

# James N Graham

Rudolf Peierls Centre for Theoretical Physics • Parks Road • Oxford OX1 3PU  
Pembroke College • Oxford OX1 1DW  
[james.graham@physics.ox.ac.uk](mailto:james.graham@physics.ox.ac.uk) • +44 7960 778220 • +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

<b>University of Oxford</b> , Oxford, UK	
DPhil Theoretical Physics	2020—present
MSc Mathematical & Theoretical Physics, <i>Distinction</i>	2017
<b>Northwestern University</b> , Evanston, IL	
BS Applied Mathematics, <i>summa cum laude</i>	2016

---

## Teaching

<b>Teaching Assistant</b> , Mathematical Institute, University of Oxford	Jan.—Apr. 2021
<ul style="list-style-type: none"><li>○ Marked four General Relativity problem sheets for a total of eleven students split into two classes;</li><li>○ Presented at least one problem per class remotely with Microsoft Teams;</li><li>○ Assisted class tutor in answering students' physical and mathematical questions during classes.</li></ul>	
<b>Mathematics Tutor</b> , Washington, DC	2019—present
<ul style="list-style-type: none"><li>○ Tutored a pair of brothers on topics from arithmetic with fractions and decimals up to IB Analysis.</li></ul>	
<b>Teaching Assistant</b> , Department of Mathematics, Northwestern University	Sept. 2015—Mar. 2016
<ul style="list-style-type: none"><li>○ Led a discussion section on calculus for one hour per week;</li><li>○ Answered students' questions about questions from problem sets, including occasionally typesetting and distributing solutions;</li><li>○ Invigilated and marked two department-wide quizzes and exams each term.</li></ul>	

---

## Employment

<b>Collections Invigilator</b> , Pembroke College, University of Oxford	2022—present
<ul style="list-style-type: none"><li>○ Facilitated the sitting of mock exams for as many as 60 students at a time;</li><li>○ Informed the Academic Office of issues including missing exams and students.</li></ul>	
<b>Physics Aptitude Test Marker</b> , Department of Physics, University of Oxford	Nov. 2021
<ul style="list-style-type: none"><li>○ Developed a mark scheme for a small number of free-response problems;</li><li>○ Worked with other markers to ensure the mark scheme was applied consistently.</li></ul>	
<b>Education Coordinator</b> , Mathnasium of Tysons, Vienna, VA	Oct. 2019—Jul. 2020
<ul style="list-style-type: none"><li>○ Maintained individualized curricula for more than 150 students to respond to long-term learning needs and short-term school requirements;</li><li>○ Supervised more than 15 instructors to ensure consistent, responsive and personalized instruction;</li><li>○ Managed relationships with parents to set expectations, report students' progress and achieve learning goals;</li><li>○ Provided technical support and advice to help families transition from in-person to online learning.</li></ul>	
<b>Research Assistant</b> , Applied Mathematics, Northwestern University	Mar. 2014—Jan. 2015
<ul style="list-style-type: none"><li>○ Modeled the activity and synchronization of a network of neurons using Python;</li><li>○ Developed tools to visualize simulation data using MATLAB and Mathematica;</li><li>○ Investigated synchronization of neural firing in presence of periodic stimulus.</li></ul>	
<b>Research Assistant</b> , Applied Mathematics, Northwestern University	Apr.—Sept. 2013
<ul style="list-style-type: none"><li>○ Implemented a neural network to simulate an in-vivo cortex using MATLAB;</li><li>○ Investigated synapse survival through stimulation by memories.</li></ul>	

## Publications

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>

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>

---

## Posters – Conferences – Schools – Seminars

EMBO Workshop on Physics of cells: PhysCell2022	Sept. 2022
International School on Biological Physics of Cells	Sept. 2022
XXVIII International Summer School Instituto Nicolás Cabrera	Sept. 2022
3CR Talk Series	May 2022
Pembroke Physics Society	May 2017

---

## Awards

<b>Outstanding Graduate Prize in Applied Mathematics</b>	2016
<b>Roger Boye Oxbridge Bursary</b> to support study at Oxford	2016
<b>Summer Research Opportunities Award</b>	2014
<b>Merck Index Award</b> for outstanding performance in organic chemistry	2013

---

## Skills

C++ • Python • LaTeX • Mathematica • Git • MATLAB • HTML • CSS  
Research • Communication • Teaching