




Eli Mizrachi

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Education

- University of Maryland at College Park (UMD), **PhD Physics** *Aug 2017 - Mar 2024*
- UC Berkeley, **B.A. Physics** *Aug 2013 - Dec 2015*
- San Diego Mesa Community College, **A.S. Physics with High Honors** *Aug 2011 - May 2013*
- Bonita Vista High School, **International Baccalaureate Diploma** *Sep 2008 - Jun 2011*

Research

- Lawrence Livermore Nat'l Lab RED Group, **Graduate Research Assistant** *Jun 2019*
- Developed new techniques for analysis of low-energy ionization backgrounds in LZ. Characterized low-energy ionization backgrounds in a dual-phase xenon time projection chamber (TPC) with exotic low-outgassing materials. Designed and built a gas sampling system for a novel xenon-doped argon test stand.
- UMD Lobb Group, **Graduate Research Assistant** *Jun 2018 - Aug 2018*
- Designed and investigated sample heating and cooling solutions to improve quality of superconducting qubit samples.
- SLAC Nat'l Accelerator Laboratory Noble Liquids Group, **Technician** *Jul 2016 - Jun 2017*
- Directed and performed retrofits of LZ System Test thermosyphons. Designed cleanroom for LZ grid tests. Built out hundred-liter scale automated liquid nitrogen delivery systems. Assisted with xenon sampling and purification efforts.
- UC Davis Tripathi Group, **Research Assistant** *Jun 2015 - Aug 2015*
- Simulated electric fields for a prototype liquid xenon purity monitor.
- Lawrence Berkeley Nat'l Lab Sorensen Group, **Research Assistant** *Jan 2015 - Jun 2016*
- Simulated electric fields in a novel TPC with charge readout capabilities. Tested and installed charge-shaping amplifiers. Assisted in testing a novel high voltage feedthrough design.
- UC Berkeley Mueller Group, **Research Assistant** *Jun 2014 - Dec 2014*
- Assisted in design and assembly of an experiment using quartz crystal oscillators to test for violations of Lorentz symmetry.

Teaching

- UMD Undergraduate Physics for Biologists I & II, **Graduate Teaching Assistant** *Aug 2017 - Dec 2019*
- Led laboratory sections and developed course materials for instructing students on data acquisition, handling and processing techniques.
- UC Berkeley Frontiers of Physics, **Co-teacher** *Jan 2016 - May 2016*
- Co-led seminar for undergraduates on cutting-edge physics research at UC Berkeley and arranged for weekly speakers.
- UC Berkeley Undergraduate Particle Physics, **Grader** *Aug 2015 - Dec 2015*

Recent Awards

US Department of Energy Office of Science, Graduate Student Research Award	<i>Aug 2020 - Aug 2021</i>
Ralph Meyers & Friends of Physics Outstanding Teaching Abilities, 2nd Place	<i>May 2019</i>
University of Maryland Graduate School, Summer Research Fellowship	<i>Apr 2019</i>
Ralph Meyers & Friends of Physics Outstanding Teaching Abilities, Honorable Mention	<i>May 2018</i>
University of Maryland Graduate School, Dean's Fellowship	<i>Aug 2017</i>

Service

LZ Equity and Inclusion Committee, Member	<i>Dec 2022</i>
LZ Graduates Engineers Technicians Undergraduates and Postdocs (GETUP), Institutional Board Representative	<i>Nov 2021 - Dec 2022</i>
UMD Women in Physics Mentoring Program, Mentor	<i>Aug 2018 - Aug 2019</i>
UMD Physics Graduate Student Committee, Elected Member	<i>Aug 2018 - Aug 2019</i>
American Association for the Advancement of Science; Catalyzing Advocacy in Science and Engineering Workshop, Representative on Behalf of UMD	<i>Mar 2018</i>
UMD Physics Equity Constellation, Member	<i>Feb 2017 - Sep 2019</i>
Berkeley Connect Student Advisory Board, Member	<i>Jul 2015 - Dec 2015</i>
Berkeley Physics Undergraduate Lab Committee, Student Chair	<i>Feb 2015 - Feb 2016</i>
Berkeley Society of Women in the Physical Sciences, Member	<i>Sep 2014 - May 2016</i>
Berkeley Society of Physics Students, Member	<i>Sep 2014 - May 2016</i>
Berkeley Society of Physics Students, Social Activities Coordinator	<i>Sep 2014 - Sep 2015</i>
San Diego Mesa Community College Honors Club, Treasurer	<i>Aug 2012 - Aug 2013</i>
San Diego Reuben H. Fleet Science Center Museum, Gallery Volunteer	<i>Apr 2012 - Apr 2013</i>

Skills and Tools

Confidence	Languages	Software	Hardware
	Markdown, Python	Quarto, OnShape, Notion, VSCode	Cryogenic, High Purity, High Vacuum Systems
	Spanish	Solidworks, Git	Orbital Welder, Drill Press
	C++, LaTeX, Typst	COMSOL	Milling Machine, Lathe, Belt Sander, Bench Grinder

Publications

- [1] J. Aalbers et al., *Cosmogenic Production of ^{37}Ar in the Context of the LUX-ZEPLIN Experiment*, Physical Review D **105**, (2022)

- [2] J. Aalbers et al., *A Next-Generation Liquid Xenon Observatory for Dark Matter and Neutrino Physics*, Journal of Physics G: Nuclear and Particle Physics **50**, (2022)
- [3] D. S. Akerib et al., *Enhancing the Sensitivity of the LUX-ZEPLIN (LZ) Dark Matter Experiment to Low Energy Signals*, (2021)
- [4] D. S. Akerib et al., *Identification of Radiopure Titanium for the LZ Dark Matter Experiment and Future Rare Event Searches*, Astroparticle Physics **96**, 1 (2017)
- [5] D. S. Akerib et al., *The LUX-ZEPLIN (LZ) Radioactivity and Cleanliness Control Programs*, The European Physical Journal C **80**, (2020)
- [6] D. S. Akerib et al., *Projected Sensitivity of the LUX-ZEPLIN Experiment to the $0\nu\beta\beta$ Decay of ^{136}Xe* , Physical Review C **102**, (2020)
- [7] E. P. Bernard et al., *Thermodynamic Stability of Xenon-Doped Liquid Argon Detectors*, Physical Review C **108**, (2023)
- [8] T. L.-Z. Collaboration et al., *Simulations of Events for the LUX-ZEPLIN (LZ) Dark Matter Experiment*, Astroparticle Physics **125**, (2021)
- [9] M. Goryachev, A. Lo, P. Haslinger, E. Mizrachi, L. Anderegg, H. Müller, M. Hohensee, and M. E. Tobar, *Acoustic Tests of Lorentz Symmetry Using Bulk Acoustic Wave Quartz Oscillators*, in (arXiv, Bloomington, Indiana, 2016)
- [10] K. Kamdin, E. Mizrachi, J. A. Morad, and P. Sorensen, *Absolute Electron Extraction Efficiency of Liquid Xenon*, in *Bulletin of the American Physical Society* (American Physical Society, Salt Lake City, Utah, 2016)
- [11] A. Lo, P. Haslinger, E. Mizrachi, L. Anderegg, H. Müller, M. Hohensee, M. Goryachev, and M. E. Tobar, *Acoustic Tests of Lorentz Symmetry Using Quartz Oscillators*, Physical Review X **6**, (2016)
- [12] LUX-ZEPLIN Collaboration et al., *First Dark Matter Search Results from the LUX-ZEPLIN (LZ) Experiment*, Physical Review Letters **131**, (2023)
- [13] T. LUX-ZEPLIN et al., *Projected Sensitivity of the LUX-ZEPLIN (LZ) Experiment to the Two-Neutrino and Neutrinoless Double Beta Decays of ^{134}Xe* , Physical Review C **104**, (2021)
- [14] E. Mizrachi, K. Kamdin, J. A. Morad, and P. Sorensen, *Absolute Measurement of the Electron Extraction Efficiency of Liquid Xenon*, (2016)
- [15] E. Mizrachi, J. Xu, S. Pereverzev, and A. Bernstein, *Addressing Electron Backgrounds in a Dual-Phase Liquid Xenon Time Projection Chamber*, (2019)
- [16] E. Mizrachi, *Characterization of Delayed Ionization Backgrounds in the LZ Experiment*, (2023)
- [17] E. Mizrachi, N. Bowden, I. Jovanovic, E. Bernard, and S. Pereverzev, *Development of a Xenon-Doped Dual-Phase Argon Time Projection Chamber*, (2021)
- [18] E. Mizrachi, A. Manalaysay, and M. Tripathi, *Electric Field Simulation of a Liquid Xenon Purity Monitor*, (2015)
- [19] E. Mizrachi, *LZ Analysis Workshop Python Tutorial*, (2023)
- [20] E. Mizrachi, A. Lo, P. Haslinger, L. Anderegg, and H. Mueller, *Testing Lorentz Symmetry Using Rotating Crystal Oscillators*, (2015)
- [21] E. Mizrachi, A. Lo, P. Haslinger, L. Anderegg, and H. Mueller, *Testing Lorentz Symmetry Using Rotating Crystal Oscillators*, (2015)

- [22] B. J. Mount et al., *LUX-ZEPLIN (LZ) Technical Design Report*, (2017)
- [23] T. Pershing et al., *Calibrating the Scintillation and Ionization Responses of Xenon Recoils for High-Energy Dark Matter Searches*, *Physical Review D* **106**, (2022)
- [24] T. Pershing et al., *Performance of Hamamatsu VUV4 SiPMs for Detecting Liquid Argon Scintillation*, *Journal of Instrumentation* **17**, (2022)
- [25] The LUX-ZEPLIN Collaboration et al., *Background Determination for the LUX-ZEPLIN Dark Matter Experiment*, *Physical Review D* **108**, (2023)
- [26] T. L. Collaboration et al., *The LUX-ZEPLIN (LZ) Experiment*, *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment* **953**, (2020)
- [27] T. L. Collaboration et al., *Projected Sensitivities of the LUX-ZEPLIN (LZ) Experiment to New Physics via Low-Energy Electron Recoils*, *Physical Review D* **104**, (2021)
- [28] J. Xu et al., *Search for the Migdal Effect in Liquid Xenon with keV-level Nuclear Recoils*, (2023)