

Naomi Gendler

Curriculum Vitae

School of Natural Sciences, Institute for Advanced Study
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INSPIRE-HEP profile

Research Interests

I am focused on what consequences string theory has for low energy physics and experiment. To make progress in this endeavor, my research comprises understanding axion physics in the string theory landscape; determining quantum gravity constraints on effective field theories; and developing new methods for the geometric study of Calabi-Yau manifolds.

Academic Appointments

- 2026–present **Member, School of Natural Sciences, Institute for Advanced Study, Princeton, NJ**
- 2023–2026 **Postdoctoral Fellow, Department of Physics, Harvard University, Cambridge, MA**

Education

- 2017–2023 **Ph.D. in Physics, Cornell University, Ithaca, NY**
Advisor: Professor Liam McAllister
Thesis: *String Theory in the Infrared: Phenomenology and Constraints*
- 2016–2017 **M.Sc. in Applied Mathematics, First Class Honours, University of Auckland, Auckland, New Zealand**
Thesis: *Pulse Dynamics in Lasers with Saturable Absorbers*
- 2012–2016 **B.A. in Physics, Reed College, Portland, OR**
Thesis: *Dark Matter Corrections to the Anomalous Magnetic Moment of the Muon*

Honors and Awards

- 2022 **First Place, Gong Show Award, Strings 2022, Vienna, Austria**
- 2021 **Boochever Fellowship, Cornell University**
- 2017 **Hartman Memorial Scholarship**
- 2017 **Honorable Mention, NSF Graduate Research Fellowship Program**
- 2016 **Aitken Prize for Best Student Presentation, New Zealand Mathematical Society Colloquium, Wellington, New Zealand**

Publications

Author lists follow the alphabetical convention of hep-th except in [10] and [11]. Citation summary (INSPIRE-HEP, October 2026): 653 citations, h -index 12.

- [15] 2026 **Calculating Axion-Matter Couplings in String Theory**, *J. Benabou, N. Gendler, T. Harvey, J. Moritz*, arXiv:2609.20911 [hep-th]
- [14] 2026 **Catastrophic Inflation in the Axiverse**, *N. Gendler, O. Janssen, M. Kleban, C. Norton*, arXiv:2608.14780 [hep-th]
- [13] 2026 **Holes in Calabi–Yau Effective Cones**, *N. Gendler, E. Sheridan, M. Stillman, D. Wu*, arXiv:2603.11173 [hep-th]
- [12] 2025 **Universality in the Axiverse**, *J. Cheng, N. Gendler*, JHEP **11** (2025) 012, arXiv:2507.12516 [hep-th]
- [11] 2025 **Constraining the Axiverse with Reionization**, *Z. Yin, H. Cheng, E. Di Valentino, N. Gendler, D. J. E. Marsh, L. Visinelli*, arXiv:2507.03535 [hep-ph]
- [10] 2024 **Fuzzy Axions and Associated Relics**, *E. Sheridan, F. Carta, N. Gendler, M. Jain, D. J. E. Marsh, L. McAllister, N. Righi, K. K. Rogers, A. Schachner*, JHEP **09** (2025) 016, arXiv:2412.12012 [hep-th]
- [9] 2024 **Possible Implications of QCD Axion Dark Matter Constraints from Helioscopes and Haloscopes for the String Theory Landscape**, *N. Gendler, D. J. E. Marsh*, Phys. Rev. Lett. **134** (2025) 081602, arXiv:2407.07143 [hep-th]
- [8] 2024 **Axions in the Dark Dimension**, *N. Gendler, C. Vafa*, JHEP **12** (2024) 127, arXiv:2404.15414 [hep-th]
- [7] 2023 **Counting Calabi–Yau Threefolds**, *N. Gendler, N. MacFadden, L. McAllister, J. Moritz, R. Nally, A. Schachner, M. Stillman*, arXiv:2310.06820 [hep-th]
- [6] 2023 **Glimmers from the Axiverse**, *N. Gendler, D. J. E. Marsh, L. McAllister, J. Moritz*, JCAP **09** (2024) 071, arXiv:2309.13145 [hep-th]
- [5] 2023 **Axion Minima in String Theory**, *N. Gendler, O. Janssen, M. Kleban, J. La Madrid, V. M. Mehta*, JHEP **02** (2025) 134, arXiv:2309.01831 [hep-th]
- [4] 2022 **Moduli Space Reconstruction and Weak Gravity**, *N. Gendler, B. Heidenreich, L. McAllister, J. Moritz, T. Rudelius*, JHEP **12** (2023) 134, arXiv:2212.10573 [hep-th]
- [3] 2022 **Superpotentials from Singular Divisors**, *N. Gendler, M. Kim, L. McAllister, J. Moritz, M. Stillman*, JHEP **11** (2022) 142, arXiv:2204.06566 [hep-th]
- [2] 2021 **PQ Axiverse**, *M. Demirtas, N. Gendler, C. Long, L. McAllister, J. Moritz*, JHEP **06** (2023) 092, arXiv:2112.04503 [hep-th]
- [1] 2020 **Merging the Weak Gravity and Distance Conjectures Using BPS Extremal Black Holes**, *N. Gendler, I. Valenzuela*, JHEP **01** (2021) 176, arXiv:2004.10768 [hep-th]

Invited Conference and Workshop Talks

- Sep 2026 **Universality in the Axiverse**, *Plenary talk*, DESY Theory Workshop 2026, Hamburg, Germany
- Jun 2026 **The Geometric Axiverse**, *Plenary talk*, Strings 2026, Shanghai, China
- May 2026 **PQ Axiverse**, *Plenary talk*, SUSY 2026, University of Oklahoma, Norman, OK
- Aug 2025 **The String Theory Axiverse**, *Plenary talk*, 22nd Simons Physics Summer Workshop: Future Pathways for Fundamental Physics, Simons Center for Geometry and Physics
- Jul 2025 **QCD Axion Dark Matter and Hierarchies in the Axiverse**, *Plenary talk*, String Phenomenology 2025, Northeastern University
- Jan 2025 **Hierarchies in the String Axiverse**, *Plenary talk*, Workshop on Symmetries and Gravity, Harvard CMSA
- Jan 2025 **String Cosmology**, *Plenary panelist*, Strings 2025, NYU Abu Dhabi, UAE
- Nov 2024 **QCD Axion Dark Matter in String Theory**, *Plenary talk*, Dark World to Swampland: 9th IBS-IFT Workshop, Daejeon, South Korea
- Oct 2024 **QCD Axion Dark Matter in String Theory**, *Plenary talk*, MADMAX Collaboration Meeting, Munich, Germany
- May 2024 **Axions in the Dark Dimension**, *Plenary talk*, Swamplandia 2024, Kloster Seeon, Germany
- Apr 2024 **The String Axiverse: Axion-Photon Couplings and Universality**, *Plenary talk*, KITP Conference: Spacetime and String Theory, UC Santa Barbara
- Mar 2024 **The Hierarchical Axiverse**, *Plenary talk*, KITP Workshop: What is String Theory?, UC Santa Barbara
- Sep 2023 **The (In)visible Axiverse**, *Plenary talk*, Swamplandia 2023, Madrid, Spain
- Jul 2023 **The (In)visible Axiverse**, *Plenary talk*, Axion 2023, Beijing, China
- Jun 2023 **Axion-Photon Couplings and Axion Dark Matter in String Theory**, *Plenary talk*, Ending Inflation and the Hot Big Bang, Simons Center for Geometry and Physics
- Apr 2023 **Axion-Photon Couplings in String Theory**, *Plenary talk*, String Theory Regional Meeting 2023, Virginia Tech
- Jan 2022 **Flops, Topological Invariants, and the Weak Gravity Conjecture**, *Plenary talk*, Geometry and Swampland Workshop, Banff International Research Station
- Additional invitations I was unable to accept:* plenary talk, String Phenomenology (July 2026); plenary talk, 13th KIAS Workshop on Particle Physics and Cosmology, Busan (Nov 2025); plenary talk, Dark Matter Beyond the Weak Scale III, Oxford (Apr 2025).

Contributed Talks

- May 2025 **QCD Axion Dark Matter in String Theory**, *Contributed talk*, Berkeley Axion Workshop: Enabling Discovery of QCD Axion Dark Matter at the GUT Scale, Lawrence Berkeley National Laboratory
- Jul 2023 **Axion-Photon Couplings in String Theory**, *Parallel talk*, String Phenomenology 2023, Daejeon, South Korea
- Jul 2022 **PQ Axiverse**, *Gong show (first place)*, Strings 2022, Vienna, Austria
- Jul 2022 **Superpotentials from Singular Divisors**, *Parallel talk*, String Phenomenology 2022, Liverpool, UK
- Oct 2021 **PQ Axiverse**, *Seminar Series on String Phenomenology*, Online
- Jul 2020 **Merging the Weak Gravity and Distance Conjectures Using BPS Extremal Black Holes**, *Gong show*, QFT and Geometry Summer School, Online
- Jul 2020 **BPS States and Extremal Black Holes at Infinite Distance**, *Seminar Series on String Phenomenology*, Online

Colloquia and Invited Seminars

- Oct 2026 **Universality in the Axiverse**, *Seminar*, City College of New York
- May 2025 **Fuzzy Axion Dark Matter in String Theory**, *Seminar*, Stanford University
- Dec 2024 **QCD Axion Dark Matter in String Theory**, *Seminar*, Harvard University
- Nov 2024 **QCD Axion Dark Matter in String Theory**, *Particle Theory Seminar*, Lawrence Berkeley National Laboratory / UC Berkeley
- Oct 2024 **QCD Axion Dark Matter in String Theory**, *Seminar*, Brandeis University
- Apr 2024 **Axions: A Bridge Between String Theory and the Real World**, *Colloquium*, Max Planck Institute for Physics, Munich
- Feb 2024 **Glimmers from the Axiverse**, *Seminar*, Harvard University
- Sep 2023 **Glimmers from the Axiverse**, *String/Gravity Theory Seminar*, Massachusetts Institute of Technology
- Sep 2023 **Glimmers from the Axiverse**, *Seminar*, Northeastern University
- Sep 2023 **Moduli Space Reconstruction and Weak Gravity**, *Dual Mystery Channel seminar*, IIT Madras (online)
- Apr 2023 **Moduli Space Reconstruction and Weak Gravity**, *Swampland Seminar Series (joint with J. Moritz)*, Online
- Mar 2023 **Moduli Space Reconstruction and Weak Gravity**, *Seminar*, Virginia Tech
- Mar 2023 **Axions in String Theory**, *Physics Seminar*, Reed College
- Nov 2022 **Moduli Space Reconstruction and Weak Gravity**, *Seminar*, California Institute of Technology
- Jun 2022 **Calabi–Yau Flops and the Weak Gravity Conjecture**, *Seminar*, LMU Munich
- Apr 2022 **PQ Axiverse**, *Seminar*, Cornell University
- Apr 2022 **PQ Axiverse**, *Seminar*, Massachusetts Institute of Technology
- Mar 2022 **PQ Axiverse**, *Seminar*, Harvard University

Mar 2022 **PQ Axiverse**, *Seminar*, Northeastern University

Feb 2022 **PQ Axiverse**, *Seminar*, University of Liverpool

Additional invitations I was unable to accept: University of Wisconsin–Madison (Apr 2025), Princeton University (October 2026).

Teaching

2027 Invited lecturer, *Axions in String Theory*, CERN Winter School

Teaching Assistant, Cornell University

2022, 2020 Introductory Mechanics

2021, 2018 Quantum Mechanics (PHYS 3316)

2020 Statistical Mechanics (PHYS 6562, graduate)

2019, 2017 Electricity and Magnetism (PHYS 3327)

2019 Oscillations and Waves (PHYS 2214/2218)

2018 General Relativity (PHYS 4445)

2019 Introductory Mechanics, laboratory instructor

Grader, Reed College

2015, 2014 Oscillations and Waves

2016, 2015 Modern Physics

Mentoring

2024–present **Mentor, Strings Mentoring Program**

Mentor graduate students on research, work–life balance, and postdoctoral applications.

Professional Service

Workshops organized

2026 **String Theory and the Observable Universe**, *Co-organizer (with J. Moritz, E. Pajer, M. Reece)*, Aspen Center for Physics, 3-week summer workshop

2025 **Prospects for the String Axiverse**, *Lead organizer*, Banff International Research Station, 5-day workshop

2024 **Surveying the Landscape**, *Co-organizer*, University of Massachusetts Amherst

2023 **Theoretical Tests of the Landscape**, *Co-organizer*, University of Massachusetts Amherst

Refereeing

2024–present *Journal of High Energy Physics; Journal of Cosmology and Astroparticle Physics*

Department service

2022 Judge, Cornell Undergraduate Research Symposium

2020 Judge, Cornell Undergraduate Research Fall Forum

2018–2022 Graduate student panelist on applying to graduate school, Cornell University

Outreach

- 2024 **Instructor**, *Cambridge Math Circle*
Taught math enrichment courses for elementary school students.
- 2023 **Podcast guest**, *People Behind Physics, Episode 9*
Discussed string theory, graduate school, and work–life balance.
- 2022 **Fireside chat**, *Society of Physics Students, Cornell University*
Answered undergraduate questions about graduate school and being a woman in physics.
- 2021 **Public talk**, “**Axions in String Theory**”, *Society of Physics Students, Cornell University*
Introductory-level talk on axions, string theory, and current research.
- 2019 **Workshop leader**, *Expanding Your Horizons, Cornell University*
Designed and led workshops on the physics of bubbles for middle-school girls.
- 2018–2019 **GRASSHOPR Fellow**, *Cornell University*
Designed and taught a quantum mechanics and optics mini-course for a local high-school physics class.
- 2018 **Workshop leader**, *Upward Bound, Cornell University*
Designed and led workshops on superconductivity for high-school students from underserved communities.
- 2018 **Physics tutor**
Tutored high-school students in AP Physics weekly.
- 2016 **Workshop leader**, *New Zealand Maths Craft Festival, Auckland Museum*
Ran mathematics workshops for elementary school children.
- 2013 **Education intern**, *Oregon Museum of Science and Industry*
Designed, built, and presented physics demonstrations.