

## James Graham

Pembroke College • St. Aldate's • Oxford OX1 1DW

[jsnsgraham@gmail.com](mailto:jsnsgraham@gmail.com) • +1 (571) 447 3328

[jngraham.com](http://jngraham.com) • [github.com/jngraham](https://github.com/jngraham) • [linkedin.com/in/j-n-graham](https://linkedin.com/in/j-n-graham)

---

### 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.

---

### Employment

#### Teaching Assistant, Mathematical Institute, University of Oxford

Jan.—Apr. 2021

- Marked four General Relativity problem sheets for a total of eleven students split into two classes;
- Presented at least one problem per class remotely with Microsoft Teams;
- Assisted class tutor in answering students' physical and mathematical questions during classes.

#### 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.

#### 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.

---

### 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