO: a next generation double beta decay experiment”, UC Santa Cruz seminar, December 2003.
- “EXO: a next generation double beta decay experiment”, Indiana University seminar, October 2003.
- “EXO: a next generation double beta decay experiment”, UCLA seminar, May 2003.

- “Direct photon cross-section from Run Ib inclusive electron events at CDF”, APS Meeting, Albuquerque, New Mexico, April 2002.
- “Operation of the Central Outer Tracker at CDF during Tevatron collider Run II”, APS meeting, Atlanta, Georgia, March 1999.

Teaching:

- Spring 2016: Physics 410 - Classical Mechanics. Three credit course.
- Fall 2015: Physics 375 - Experimental Physics - Optics. Three credit course.
- Spring 2015: Physics 410 - Classical Mechanics. Three credit course.
- Fall 2014: Physics 375 - Experimental Physics - Optics. Three credit course.
- Spring 2014: Physics 410 - Classical Mechanics. Three credit course.
- Fall 2013: Physics 273 - Introductory Physics: Waves. Oscillators and wave phenomena for physics majors. Three credit course.
- Spring 2013: Physics 273 - Introductory Physics: Waves. Oscillators and wave phenomena for physics majors. Three credit course.
- Fall 2012: Physics 273 - Introductory Physics: Waves. Oscillators and wave phenomena for physics majors. Three credit course.
- Spring 2012: Physics 273 - Introductory Physics: Waves. Oscillators and wave phenomena for physics majors. Three credit course.
- Fall 2011: Physics 401 - Quantum Physics for physics majors. Three credit course.
- Spring 2011: Physics 272 - Introductory Physics: Fields. Introductory electricity and magnetism for physics majors. Three credit course.
- Fall 2010: Physics 401 - Quantum Physics for physics majors. Three credit course.
- Spring 2010: Physics 272 - Introductory Physics: Fields. Introductory electricity and magnetism for physics majors. Three credit course.
- Fall 2009: Physics 401 - Quantum Physics for physics majors. Three credit course.
- Spring 2009: Physics 272 - Introductory Physics: Fields. Introductory electricity and magnetism for physics majors. Three credit course.
- Fall 2008: Physics 375 - Experimental physics III: electromagnetic waves, optics, and modern physics. Three credit junior level optics course with lab and lecture.

- Spring 2008: Physics 272 - Introductory Physics: Fields. Introductory electricity and magnetism for physics majors. Three credit course.
- Spring 2008: Physics 441 - Fifty-one years of the weak interaction: nuclear and particle physics for seniors. Team taught with E. Beise and L. Orozco. Three credit course.
- Fall 2007: Physics 375 - Experimental physics III: electromagnetic waves, optics, and modern physics. Three credit junior level optics course with lab and lecture.
- Fall 2006: Physics 375 - Experimental physics III: electromagnetic waves, optics, and modern physics. Three credit junior level optics course with lab and lecture.

Professional Organizations:

- American Physical Society
- SLAC Users Organization

Honors: Dean's award for excellence in teaching (2014)
 Dept. of Energy Early Career Award (2011)
 Richard A. Ferrell Distinguished Faculty Award, University of Maryland (2010)
 Goldhaber Prize, Harvard University (2000)
 Wallace-Noyes Fellowship, Harvard University (1998)
 H.Y. Loh Award, Virginia Tech (1996)
 Phi Beta Kappa, Virginia Tech (1995)
 Robert P. Hamilton Prize, Virginia Tech (1995)
 Hugh D. Ussery Scholarship, Virginia Tech (1994-1995)