

# Gary Shiu

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## Education

|                                    |                                 |      |
|------------------------------------|---------------------------------|------|
| Ph.D., Physics                     | Cornell University              | 1998 |
| B.S. (First Class Honors), Physics | Chinese University of Hong Kong | 1993 |

## Academic Positions

|                                  |                                             |           |
|----------------------------------|---------------------------------------------|-----------|
| Paul Dirac Professor of Physics  | University of Wisconsin-Madison             | 2026-     |
| Professor of Physics             | University of Wisconsin-Madison             | 2010-     |
| Data Science Institute Affiliate | University of Wisconsin-Madison             | 2023-     |
| Chair Professor of Physics       | Hong Kong U. of Science & Technology        | 2012-2014 |
| Senior Fellow                    | Hong Kong Institute for Advanced Study      | 2012-2017 |
| Founding Director                | Center for Fundamental Physics, HKUST       | 2013-2017 |
| Associate Professor of Physics   | University of Wisconsin-Madison             | 2006-2010 |
| Assistant Professor of Physics   | University of Wisconsin-Madison             | 2002-2006 |
| Senior Research Associate        | University of Pennsylvania                  | 2000-2002 |
| Postdoctoral Member              | C.N. Yang Institute for Theoretical Physics | 1998-2000 |

## Selected Visiting Appointments

BEL Professor, Brout Englert Lemaitre Center, Belgium, May 2023

Visiting Senior Scientist, Kavli Institute for the Physics & Mathematics of the Universe, 2020-

Johannes Diderik van der Waals Chair, University of Amsterdam, 2012

Member, Institute for Advanced Study, Princeton, Spring 2009

Visiting Professor, Stanford University, Fall 2008

Scientific Associate, CERN, 2008

## Selected Awards and Honors

|                                                                   |      |
|-------------------------------------------------------------------|------|
| Wisconsin Alumni Research Foundation Named Professorship          | 2026 |
| Kellett Mid-Career Award, University of Wisconsin                 | 2016 |
| Fellow, American Association for the Advancement of Science       | 2015 |
| Johannes Diderik van der Waals Chair, University of Amsterdam     | 2012 |
| Fellow, Institute of Physics                                      | 2012 |
| University of Wisconsin Chancellor's Distinguished Teaching Award | 2012 |
| Fellow, American Physical Society                                 | 2011 |
| Ambrose Monell Foundation Fellow, Institute for Advanced Study    | 2009 |
| John Simon Guggenheim Fellow                                      | 2008 |
| Vilas Associate Award, University of Wisconsin                    | 2008 |
| Kavli Frontiers Fellow, National Academy of Sciences              | 2006 |
| Cottrell Scholar Award                                            | 2005 |
| NSF Career Award                                                  | 2004 |
| Research Innovation Award from Research Corporation               | 2003 |

### **Distinguished Lectures**

|                                                                     |             |
|---------------------------------------------------------------------|-------------|
| Niels Bohr Colloquium, The Nordic Institute for Theoretical Physics | 2025        |
| BEL Lectures, Brout Englert Lemaître Center                         | 2023        |
| Nico van Kampen Colloquium, Utrecht University                      | 2020        |
| Zi-Ping Distinguished Lectures in Theoretical Physics, Beijing      | 2018        |
| Distinguished Lectures in Astronomy, Hong Kong Space Museum         | 2014        |
| Johannes Diderik van der Waals Lectures, University of Amsterdam    | 2012        |
| Colloquium Ehrenfestii, Leiden University                           | 2010        |
| Steve Goldman Lectures in Mathematical Physics, Florida             | 2008 & 2009 |

### **Selected Recent Professional Services**

- Service to the Discipline:
  - Executive Committee Member-at-Large, Division of Particles and Fields, American Physical Society (APS), 2026-
  - Fellowship Selection Committee, Division of Particles and Fields, APS, 2026.
  - Program Committee, Division of Particles and Fields, APS, 2020-2023.
  - Selection Committee, APS Sakurai Dissertation Award in Theoretical Particle Physics, 2020-2022 (Vice Chair in 2021, Chair in 2022).
  - Executive Member of the String Vacuum Project, an NSF funded multi-institutional, interdisciplinary project involving particle physics, astrophysics, cosmology, string theory, mathematics, & information science (2010 –2014).
  - Founding Member, Joint Consortium for Fundamental Physics, an initiative to establish a research program in particle physics, astrophysics, and cosmology among the three major universities in Hong Kong, January 2013.
  - “Mathematical Physics” Cluster Coordinator, Cluster Hiring Initiative, UW-Madison.
- Review Boards and Advisory Boards:
  - Review Panels for NSF, DOE & various funding agencies worldwide (multiple years).
  - External Review Panelist, NSF AI Institute IAIFI at MIT, 2022.
  - Search Committee for the Founding Director of the Center for Astrophysics and Cosmology, Institute of Basic Science, South Korea, 2021.
  - Reviewer of John C. Polanyi Award & Canadian Research Chairs Program, NSERC.
  - External Reviewer for National Center for Theoretical Physics, Taiwan.
  - Advisor, Hong Kong Space Observers, 2013 -
  - Cluster Advisory Committee, Office of the Provost, University of Wisconsin-Madison; duties include advising on the selection of faculty clusters that have the potential to create new interdisciplinary areas of knowledge beyond departmental boundaries.
- Editorial Boards:
  - Journal of Particle Physics and Cosmology, 2025-
  - International Journal of Modern Physics A, 2023-
  - Modern Physics Letters A, 2023-
  - Advances in Theoretical and Mathematical Physics, 2022-
  - Science China, 2018-
  - Chinese Physics C, 2018-
- Organization of conferences, workshops, and thematic programs (selected list):
  - Inaugural Chair, Gordon Research Conference on String Theory and Cosmology, 2015
  - Chair, 10-th International String Phenomenology Conference, Madison, 2011

- Thematic Program on [“The Unreasonable Effectiveness of Toric Geometry: Bridging Mathematics, Computation, and String Theory”](#), Erwin Schrodinger Institute, 2026
- Aspen Workshop on “AI Reasoning for Theoretical Physics”, May 24-June 14, 2026
- “Data Analysis and Machine Learning for Physics” Workshop, Taipei, May 6-8, 2026.
- Lepton Photon International Conference, Madison, August 25-29, 2025
- Thematic Program on [“The Landscape vs. the Swampland”](#), Erwin Schrodinger Institute, Vienna, July 1-August 9, 2024
- Institute for Fundamental Physics of the Universe Focus Week [“Interpretable and higher-order statistics for late-time cosmology”](#), Trieste, June 27-July 1, 2022
- Kavli Institute for Theoretical Physics Program “The String Swampland & Quantum Gravity Constraints on Effective Theories”, February 18-March 13, 2020
- [Microsoft Workshop on “Physics  \$\cap\$  ML”](#), Redmond, April 25-26, 2019
- HenryFest, Symposium in honor of Henry Tye’s 70-th Birthday, Cornell, 2017
- Initiated and Organized Online Seminar Series:
  - “Physics  $\cap$  ML” (<http://www.physicsmeetsml.org>), an online seminar series at the interface of theoretical physics and machine learning, 2020 –
  - Online Seminar Series on String Phenomenology, September 2021 –
- International advisory or program committees of international conferences (selected list):
  - International String Phenomenology Conference (multiple years, from 2004 on)
  - Strings Conference (2016)
  - International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY) (2021)
  - [Hammers & Nails](#), Machine Learning Meets Astro & Particle Physics (2022)
  - Quantum Gravity (2025)
- Convener for international conferences:
  - International Conference on High Energy Physics (ICHEP), 2012
  - SUSY, 2003, 2012, 2015, 2021
  - International Symposium on Particles, Strings and Cosmology (PASCOS), 2013, 2016

### Invited Talks

Delivered over 500 talks at both a general & a technical level worldwide (in 28 countries so far).

- *Distinguished Named lectures*: listed above.
- Lecturer at more than 20 theoretical physics summer/winter schools, including the TASI Summer School (2008), the Kavli Asian Winter School (2008, 2011, 2016, 2019), the ICTP Spring School (2008), the Perimeter Institute Summer School (2007), Beijing Institute of Mathematical Sciences and Applications (2025), Domoschool (2026).
- Plenary speaker at major international conferences including Strings, String Phenomenology, String Data, Gordon Research Conference, PASCOS, Planck, and SUSY.
- Public lectures on string theory, particle physics, and cosmology in Asia, Europe, and USA.

### Education and Outreach

- Mentored 11 PhDs, 32 postdocs: 27 of them now hold faculty/scientist positions worldwide.
- Chancellor’s Distinguished Teaching Award (highest teaching honor at UW-Madison), 2012.
- Designed 6 new courses: String Theory (2003), Supersymmetry (2008), Cosmology (2018), Machine Learning in Collider Physics (2021), String Landscape & the Swampland (2023), Machine Learning in Physics (2024).

- Opt-ed articles for newspapers e.g. South China Morning Post, Hong Kong Economic Journal.
- Research or interviews featured in media worldwide including Scientific American, Science Magazine, Astronomy Magazine, Quanta Magazine, Der Spiegel, Die Welt, Telepolis, Cosmos Magazine, New Scientist, Physics World, Wisconsin State Journal, Wisconsin Public TV, Mingpao, Singtao Daily, South China Morning Post, Radio Television Hong Kong.

## **Publications**

Author of over 180 refereed journal articles, with over 17,000 citation count (currently at a rate >1100 per year), h-index  $\sim 71$ . Six most cited papers were each cited more than 500 times.

Google Scholar: [https://scholar.google.com/citations?user=7\\_B0r5MAAAAJ&hl=en](https://scholar.google.com/citations?user=7_B0r5MAAAAJ&hl=en)

INSPIRE database: <http://inspirehep.net/author/profile/G.Shiu.1>

## Ten Sample Publications:

1. J. H.T. Yip, C. Arnal, F. Charton and G. Shiu, "Transforming Calabi-Yau Constructions: Generating New Calabi-Yau Manifolds with Transformers," [\[arXiv:2507.03732 \[hep-th\]\]](#).
2. F. Marchesano, G. Shiu, T. Weigand, "The Standard Model from String Theory: What Have We Learned?," *Ann. Rev. Nucl. Part. Sci.* **74**, 113-140 (2024) [\[arXiv:2401.01939 \[hep-th\]\]](#).
3. G. Shiu, F. Tonioni and H. V. Tran, "Late-time attractors and cosmic acceleration," *Phys. Rev. D* **108**, no.6, 063528 (2023) [\[arXiv:2306.07327 \[hep-th\]\]](#).
4. M. Biagetti, A. Cole and G. Shiu, "The Persistence of Large Scale Structures I: Primordial non-Gaussianity," *JCAP* **04**, 061 (2021) [\[arXiv:2009.04819 \[astro-ph.CO\]\]](#).
5. H.C. Kim, G. Shiu, C. Vafa, "Branes and the Swampland," *Phys. Rev. D* **100**, no. 6, 066006 (2019) [\[arXiv:1905.08261 \[hep-th\]\]](#).
6. H. Ooguri, E. Palti, G. Shiu and C. Vafa, "Distance and de Sitter Conjectures on the Swampland," *Phys. Lett. B* **788**, 180 (2019) [\[arXiv:1810.05506 \[hep-th\]\]](#).
7. Y. Hamada, T. Noumi and G. Shiu, "Weak Gravity Conjecture from Unitarity and Causality," *Phys. Rev. Lett.* **123**, no. 5, 051601 (2019) [\[arXiv:1810.03637 \[hep-th\]\]](#).
8. J. Brown, W. Cottrell, G. Shiu and P. Soler, "Fencing in the Swampland: Quantum Gravity Constraints on Large Field Inflation," *JHEP* **10**, 023 (2015) [\[arXiv:1503.04783 \[hep-th\]\]](#).
9. F. Marchesano, G. Shiu and A. M. Uranga, "F-term Axion Monodromy Inflation," *JHEP* **09**, 184 (2014) [\[arXiv:1404.3040 \[hep-th\]\]](#).
10. X. Chen, M.x. Huang, S. Kachru, G. Shiu, "Observational signatures and non-Gaussianities of general single field inflation," *JCAP* **01**, 002 (2007) [\[arXiv:hep-th/0605045 \[hep-th\]\]](#).

## Book Chapters (Selected):

1. M. Montero and G. Shiu, "A Gentle Hike Through the Swampland", invited chapter, "Handbook of Quantum Gravity" (Eds. C. Bambi, L. Modesto, I.L. Shapiro, Springer 2023).
2. A. Cole and G. Shiu, "Towards the Shape of Cosmological Observables and the String Theory Landscape with Topological Data Analysis", invited chapter of "Progress in Information Geometry", edited by Frank Nielsen, published by Springer Nature, 2021.
3. B.R. Greene and G. Shiu, "Dark Energy in String Theory", invited chapter of "Perspectives in String Phenomenology", edited by Bobby Acharya, Gordon L Kane, and Piyush Kumar, published by World Scientific, 2015.
4. G. Shiu, "The CMB as a Possible Probe of String Theory", invited chapter of "String Cosmology", edited by Johana Erdmenger, published by Wiley-VCH, Germany, 2008.
5. G. Shiu, "Strings for Particle Physicists", invited chapter of "The Dawn Of The LHC Era", Proceedings of the 2008 Theoretical Advanced Study Institute (TASI) In Elementary Particle Physics, published by World Scientific, 2008.