

# Siddharth Muthukrishnan

Black Hole Initiative  
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*CV last updated: October-15-2025.*

AOS: Philosophy of Physics, Philosophy of Science, Philosophy of Language.  
AOC: Early Modern, Epistemology, Philosophy of Computer Science.

## Employment

- 2025- Fellow, [Black Hole Initiative](#), Harvard University.
- 2024-2025 Postdoctoral Scholar, University of Pittsburgh. Supervisor: [David Wallace](#).
- 2010-2011 Research Assistant, School of Technology and Computer Science, [Tata Institute of Fundamental Research](#), Mumbai, India.

## Education

- 2019-2025 PhD, [Department of History and Philosophy of Science](#), University of Pittsburgh. Supervisor: [David Wallace](#). Committee: [Robert Batterman](#), [James Woodward](#), and [Nicholas Huggett](#) (external, University of Illinois Chicago). [Work completed by 2024, defended in 2025.]
- 2018-2019 PhD Student, [Department of Philosophy](#), University of Southern California. [Transferred to Pitt HPS along with David Wallace.]
- 2011-2018 PhD in Physics, [Department of Physics & Astronomy](#), University of Southern California. Dissertation: [Tunneling, Cascades, and Semiclassical Methods in Analog Quantum Optimization](#). Supervisor: [Daniel Lidar](#).
- 2006-2010 B.TECH in Engineering Physics, [Indian Institute of Technology, Guwahati](#), India.

## Publications

- 2025 “Many Worlds as Anti-Conspiracy Theory: Locally and causally explaining a quantum world without finetuning”, in the forthcoming volume [Alyssa Ney](#) (Ed.), *Local Quantum Mechanics: Everett, Many Worlds, and Reality* (New York: Oxford University Press). Preprint available: [PhilSci Archive:25958](#).
- 2023 “Unpacking Black Hole Complementarity”, forthcoming at [The British Journal for the Philosophy of Science](#). Preprint available: [PhilSci Archive:22594](#). [An accessible version of the main argument in this paper is published as “Black Holes and Reality” in *BjPS Short Reads*]

## Publications (physics)

- 2019 **Muthukrishnan**, Albash, Lidar, “Sensitivity of quantum speedup by quantum annealing to a noisy oracle,” *Physical Review A*, Vol. 99, Iss. 3, 032324.
- 2017 **Muthukrishnan**, Lidar, “Quasiadiabatic Grover search via the Wentzel-Kramers-Brillouin approximation,” *Physical Review A*, Vol. 96, Iss. 1, 012329.

- 2016 **Muthukrishnan**, Albash, and Lidar, “Tunneling and speedup in quantum optimization for permutation-symmetric problems,” *Physical Review X*, Vol. 6, Iss. 3, 031010.
- 2012 Das, Sharma, and **Muthukrishnan**, “On Some Special Cases of the Entropy Photon-Number Inequality,” *Theory of Quantum Computation, Communication, and Cryptography (Lecture Notes in Computer Science)*, Vol. 7582, pp. 116-127.
- 2011 Sharma, Das, and **Muthukrishnan**, “Entropy power inequality for a family of discrete random variables,” *Proceedings of the 2011 IEEE International Symposium on Information Theory*, pp. 1945-1949.

## In progress

*Drafts available on request.*

- 2025 “Grace Under Pressure: Vagueness, Models, and Fault-Tolerance” (in submission)
- “Unruh, Hawking, and Equivalence” (with Ignacio J. Araya)
- “Epistemicism vs. Physics”
- “The Scientific and the Zetetic”
- “Puzzles from Newton’s Third Rule”

## Presentations

*\*=invited; all other presentations contributed and refereed*

### EPISTEMICISM VS. PHYSICS

- 2026 *Forthcoming* Colloquium Presentation at the Central APA 2026, Chicago.

### UNRUH, HAWKING, AND EQUIVALENCE

- 2025 \* Philosophy of High-Energy Physics Conference, Center for Philosophy of Science, University of Pittsburgh.
- 2022 \* Presentation to the Beyond Spacetime group at the University of Illinois Chicago.
- 2022 Deutsche Physikalische Gesellschaft Annual Conference (Online).

### MANY WORLDS AS ANTI-CONSPIRACY THEORY

- 2024 PSA2024: Philosophy of Science Association, 29th Biennial Meeting, New Orleans.
- 2024 \* Everett and Locality Workshop, New Orleans.
- 2023 Foundations of Physics, Bristol, UK. [refereed poster]
- 2022 PSA2022: Philosophy of Science Association, 28th Biennial Meeting, Pittsburgh. [refereed poster]

### GRACE UNDER PRESSURE: VAGUENESS, MODELS, AND FAULT-TOLERANCE

- 2024 \* Open Texture Workshop, University of Pittsburgh.
- 2024 Symposium Presentation at the Pacific APA 2024, Portland. (Symposium presentations at the Pacific have about a 10% acceptance rate and are assigned a full 3 hr session with two commentators.)

### THE SCIENTIFIC AND THE ZETETIC

- 2025 Colloquium Presentation at the Eastern APA 2025, New York.
- 2024 Philosophy of Science: Past, Present and Future Conference, University of Minnesota, Minneapolis. [refereed poster]

2024 Philosophy of Science and Epistemology Conference at the Hong Kong University of Science and Technology.

#### UNPACKING BLACK HOLE COMPLEMENTARITY

2025 \* Black Hole Initiative Foundations Colloquium, Harvard University.  
2024 Physics and Reality Conference at the University of Helsinki, Finland.  
2023 \* Black Hole Initiative Foundations Seminar, Harvard University.  
2023 \* Foundations of Gravitational Physics Workshop at the LMU Munich, Germany.  
2023 Black Hole Thermodynamics at 50 Workshop (Online).  
2023 Philosophy of Logic, Math, and Physics (LMP) Graduate Student Conference at Western University, London, Ontario, Canada (Online).  
2022 PSA2022: Philosophy of Science Association, 28th Biennial Meeting, Pittsburgh.  
2022 XXV Urbino Summer School, Dualities Between Physics and Philosophy, University of Urbino, Italy (Online).  
2021 Deutsche Physikalische Gesellschaft Annual Conference (Online).

#### PUZZLES FROM NEWTON'S THIRD RULE

2022 HOPOS, University of California, Irvine.

#### MISCELLANEOUS

2025 \* Debate with Eugene Chua on idealization and the black hole information paradox, History, Philosophy & Culture meeting, Black Hole Initiative, Harvard University.  
2022 \* Comments on Christopher Weaver's "On Poincare Recurrence" at the Ohio Philosophical Association Conference at the University of Akron (Online).  
2018 \* "The measurement problem" at Gathering Philosophers in Southern California Workshop, Los Angeles.

## Teaching

#### INSTRUCTOR OF RECORD

2023 Philosophy of 20<sup>th</sup> Century Physics (HPS 1612) at the University of Pittsburgh.  
2022 Science Fiction and Philosophy (HPS 0640) at the University of Pittsburgh.  
2021 Morality and Medicine (HPS 0613) at the University of Pittsburgh.

#### TEACHING ASSISTANT

2020 Morality and Medicine (HPS 0613) at the University of Pittsburgh.  
2011-2017 Teaching Assistant and Lab Instructor to several physics graduate and undergraduate courses at the University of Southern California :  
*Undergraduate*—ASTR 100:The Universe; PHYS 100:The Physical World; PHYS 125:Physics for Architects; PHYS 135a,b:Physics for the Life Sciences.  
*Graduate*—PHYS 558a,b:Quantum Mechanics; CHM 550:Statistical Mechanics.

## Visiting position

2022 Beyond Spacetime short-term visitor at the [Department of Philosophy](#), University of Illinois Chicago. Visit supervisor: [Nicholas Huggett](#).

## Awards and Grants

2024	HPS Department Faculty Travel Award.
2024	APA Graduate Student Award for travel.
2024	Wesley Salmon Memorial Fund for travel.
2023	Travel grant from Harvard University for the Black Hole Initiative Conference.
2023	Wesley Salmon Memorial Fund for travel.
2023	Templeton Foundation award to attend Beyond the Ivory Tower writing workshop.
2022	Wesley Salmon Memorial Fund for travel.
2022	Visiting fellowship grant from the Beyond Spacetime program at University of Illinois Chicago.
2022,2023	WEH Heraeus conference grant for the Deutsche Physikalische Gesellschaft Annual Conference.
2011-2016	Dornsife College Merit Award.
2011	NSF Student Travel Grant.

## Service and Outreach

2023-2025	Referee for <i>British Journal of Philosophy of Science</i> ( $\times 2$ ); <i>Philosophy of Science</i> ( $\times 1$ ); <i>Studies in the History and Philosophy of Science</i> ( $\times 1$ ); <i>Synthese</i> ( $\times 1$ ); <i>Philosophy of Physics</i> ( $\times 6$ ).
2025-	Primary organizer of the Foundations Seminar at the Black Hole Initiative, Harvard University.
2025	Co-organizer of the Philosophy of Physics Reading Group at University of Pittsburgh.
2020	Hosted <a href="#">Natural Philosophers</a> , a series of online interviews of philosophers.
2019-2022	Work in progress coordinator at the HPS Department, University of Pittsburgh.
2015	<i>Graduate Research Mentor</i> , <a href="#">McNair Gateway Scholars Program at USC</a> .
2012-2019	Referee for <i>Physical Review Letters</i> , <i>Physical Review A</i> , <i>Physical Review E</i> , <i>Quantum Information Processing</i> .

## Skills

- *Languages*. German: Reading; Hindi and Tamil: native conversational fluency; Kannada: Reading and writing.
- *Programming languages/platforms*. C, C++, Python, MATLAB, Mathematica. Experience programming on high-performance clusters.

## References (more available on request)

### [David Wallace](#)

Mellon Professor in the Depts. of Philosophy and History and Philosophy of Science, University of Pittsburgh  
david.wallace@pitt.edu

University of Illinois Chicago

huggett@uic.edu

### [Robert Batterman](#)

Distinguished Professor of Philosophy, University of Pittsburgh  
rbatterm@pitt.edu

### [James Woodward](#)

Distinguished Professor (Emeritus) in the Dept. of History and Philosophy of Science, University of Pittsburgh  
jfw@pitt.edu

### [Kate Stanton](#)

Assistant Professor of Philosophy, University of Pittsburgh  
katehazelstanton@pitt.edu

### [Nick Huggett](#)

LAS Distinguished Professor of Philosophy, [John Norton](#) (Teaching reference.)

Distinguished Professor, History and Philosophy of Science, University of Pittsburgh jdnorton@pitt.edu