

Employment and Education

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| UC Berkeley / Lawrence Berkeley National Lab Postdoctoral Researcher | from 2024 |
| Stanford University PhD in Physics (advisor: Natalia Toro) | 2024 |
| Oxford University (New College) MSc in Mathematical and Theoretical Physics with distinction | 2019 |
| Cambridge University (St. John's College) MASt in Mathematics with distinction | 2018 |
| Massachusetts Institute of Technology BS in Physics and Mathematics | 2017 |

Fellowships and Awards

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| NSF Graduate Research Fellowship | 2017 – 2022 |
| Marshall Scholarship | 2017 – 2019 |
| Demuth Prize, New College | 2019 |
| Dirac Prize, St. John's College | 2018 |
| Finalist, Hertz Fellowship | 2017 |
| Joel Matthew Orloff Award for Outstanding Research, MIT | 2017 |
| Honorable Mention, Putnam Mathematical Competition | 2016, 2017 |
| Gold Medal, International Physics Olympiad | 2012, 2013 |
| Winner, USA Junior Mathematical Olympiad | 2011 |

Publications

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|-------------------|--|
| 2312.11601 | Physical Signatures of Fermion-Coupled Axion Dark Matter A. Berlin, A. J. Millar, T. Trickle, K. Zhou, JHEP 05, 314 (2024) |
| 2303.04816 | Interactions of Particles with “Continuous Spin” Fields P. Schuster, N. Toro, K. Zhou, JHEP 04, 010 (2023) |
| 2209.12901 | Discovering QCD-Coupled Axion Dark Matter with Polarization Haloscopes A. Berlin, K. Zhou, Phys. Rev. D 108, 035038 (2023) |
| 2112.02104 | Probing Invisible Vector Meson Decays with the NA64 and LDMX Experiments P. Schuster, N. Toro, K. Zhou, Phys. Rev. D 105, 035036 (2022) |
| 2106.09033 | Stellar Shocks From Dark Matter Asteroid Impacts A. Das, S. A. R. Ellis, P. Schuster, K. Zhou, Phys. Rev. Lett. 128, 021101 (2022) |

- 2007.15656** Heterodyne Broadband Detection of Axion Dark Matter
A. Berlin, R. T. D'Agnolo, S. A. R. Ellis, K. Zhou, Phys. Rev. D 104, L111701 (2021)
- 1912.11048** Axion Dark Matter Detection by Superconducting Resonant Frequency Conversion
A. Berlin, R. T. D'Agnolo, S. A. R. Ellis, C. Nantista, J. Neilson,
P. Schuster, S. Tantawi, N. Toro, K. Zhou, JHEP 07, 088 (2020)
- 1704.06266** Casimir Meets Poisson: Improved Quark/Gluon Discrimination with Counting Observables
C. Frye, A. Larkoski, J. Thaler, K. Zhou, JHEP 09, 083 (2017)
- 1704.05456** Generalized Fragmentation Functions for Fractal Jet Observables
B. Elder, M. Procura, J. Thaler, W. Wallewijn, K. Zhou, JHEP 06, 085 (2017)
- 1703.04722** Minimum Energetic Cost to Maintain a Target Nonequilibrium State
J. Horowitz, K. Zhou, J. England, Phys. Rev. E 95, 042102 (2017)

Community White Papers

- 2203.14923** Axion Dark Matter
Contributed writing for a subsection, and editing for all sections
- 2203.08192** Current Status and Future Prospects for the Light Dark Matter eXperiment
Contributed theoretical projections for experimental sensitivity, and figures
- 2203.12714** Searches for New Particles, Dark Matter, and Gravitational Waves with SRF Cavities
Contributed writing and feedback

Other Works

Physics Olympiad Handouts

Solo-authored proto-textbook used by students in dozens of countries

- 2411.08283** The surprising subtlety of electrostatic field lines
K. Zhou and T. Brauner, to appear in Am. J. Phys.
- 2203.15821** Comment on "Poynting vector controversy in axion modified electrodynamics"

Talks

Physical Signatures of Fermion-Coupled Axion Dark Matter

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| UC Berkeley "4D" Seminar | 8/24 |
| Phenomenology 2024 Symposium | 5/24 |
| Flatiron Institute, Particle Astrophysics and Cosmology Meeting Around NYC | 4/24 |
| University of Geneva High Energy Particle Physics Seminar | 3/24 |
| HEP/Astro Results Forum | 3/24 |
| SLAC Theory Seminar | 11/23 |

Electromagnetism and Gravity with Continuous Spin

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| UIUC High Energy Physics Seminar | 10/24 |
| Hunting Invisibles (HIDDeN) Virtual Institute Seminar | 11/23 |
| Caltech High Energy Physics Seminar | 10/23 |

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| UC Santa Cruz SCIPP Seminar | 10/23 |
| University of Maryland EPT Seminar | 9/23 |
| ICTP HECAP Seminar | 7/23 |
| CERN BSM Forum | 6/23 |
| UC Davis QMAP Particle/Cosmology Seminar | 4/23 |
| UC Berkeley "4D" Seminar | 4/23 |
| Stanford Phenomenology Seminar | 2/23 |
| Perimeter Institute Theory Seminar | 10/22 |

Discovering the QCD Axion with Polarization Haloscopes

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| 18th Patras Workshop on Axions, WIMPs and WISPs | 7/23 |
| Phenomenology 2023 Symposium | 5/23 |
| Fermilab Theory Seminar | 4/23 |
| TRIUMF Theory Seminar | 10/22 |
| University of Victoria Theory Seminar | 10/22 |

Flashes in the Dark: New Searches for Axions and Macroscopic Dark Matter

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| Johns Hopkins Theory Seminar | 9/22 |
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Probing Dark Sectors With Invisible Vector Meson Decays

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| Phenomenology 2022 Symposium | 5/22 |
| APS April Meeting 2022 | 4/22 |
| ILC Workshop on Potential Experiments (ILCX2021) | 10/21 |

Searching for Ultraheavy and Ultralight Dark Matter

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| SLAC Theory Seminar | 3/22 |
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Stellar Shocks From Dark Asteroids

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| 24th International Conference on Particle Physics and Cosmology (COSMO'21) | 8/21 |
| APS Division of Particles & Fields Meeting (DPF21) | 7/21 |
| Phenomenology 2021 Symposium | 5/21 |

Heterodyne Detection of Axion Dark Matter

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| Virtual Axion Institute | 8/20 |
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Proposals

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| An SRF Cavity for Dark Matter Axion Detection | 2022 – 2024 |
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- SLAC LDRD grant, with principal investigator Zenghai Li
- Participated in design discussions, writing and editing of proposal and progress updates

Outreach and Service

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| U.S. Physics Olympiad | 2015 – 2024 |
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- [Wrote and edited](#) the largest physics competition in the United States (6,000 participants)
- Taught classes on problem solving and lab skills to finalists at annual training camps
- Directed the theoretical training of the U.S. traveling team from 2021 to 2024

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| Physics StackExchange | 2014 – 2020 |
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- Wrote 1,000 [answers](#) for questions on all fields of physics, with 2.5 million total views

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| Press coverage | 2022 |
| <ul style="list-style-type: none"> Participated in several interviews for “Stellar Shocks From Dark Matter Asteroid Impacts” (Altmetric score of 200+, in top 1% of Physical Review Letters) | |
| National Science Bowl | 2023 – 2024 |
| <ul style="list-style-type: none"> Wrote and edited physics questions for the U.S. Department of Energy’s flagship middle school and high school outreach event (~10,000 participants) | |
| Department service | |
| <ul style="list-style-type: none"> Co-organized the Berkeley/LBNL particle theory seminar | Spring 2025 |
| <ul style="list-style-type: none"> Served as student representative for the physics department’s Graduate Studies Committee | 2023 |
| <ul style="list-style-type: none"> Participated on various panels for undergraduates and incoming graduate students | 2020 |
| Local outreach | |
| <ul style="list-style-type: none"> Judged research presentations for the US Invitational Young Physicists Tournament | 2023 |
| <ul style="list-style-type: none"> Taught high school students at “Splash” events at MIT, Oxford, and Stanford | 2013 – 2019 |
| Peer review | |
| <ul style="list-style-type: none"> Refereed research papers for <i>JHEP</i> and <i>Phys. Rev. D</i> Refereed pedagogical papers and books for <i>Am. J. Phys.</i>, <i>Cambridge University Press</i>, and <i>World Scientific</i> | |

Teaching

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| Physics 230: Graduate Quantum Mechanics I | 2024 |
| Physics 120: Intermediate Electricity and Magnetism I | 2023 |
| Physics 330: Quantum Field Theory I | 2022 |
| <ul style="list-style-type: none"> Ran weekly sections and office hours; helped write, edit, solve, and grade new problem sets | |