Shuyang Cao | Résumé

+1 (412) 628 2145 • shuyang.cao@pitt.edu
https://caosy.github.io • CaoSY • 0000-0001-6411-454X

Research Interest

Nonequilibrium Dynamics, Gravitational Wave, Dark Matter, Axion Electrodynamics

Education

University of Pittsburgh — **Pittsburgh**
Ph.D. in *Physics* — *Aug. 2019 – present*
GPA 3.982/4
Advisor: Prof. Adam K Leibovich,Prof. Daniel Boyanovsky

University of Pittsburgh — **Pittsburgh**
M.S. in *Physics* — *Aug. 2019 – May. 2020*

Peking University — **Beijing**
B.S. in *Electronic and Information Science and Technology* — *Sep. 2014 – Jul. 2018*
Advisor: Prof. Xiaoji Zhou

Hong Kong University of Science and Technology — **Hong Kong**
Non-degree Undergraduate Exchange Program — *Sep. 2016 – Dec. 2016*
TGA: 4.060/4.3

Selected Honors and Awards

Andrew W. Mellon Predoctoral Fellow — **Academic year 2023-2024**
University-wide fellowship awarded to doctoral students of exceptional promise and ability across the disciplines.

Dietrich School of Arts and Sciences Summer Fellowship — **Summer. 2020**
awarded to top first-year graduate students in good academic standing

Talks and Presentations

Phenomenology 2023 Symposium — **Pittsburgh, U.S.**
Title: Imprints of Axion's Evolution in CMB — *May 9, 2023*

APS April Meeting 2023 — **Online**
Title: Brownian Axion-like Particles in Cosmic Microwave Background — *Apr. 25, 2023*

The 5th Neighborhood Workshop — **State College, U.S.**
Title: Chern-Simons Condensate from Misaligned Axions — *Apr. 6, 2023*

2022 Annual Meeting of the APS Mid-Atlantic Section **State College, U.S.**
Title: Brownian Axion-like Particles *Dec. 3, 2022*

Teaching Assistant

- PHYS 0212 Introduction to Laboratory Physics, Fall 2019, University of Pittsburgh
- PHYS 0212 Introduction to Laboratory Physics, Spring 2020, University of Pittsburgh
- PHYS 0212 Introduction to Laboratory Physics, Fall 2020, University of Pittsburgh
- PHYS 0212 Introduction to Laboratory Physics, Spring 2021, University of Pittsburgh
- PHYS 0110 Introduction to Physics 1, Summer 2021, University of Pittsburgh
- PHYS 0212 Introduction to Laboratory Physics, Fall 2021, University of Pittsburgh
- PHYS 0212 Introduction to Laboratory Physics, Spring 2022, University of Pittsburgh
- PHYS 0212 Introduction to Laboratory Physics, Fall 2022, University of Pittsburgh

Publications

[1] ***Shuyang Cao*** and Daniel Boyanovsky. "Effective field theory of particle mixing". In: (Oct. 2023). arXiv: 2310.17070 [hep-ph].

[2] ***Shuyang Cao***, Wenjie Huang, and Daniel Boyanovsky. "Dynamics of axion-neutral pseudoscalar mixing". In: *Phys. Rev. D* 108 (2 July 2023), p. 025012. DOI: 10.1103/PhysRevD.108.025012.

[3] ***Shuyang Cao*** and Daniel Boyanovsky. "Chern Simons condensate from misaligned axions". In: *Phys. Rev. D* 107 (8 Apr. 2023), p. 083531. DOI: 10.1103/PhysRevD.107.083531.

[4] ***Shuyang Cao*** and Daniel Boyanovsky. "Nonequilibrium dynamics of axionlike particles: The quantum master equation". In: *Phys. Rev. D* 107 (6 Mar. 2023), p. 063518. DOI: 10.1103/PhysRevD.107.063518.

[5] ***Shuyang Cao*** and Daniel Boyanovsky. "Brownian axionlike particles". In: *Phys. Rev. D* 106 (12 Dec. 2022), p. 123503. DOI: 10.1103/PhysRevD.106.123503.

[6] ***Shuyang Cao***, Pengju Tang, Xinxin Guo, Xuzong Chen, Wei Zhang, and Xiaoji Zhou. "Extraction and identification of noise patterns for ultracold atoms in an optical lattice". In: *Opt. Express* 27.9 (Apr. 2019), pp. 12710–12722. DOI: 10.1364/OE.27.012710.

[7] Dong Hu, Lin-Xiao Niu, Jia-Hua Zhang, Xin-Hao Zou, ***Shu-Yang Cao***, and Xiao-Ji Zhou. "Coupled Two-Dimensional Atomic Oscillation in an Anharmonic Trap". In: *Chinese Physics Letters* 34.7 (July 2017), p. 076701. DOI: 10.1088/0256-307x/34/7/076701.