Kevin Zhou

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Education

Stanford University   (expected) 2019 – 2024
PhD in Physics (advisor: Natalia Toro)

Oxford University (New College)   2018 – 2019
MSc in Mathematical and Theoretical Physics with distinction

Cambridge University (St. John's College)   2017 – 2018
MASt in Mathematics with distinction

Massachusetts Institute of Technology   2013 – 2017
BS in Physics and Mathematics

Fellowships and Awards

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

2209.12901   Discovering QCD-Coupled Axion Dark Matter with Polarization Haloscopes
A. Berlin, K. Zhou

2112.02104   Probing Invisible Vector Meson Decays with the NA64 and LDMX Experiments
P. Schuster, N. Toro, K. Zhou, Phys. Rev. D (2022)

2106.09033   Stellar Shocks From Dark Matter Asteroid Impacts
A. Das, S. A. R. Ellis, P. Schuster, K. Zhou, Phys. Rev. Lett. (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 (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 (2020)

1704.06266   Casimir Meets Poisson: Improved Quark/Gluon Discrimination with Counting Observables
C. Frye, A. Larkoski, J. Thaler, K. Zhou, JHEP (2017)

| 1704.05456 | Generalized Fragmentation Functions for Fractal Jet Observables |
| | B. Elder, M. Procura, J. Thaler, W. Wallewijn, K. Zhou, JHEP (2017) |

| 1703.04722 | Minimum Energetic Cost to Maintain a Target Nonequilibrium State |
| | J. Horowitz, K. Zhou, J. England, Phys. Rev. E (2017) |

Talks

Theory and Phenomenology of Continuous Spin Particles
      Perimeter Institute Theory Seminar   10/2022

Flashes in the Dark: New Searches for Axions and Macroscopic Dark Matter
      Johns Hopkins Theory Seminar   9/2022

Probing Dark Sectors With Invisible Vector Meson Decays
      Phenomenology 2022 Symposium   5/2022
      APS April Meeting 2022   4/2022
      ILC Workshop on Potential Experiments (ILCX2021)   10/2021

Searching for Ultraheavy and Ultralight Dark Matter
      SLAC Theory Seminar   3/2022

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

Heterodyne Detection of Axion Dark Matter
      Virtual Axion Institute   8/2020

Teaching

Physics 330: Quantum Field Theory I   Autumn 2022

Outreach

U.S. Physics Olympiad   2015 − present

- Wrote and edited the largest physics competition in the United States (6,000 participants)
- Released 1,000 pages of original learning materials, used by students around the world
- Taught classes on problem solving and lab skills to finalists at annual summer camps
- Intensively trained team to represent the U.S. at the 2021 International Physics Olympiad, leading to its first ever 5 gold medal finish

Physics StackExchange   2014 − 2020

- Wrote answers on topics ranging from everyday physics to quantum field theory
- Total of over 1,000 answers with 2 million total views

Splash   2013 − 2019

- Spoke to high school students at annual Splash events hosted at MIT, Oxford, and Stanford

- Taught classes on quantum cryptography, dimensional analysis, chirality, and particle detectors

Press coverage   2022

- Participated in several interviews for "Stellar Shocks From Dark Matter Asteroid Impacts" (Altmetric score of 200+, in top 1% of PRL outputs)

National Science Bowl   2022

- Wrote and edited physics questions for the U.S. Department of Energy's flagship middle school and high school outreach event ($\sim$10,000 participants)