

James Graham

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Education

University of Oxford, Oxford, UK

DPhil Theoretical Physics

2020—present

MSc Mathematical & Theoretical Physics, *Distinction*

2017

Northwestern University, Evanston, IL

BS Applied Mathematics, *summa cum laude*

2016

Research & Coursework

Non-Perturbative Methods in Quantum Field Theory, University of Oxford

Mar.—Apr. 2017

- Implemented a statistical algorithm to simulate a quantum theory using C++;
- Extracted physical quantities from correlation functions with MATLAB and Excel.

Research Assistant, Applied Mathematics, Northwestern University

Mar. 2014—Jan. 2015

- Modeled the activity and synchronization of a network of neurons using Python;
- Developed tools to visualize simulation data using MATLAB and Mathematica;
- Investigated synchronization of neural firing in presence of periodic stimulus.

Research Assistant, Applied Mathematics, Northwestern University

Apr.—Sept. 2013

- Implemented a neural network to simulate an in-vivo cortex using MATLAB;
 - Investigated synapse survival through stimulation by memories.
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Employment

Education Coordinator, Mathnasium of Tysons, Vienna, VA

Oct. 2019—Jul. 2020

- Maintained individualized curricula for more than 150 students to respond to long-term learning needs and short-term school requirements;
- Supervised more than 15 instructors to ensure consistent, responsive and personalized instruction;
- Managed relationships with parents to set expectations, report students' progress and achieve learning goals;
- Provided technical support and advice to help families transition from in-person to online learning.

Instructor, Mathnasium of Mount Vernon, Alexandria, VA

Apr. 2019—Oct. 2019

- Taught students mathematical topics ranging from basic facts to trigonometry and pre-calculus in a small group setting;
- Managed individualized workflows of several students simultaneously;
- Enthused students in mathematics by relating my experiences to theirs.

Teaching Assistant, Department of Mathematics, Northwestern University

Sept. 2015—Mar. 2016

- Led a discussion section on calculus for one hour per week;
 - Answered students' questions about questions from problem sets, including occasionally typesetting and distributing solutions;
 - Invigilated and marked two department-wide quizzes and exams each term.
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Publications

Karamchandani, A. J., **Graham, J. N.**, & Riecke, H. E. (2018). Pulse-coupled mixed-mode oscillators: Cluster states and extreme noise sensitivity. *Chaos*, 28(4), [043115]. <https://doi.org/10.1063/1.5021180>

Adams W, **Graham JN**, Han X, Riecke H (2019) Top-down inputs drive neuronal network rewiring and context-enhanced sensory processing in olfaction. *PLoS Comput Biol* 15(1): e1006611. <https://doi.org/10.1371/journal.pcbi.1006611>

Awards

Outstanding Graduate Prize in Applied Mathematics

2016

Roger Boye Oxbridge Bursary to support study at Oxford

2016

Summer Research Opportunities Award to support summer research

2014

Merck Index Award for outstanding performance in organic chemistry

2013

Skills

C++ • Python • LaTeX • Mathematica • Git • MATLAB • HTML • CSS

Research • Communication • Teaching • Remote Teaching • Teamwork