

SHIRLEY WEISHI LI

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Employment

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

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

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)

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, NUFAC 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

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

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

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

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

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
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The Ohio State University
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Dr. Alexander Friedland
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Dr. Luke Roberts
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