

SHIRLEY WEISHI LI

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Employment

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|---|-------------|
| University of California Irvine Assistant Professor, Department of Physics & Astronomy | 2022 – |
| Fermi National Accelerator Laboratory Postdoctoral Research Associate, Theoretical Physics Department | 2020 – 2022 |
| SLAC National Accelerator Laboratory Postdoctoral Research Associate, Theoretical Particle Physics Group | 2017 – 2020 |

Education

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| The Ohio State University Ph.D. in Physics Advisor: Prof. John F. Beacom | 2017 |
| The Ohio State University B.S. with Summa Cum Laude in Physics Advisor: Prof. Richard J. Furnstahl | 2011 |

Awards

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|---|-------------|
| APS Dissertation Award in Nuclear Physics | 2019 |
| APS Finalist in Outstanding Doctoral Thesis Award in Astrophysics Competition | 2018 |
| OSU Bunny and Thomas Clark Graduate Student Scholarship | 2017 |
| Louise B. Vetter Research Award (sponsored by Phi Kappa Phi) | 2016 |
| OSU Presidential Fellowship | 2016 – 2017 |
| OSU Hayes Graduate Research Forum Talk Award | 2016 – 2017 |
| OSU Department of Physics Smith Senior Awards | 2011 |
| OSU Department of Physics Smith Junior Awards | 2010 |
| OSU Undergraduate Research Office Summer Research Fellowship | 2010 |

Journal Articles

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22. “Old Data, New Forensics: The First Second of SN 1987A Neutrino Emission”
Shirley W. Li, John F. Beacom, Luke F. Roberts, Francesco Capozzi
arXiv:2306.08024
 21. “The Impact of Neutrino-Nucleus Interaction Modeling on New Physics Searches”
Nina M. Coyle, **Shirley W. Li**, Pedro A. N. Machado
JHEP 12, 166 (2022) [arXiv:2210.03753]
 20. “Non-Perturbative BRST Symmetry and the Spectral Structure of the Ghost Propagator”
Shirley W. Li, Peter Lowdon, Orlando Oliveira, Paulo J. Silva
Phys. Lett. B 823, 136753 (2021) [arXiv:2109.10942]
 19. “Towards a Realistic Model of Dark Atoms to Resolve the Hubble Tension”
Nikita Blinov, Gordan Krnjaic, **Shirley W. Li**
Phys. Rev. D 105, 095005 (2022) [arXiv:2108.11386]

18. “The Future of High-Energy Astrophysical Neutrino Flavor Measurements”
Ningqiang Song, **Shirley W. Li**, Carlos A. Argüelles, Mauricio Bustamante, Aaron C. Vincent
JCAP 04, 054 (2021) [arXiv:2012.12893]
17. “Exciting Prospects for Detecting Late-Time Neutrinos from Core-Collapse Supernovae”
Shirley W. Li, Luke F. Roberts, John F. Beacom
Phys. Rev. D 103, 023016 (2021) [arXiv:2008.04340] *Selected as Editors’ Suggestion*
16. “Current and Future Neutrino Oscillation Constraints on Leptonic Unitarity”
Sebastian A. R. Ellis, Kevin J. Kelly, **Shirley W. Li**
JHEP 12, 068 (2020) [arXiv:2008.01088]
15. “Simulating Hadron Test Beams in Liquid Argon”
Alexander Friedland, **Shirley W. Li**
Phys. Rev. D 102, 096005 (2020) [arXiv:2007.13336]
14. “Leptonic Unitarity Triangles”
Sebastian A. R. Ellis, Kevin J. Kelly, **Shirley W. Li**
Phys. Rev. D 102, 115027 (2020) [arXiv:2004.13719]
13. “Lepton-Nucleus Cross Section Measurements for DUNE with the LDMX Detector”
Artur M. Ankowski, Alexander Friedland, **Shirley W. Li**, Omar Moreno, Philip Schuster, Natalia Toro, Nhan Tran
Phys. Rev. D 101, 053004 (2020) [arXiv:1912.06140]
12. “The Generalized Infrared Structure of the Gluon Propagator”
Shirley W. Li, Peter Lowdon, Orlando Oliveira, Paulo J. Silva
Phys. Lett. B 803, 135329 (2020) [arXiv:1907.10073]
11. “Dark Sector Equilibration During Nucleosynthesis”
Asher Berlin, Nikita Blinov, **Shirley W. Li**
Phys. Rev. D 100, 015038 (2019) [arXiv:1904.04256]
10. “Developing the MeV Potential of DUNE:
Detailed Considerations of Muon-Induced Spallation and Other Backgrounds”
Guanying Zhu, **Shirley W. Li**, John F. Beacom
Phys. Rev. C 99, 055810 (2019) [arXiv:1811.07912]
9. “Understanding the Energy Resolution of Liquid Argon Neutrino Detectors”
Alexander Friedland, **Shirley W. Li**
Phys. Rev. D 99, 036009 (2019) [arXiv:1811.06159]
8. “DUNE as the Next-Generation Solar Neutrino Experiment”
Francesco Capozzi, **Shirley W. Li**, Guanying Zhu, John F. Beacom
Phys. Rev. Lett. 123, 131803 (2019) [arXiv:1808.08232]
7. “Dark Kinetic Heating of Neutron Stars and An Infrared Window On WIMPs, SIMPs, and Pure Higgsinos”
Masha Baryakhtar, Joseph Bramante, **Shirley W. Li**, Tim Linden, Nirmal Raj
Phys. Rev. Lett. 119, 131801 (2017) [arXiv:1704.01577]
6. “Using HAWC to Discover Invisible Pulsars”
Tim Linden et al. (*incl.* **Shirley W. Li**)
Phys. Rev. D 96, 103016 (2017) [arXiv:1703.09704]
5. “Echo Technique to Distinguish Flavors of Astrophysical Neutrinos”
Shirley W. Li, Mauricio Bustamante, John F. Beacom

- Phys. Rev. Lett. 122, 151101 (2019) [arXiv:1606.06290]
4. “Tagging Spallation Backgrounds with Showers in Water-Cherenkov Detectors”
Shirley W. Li, John F. Beacom
Phys. Rev. D 92, 105033 (2015) [arXiv:1508.05389]
 3. “Spallation Backgrounds in Super-Kamiokande Are Made in Muon-Induced Showers”
Shirley W. Li, John F. Beacom
Phys. Rev. D 91, 105005 (2015) [arXiv:1503.04823]
 2. “First Calculation of Cosmic-Ray Muon Spallation Backgrounds for MeV Astrophysical Neutrino Signals in Super-Kamiokande”
Shirley W. Li, John F. Beacom
Phys. Rev. C 89, 045801 (2014) [arXiv:1402.4687]
 1. “The Similarity Renormalization Group with Novel Generators”
Shirley W. Li, E. R. Anderson, R. J. Furnstahl
Phys. Rev. C 84, 054002 (2011) [arXiv:1106.2835]

Scientific Presentations (81 invited talks)

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| 107. | Invited Talk, CETUP 2023, Lead, SD | 07/2023 |
| 106. | Invited Talk, Workshop on Neutrino Event Generators, Batavia, IL | 03/2023 |
| 105. | Invited Talk, University of Toronto High Energy Physics Seminar, Toronto, ON | 03/2023 |
| 104. | Invited Talk, Notre Dame Particle Physics Seminar, Notre Dame, IN | 02/2023 |
| 103. | Invited Talk, Nu Tools for BSM at Neutrino Beam Experiments, Pittsburgh, PA | 12/2022 |
| 102. | Invited Talk, Yale Wright Lab Nuclear Particle Astrophysics Seminar, New Haven, CT | 12/2022 |
| 101. | Invited Talk, Los Alamos T-2 Nuclear Theory Seminar, Los Alamos, NM | 12/2022 |
| 100. | Invited Talk, NSAC Long-Range Plan Town Hall on Nuclear Astrophysics, Online | 11/2022 |
| 99. | Invited Talk, DUNE Module of Opportunity Workshop, Online | 11/2022 |
| 98. | Invited Talk, University of Kentucky Theory Seminar, Lexington, KY | 09/2022 |
| 97. | Invited Talk, Neutrino Theory Network Workshop, Batavia, IL | 06/2022 |
| 96. | Invited Talk, Users Meeting 2022, Batavia, IL | 06/2022 |
| 95. | Talk, Phenomenology 2022, Pittsburgh, PA | 05/2022 |
| 94. | Invited Talk, UChicago Particle Theory Seminar, Chicago, IL | 04/2022 |
| 93. | Invited Talk, MIT Nuclear and Particle Physics Colloquium, Boston, MA | 04/2022 |
| 92. | Invited Talk, New Methods and Ideas at the Frontiers of Particle Physics, Aspen, CO | 03/2022 |
| 91. | Invited Talk, UC Berkeley Nuclear Theory Seminar, Berkeley, CA | 03/2022 |
| 90. | Invited Talk, Fermilab Neutrino Seminar, Online | 03/2022 |
| 89. | Invited Talk, Neutrinos as a Portal to New Physics and Astrophysics, Santa Barbara CA | 02/2022 |
| 88. | Invited Talk, Brookhaven High Energy Theory Seminar, Online | 02/2022 |
| 87. | Invited Talk, UC Irvine Particle Physics Seminar, Irvine, CA | 01/2022 |
| 86. | Invited Talk, Neutrino-Nucleus Interactions in the Standard Model and Beyond, Online | 01/2022 |
| 85. | Invited Talk, UC Berkeley Theoretical Astrophysics Center Seminar, Berkeley, CA | 12/2021 |
| 84. | Invited Talk, UCLA Theoretical Elementary Particle Seminar, Online | 11/2021 |
| 83. | Invited Talk, University of Cincinnati Theory Group Seminar, Cincinnati, OH | 11/2021 |
| 82. | Invited Talk, Virginia Tech Center for Neutrino Physics Seminar, Online | 10/2021 |
| 81. | Invited Talk, Brookhaven Particle Physics Seminar, Online | 09/2021 |
| 80. | Talk, Nu Intersections: Neutrino Physics at a Crossroad, Aspen, CO | 09/2021 |
| 79. | Invited Talk, University of Cagliari High Energy Physics Colloquia, Online | 06/2021 |
| 78. | Invited Talk, APS April Meeting, Online | 04/2021 |
| 77. | Invited Talk, UMass Amherst Center for Fundamental Interactions Seminar, Online | 02/2021 |
| 76. | Invited Talk, BSM PANDEMIC Seminars, Online | 01/2021 |

75. Invited Talk, Low-Energy Physics in Liquid Argon Workshop, Online 11/2020
74. Invited Talk, Niels Bohr Institute Astroparticle Seminar, Online 11/2020
73. Invited Talk, MIT Nuclear & Particle Theory Seminar, Online 10/2020
72. Invited Talk, DUNE Collaboration Meeting, Online 09/2020
71. Invited Talk, Penn State University High Energy Physics Seminar, Online 09/2020
70. Plenary Talk, Mini-Workshop on Neutrino Theory, Online 09/2020
69. Invited Talk, University of Minnesota High Energy Physics Seminar, Online 09/2020
68. Invited Talk, SNEWS-All, Online 09/2020
67. Invited Talk, Network in Neutrinos, Nuclear Astrophysics, and Symmetries, Online 07/2020
66. Poster, Neutrino 2020, Online 06/2020
65. Invited Talk, LBNL Particle Theory Seminar, Online 06/2020
64. Talk, Brookhaven Neutrino Theory Virtual Seminar, Online 06/2020
63. Invited Talk, CERN Theory BSM Forum, Online 05/2020
62. Invited Talk, UC Irvine Joint Particle Seminar, Irvine, CA 03/2020
61. Invited Talk, Arthur B. McDonald Institute Astroparticle Seminar, Kingston, ON 02/2020
60. Invited Talk, Carleton University Particle Seminar, Ottawa, ON 02/2020
59. Talk, Neutrinos from the Lab to the Cosmos, Seattle, WA 01/2020
58. Invited Talk, TRIUMF Theory Group Seminar, Vancouver, BC 11/2019
57. Invited Talk, Texas A&M Mitchell Institute Seminar, College Station, TX 11/2019
56. Invited Talk, APS Division of Nuclear Physics Meeting, Arlington, VA 10/2019
55. Invited Talk, Topics in Cosmic Neutrino Physics, Batavia, IL 10/2019
54. Talk, International Cosmic Ray Conference, Madison, WI 07/2019
53. Talk, Precision Investigations of the Neutrino Sector, Menlo Park, CA 07/2019
52. Invited Talk, University of Oregon Institute for Theoretical Science Seminar, Eugene, OR 06/2019
51. Invited Talk, NTN Workshop on Neutrino Non-Standard Interactions, St. Louis, MO 05/2019
50. Invited Talk, SUSY 2019, Corpus Christi, TX 05/2019
49. Plenary Talk, Conference on Science at the SURF, Rapid City, SD 05/2019
48. Invited Talk, LCTP Spring Symposium, Ann Arbor, MI 04/2019
47. Invited Talk, Bay Area Particle Theory Seminar, San Francisco, CA 03/2019
46. Invited Talk, Electron-Nuclear Scattering Prospects at S30XL, Menlo Park, CA 03/2019
45. Invited Talk, Physics Opportunities in the Near DUNE Detector Hall, Batavia, IL 12/2018
44. Invited Talk, UPenn Experimental Particle Physics Seminar, Philadelphia, PA 10/2018
43. Invited Talk, Nufact 2018, Blacksburg, VA 08/2018
42. Invited Talk, Fermilab Theory Seminar, Batavia, IL 06/2018
41. Invited Talk, UC Davis Joint Theory Seminar, Davis, CA 06/2018
40. Invited Talk, Caltech High Energy Physics Seminar, Pasadena, CA 05/2018
39. Invited Talk, LBNL Institute for Nuclear and Particle Astrophysics Seminar, Berkeley, CA 05/2018
38. Invited Talk, Rising Stars in Physics Workshop, Boston, MA 04/2018
37. Invited Talk, APS April Meeting, Columbus, OH 04/2018
36. Invited Talk, Arizona State University Cosmology Seminar, Tempe, AZ 04/2018
35. Invited Talk, SLAC Elementary Particle Physics Seminar, Menlo Par, CA 01/2018
34. Invited Talk, Livermore Nuclear and Chemical Sciences Colloquium, Livermore, CA 11/2017
33. Invited Talk, LBNL Particle Theory Seminar, Berkeley, CA 11/2017
32. Plenary Talk, NNN17, Coventry, UK 10/2017
31. Invited Talk, TeV Particle Astrophysics Conference, Columbus, OH 08/2017
30. Invited Talk, New Directions in Dark Matter and Neutrino Physics, Waterloo, Canada 07/2017
29. Talk, OSU CCAPP Summer Seminar, Columbus, OH 06/2017
28. Talk, Baryon and Lepton Number Violation Workshop, Cleveland, OH 05/2017
27. Invited Talk, IceCube Particle Astrophysics Symposium, Madison, WI 05/2017
26. Invited Talk, SLAC Neutrino Workshop, Menlo Park, CA 03/2017
25. Invited Talk, Supernova at Hyper-Kamiokande, Tokyo, Japan 02/2017

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| 24. Talk, Frontiers in Nuclear Astrophysics meeting, East Lansing, MI | 02/2017 |
| 23. Invited Talk, WIPAC Seminar, Madison, WI | 12/2016 |
| 22. Plenary talk, NNN16, Beijing, China | 11/2016 |
| 21. Invited Talk, OSU Nuclear Theory Seminar, Columbus, OH | 10/2016 |
| 20. Invited Talk, Penn State University High Energy Physics Seminar, State College, PA | 10/2016 |
| 19. Invited Talk, Michigan State University NSCL Theory Seminar, East Lansing, MI | 09/2016 |
| 18. Talk, Flavor Observations with Supernova Neutrinos, Seattle, WA | 08/2016 |
| 17. Talk, OSU CCAPP Summer Seminar, Columbus, OH | 07/2016 |
| 16. Talk, Phenomenology 2016, Pittsburgh, PA | 05/2016 |
| 15. Talk, APS April Meeting, Salt Lake City, UT | 04/2016 |
| 14. Invited Talk, FroST 2016, Batavia, IL | 03/2016 |
| 13. Invited Talk, SN@DUNE, Blacksburg, VA | 03/2016 |
| 12. Talk, PIKIO, Cincinnati, OH | 02/2016 |
| 11. Poster, NNN15, Stony Brook, NY | 10/2015 |
| 10. Talk, Nu@Fermilab, Batavia, IL | 07/2015 |
| 9. Talk, Conference on the Intersections of Particle and Nuclear Physics, Vail, CO | 05/2015 |
| 8. Talk, IceCube Particle Astrophysics Symposium, Madison, WI | 05/2015 |
| 7. Talk, OSU CCAPP Summer Seminar, Columbus, OH | 06/2014 |
| 6. Poster, Neutrino 2014, Boston, MA | 06/2014 |
| 5. Talk, APS April Meeting, Savannah, GA | 04/2014 |
| 4. Talk, APS Division of Nuclear Physics Meeting, Newport Beach, CA | 10/2012 |
| 3. Talk, OSU Physics Summer Talk Series, Columbus, OH | 08/2012 |
| 2. Poster, APS Division of Nuclear Physics Meeting, Santa Fe, NM | 11/2010 |
| 1. Poster, OSU Fall Undergraduate Research Day Student Poster Forum, Columbus, OH | 10/2010 |

Summer Schools

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| Neutrino University, Batavia, IL | 2023 |
| 2022 National Nuclear Physics Summer School, Boston, MA | 2022 |
| Quantum Computing Internship for Physics Undergraduates, Batavia, IL | 2022 |

Research Advising Experience

Laura Zichi, Undergraduate Student at University of Michigan
 Payel Mukhopadhyay, Graduate Student at Stanford
 Guanying Zhu, Graduate Student at OSU

Service

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| DPF Program Committee | 2020 – 2023 |
| Organizer for Neutrino University | 2021 |
| Convener for Astroparticle Physics and Cosmology Session at WIN2021 | 2021 |
| Referee for Astroparticle Physics, European Physical Journal C, Journal of High Energy Physics, Journal of Physics G: Nuclear and Particle Physics, Physical Review D, Physical Review Letter, The Astronomical Journal, The Astrophysical Journal, Universe | |

Outreach

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| Chair, Conéctate con Fermilab, Online | 2022 |
| Volunteer, Vamos a Fermilab, Batavia, IL | 2022 |
| Panelist, Superhero Conference at Fermilab, Online | 2021 |
| Conference Experience for Undergraduates Mentor, APS DNP meeting, Crystal City, VA | 2019 |

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| Volunteer, SAGE-S Summer Camp, Menlo Park, CA | 2018 |
| Lecturer, Young Scholars Program, Columbus, OH | 2016 |
| Volunteer, “Astro Camp”, Columbus, OH | 2016 |
| Volunteer Judge, State Science Day, Columbus, OH | 2014 – 2017 |
| Volunteer Judge, OSU Denman Undergraduate Research Forum | 2016 – 2017 |
| Talk, “How to Give a Scientific Talk”, ASPIRE CAMP, OSU | 2015, 2017 |
| Volunteer Judge, OSU Natural and Mathematical Sciences Undergrad Research Forum | 2015 |
| Blog article, “My first conference talk experience”, Blog “A day in the life...”, OSU | 2012 |
| Demonstrator, “My Quantum Mom” at COSI, Columbus, OH | 2011 |

Collaborations

DUNE

References

Prof. John Beacom
Department of Physics and Astronomy
The Ohio State University
beacom.7@osu.edu

Dr. Alexander Friedland
Theory Group
SLAC National Accelerator Laboratory
alexfr@slac.stanford.edu

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Prof. Natalia Toro
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Dr. Luke Roberts
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lfroberts@lanl.gov