

Anthony Munson

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EDUCATION

PhD in Physics, University of Maryland, College Park Aug 2020–Current

- Ford Foundation Predoctoral Fellow
- MathQuantum Graduate Fellow
- Member of the Joint Center for Quantum Information and Computer Science (QuICS)
- Supervisors: Nicole Yunger Halpern and Christopher Jarzynski

MSc in Mathematics and Foundations of Computer Science, University of Oxford Oct 2019–Sep 2020

- Supervisor: Giulio Chiribella

AB in Physics and Mathematics, Harvard College Sep 2015–May 2019

- High Honors

RESEARCH EXPERIENCE

Graduate research assistant, University of Maryland, College Park May 2021–Current
Supervisors: Nicole Yunger Halpern and Christopher Jarzynski

Graduate research assistant, University of Oxford May 2020–Sep 2020
Supervisor: Giulio Chiribella

Undergraduate research assistant, University of Oxford May 2018–Aug 2018
Supervisor: Bob Coecke

PUBLICATIONS

Publications (2)

2. N. Yunger Halpern, N. B. T. Kothakonda, J. Haferkamp, **A. Munson**, J. Eisert, and P. Faist, “[Resource theory of quantum uncomplexity](#),” *Phys. Rev. A* 106, 062417 (2022)
1. **A. Munson**, B. Coecke, and Q. Wang, “[AND-gates in ZX-calculus: Spider Nest Identities and QBC-completeness](#),” In Proceedings 17th International Conference on Quantum Physics and Logic, EPTCS 340 (2020).

Forthcoming publications (2)

2. **A. Munson**, N. B. T. Kothakonda, J. Haferkamp, N. Yunger Halpern, J. Eisert, and P. Faist, “[Complexity-constrained quantum thermodynamics](#),” arXiv:2403.04828 (2024).
1. H. Kristjánsson, Y. Zhong, **A. Munson**, and G. Chiribella, “[Quantum networks with coherent routing of information through multiple nodes](#),” arXiv:2208.00480 (2023).

FELLOWSHIPS, SCHOLARSHIPS, AND AWARDS

Fellowships

- [MathQuantum Graduate Fellowship](#) 2024–Current
A University of Maryland graduate research fellowship to promote crossover research between mathematics and quantum information science. Part of a Research Training Group program funded by the National Science Foundation.
- [Ford Foundation Predoctoral Fellowship](#) 2022–Current
3-year graduate research fellowship to support underrepresented minorities who seek to become educators in academia.

- [University of Maryland Dean’s Fellowship](#) 2020–2022
2-year graduate fellowship to supplement university teaching and research assistantships.
- [Mellon Mays Undergraduate Fellowship](#) 2017–2019
2-year undergraduate research fellowship to support underrepresented minorities who seek to enter graduate school and, later, academia.

Scholarships

- [QuICS research funding](#) 2022
1-year research-assistantship funding, provided through the University of Maryland’s Joint Center for Quantum Information and Computer Science (QuICS). I was nominated for the funding and supported through NIST grant 70NANB21H055_0.
- [African American Future Achievers Scholarship](#) 2015
Funding to support undergraduate tuition and fees, awarded by Ronald McDonald House Charities.
- [Stamps Leadership Scholarship](#) (declined) 2015
4-year coverage of tuition and fees for an undergraduate education at Caltech.
- [I.I. Rabi Scholars Program](#) (declined) 2015
Undergraduate research program for incoming science students at Columbia College.

Awards

- [Outstanding Teaching Assistant Award](#) 2020
The Ralph Myers & Friends of Physics Award, bestowed by the University of Maryland’s Physics Department, in recognition of teaching in Fall 2020.

TEACHING EXPERIENCE

Academic and Test-prep Tutor

PrepNow (now StudyPoint)

- Online tutoring in physics, math, SAT, and ACT for students in high school Summer ’21–Spring ’22
* I completed over 200 hours of instruction to over a dozen students.

Teaching Assistant

University of Maryland, College Park

- Physics 275: Experimental Physics Fall ’20–Spring ’21
* Awarded Outstanding Teaching Assistant Award, Fall 2020, by University of Maryland’s Physics Department.

Instructor

Mathnasium

- In-person tutoring in math for students aged 8-18 Summer ’14–Summer ’15
* Awarded Employee of the Quarter, Spring 2015.

ACADEMIC TALKS

Invited Talks (7)

Topic: “Quantum (Un)complexity: A Resource for Quantum Computation”

1. [Quantum Information Theory Group seminar](#), University of Bristol, online (18 Oct 2023).
2. [BIRS Quantum Information Theory in Quantum Field Theory and Cosmology](#), Banff Centre for Arts and Creativity, Banff, Alberta, Canada (6 Jun 2023).
3. [Institute for Quantum Science and Technology seminar](#), University of Calgary, online (1 Mar 2023).

4. [QLA Meets QIT Workshop II](#), Chicago, Illinois (4 Nov 2022).
5. [Quantum Information seminar](#), Perimeter Institute, Waterloo, Ontario, Canada (11 May 2022).
6. [Quantum Information and Gravity seminar](#), University College London, online (28 Apr 2022).
7. [Quantum Information and Gravity seminar](#) High-energy Theory seminar, Purdue University, online (29 Mar 2022). [[Recording](#)]

Contributed Talks (1)

Topic: “Work trades off with complexity in computationally restricted thermodynamics”

1. Workshop on Stochastic Thermodynamics IV, International Centre for Theoretical Physics, online (24 May 2023). [[Recording](#)]

Other Talks (2)

Topic: “Quantum (Un)complexity: A Resource for Quantum Computation”

1. Eduardo Martin-Martinez’s group, Waterloo, Ontario, Canada (11 May 2022).
2. Christopher Jarzynski’s group, University of Maryland, College Park, Maryland (1 Apr 2022).

MENTORING AND OUTREACH

- Panelist, *Undergraduate Quantum Association Grad Student Panel* Apr 2023
 - I was invited to share my experiences as a PhD student working in quantum information science, on a live panel, for students in the University of Maryland’s Undergraduate Quantum Association.

INTERVIEWS AND MEDIA RELATIONS

- **QuICS Graduate Student Wins Ford Foundation Fellowship**
<https://quics.umd.edu/news/quics-graduate-student-wins-ford-foundation-fellowship>
- **UMD graduate students reflect on end of Ford Foundation diversity fellowship**
<https://dbknews.com/2022/10/03/end-ford-foundation-diversity-fellowship/>