

# ALEX GOUGH

## EDUCATION

**Newcastle University – School of Mathematics, Statistics, and Physics** 2020–Present  
*PhD Applied Mathematics*

- Topic: Large scale structure of the universe in the nonlinear regime.

**Oxford University – Balliol College** 2016–2020  
*BA Physics – 1st class* 2016–2019  
*MMathPhys – Distinction* 2019–2020

## RESEARCH EXPERIENCE

**Astrophysics Subdepartment, Oxford University, Oxford** Summer 2019  
*Physics Research Intern*

- Studied a parametric moment expansion to model polarised galactic foregrounds.

**Manoharan Lab, Harvard University, Cambridge, MA** Summer 2015  
*Physics Research Intern*

- Designed and built an inline holographic microscope to track nanoparticles in solution, with modifications for dark-field holography.

## TEACHING/OUTREACH EXPERIENCE

**Newcastle University** 2020–Present  
*Teaching support: MAS1902/PHY1020 Dynamics for year 1* 2021  
*Teaching support: PHY2036 Statistical Mechanics for year 2* 2021  
*Teaching support: MAS3811 Quantum Mechanics for year 3* 2020

**Oxford Physics Department, Oxford** January 2020  
*Public outreach volunteer (Oxford Stargazing)*

**The Ogden Trust/Gosford Hill School, Oxford** Summer 2018  
*Physics School Intern*

- Helped rewrite KS3 schemes of work and mark exams.
- Planned and delivered a supplementary lesson to A level students.
- Ran a careers workshop for year 9 students.

**The Oxford Trust: Science Oxford, Oxford** 2018–2020  
*Live Event Staff Member* (part time)  
*Saturday Science Club Event Volunteer* (part time)

- Support existing activities run by Science Oxford including Saturday Science Clubs.
- Support community outreach events that aim to engage local communities in encouraging and facilitating the study and communication of STEM subjects.

**Sudbury Parks and Recreation, Sudbury, MA** Summer 2017  
*Summer Camp Science Specialist*

- Designed and ran demonstrations/activities for children ages 5–10 at a summer camp.

<b>Lincoln-Sudbury Regional High School, Sudbury, MA</b>	<b>2015–2016</b>
<i>Academic Support Centre/METCO Tutor</i>	<i>2016</i>
<i>Accelerated Physics Teaching Assistant</i>	<i>2015–2016</i>
<ul style="list-style-type: none"> <li>• Worked with students referred to academic support centre on homework and school work, particularly focusing on mathematics and sciences.</li> <li>• Helped facilitate lab work and answer questions in an accelerated physics class for high school seniors in their final year of school.</li> </ul>	

<b>Museum of Science, Boston, MA</b>	<b>2015–2016</b>
<i>Early Childhood Interpretation Intern</i>	<i>Summer 2016</i>
<i>Youth Volunteer</i>	<i>2015–2016</i>
<ul style="list-style-type: none"> <li>• Assisted in daily operation of the Discovery Centre, which specialises in ages 0–8, by interpreting and maintaining exhibits and running activities.</li> <li>• Assisted in professional development of new volunteers.</li> <li>• Developed new sensory area activity to explore colour mixing and artistic integration into science designed for children under 5.</li> <li>• Participated in professional development in a Mind in the Making workshop focusing on psychology of childrens’ learning.</li> </ul>	

<b>Kumon Math and Reading Centre of Sudbury, Sudbury, MA</b>	<b>2013–2014</b>
<i>Early Learning Educator and Grader</i>	
<ul style="list-style-type: none"> <li>• Worked individually with children to develop basic reading and number skills. Marked math and reading exercises.</li> </ul>	

## OTHER EXPERIENCE

<b>Oxford University Taekwondo School</b>	<b>2016–2020</b>
<i>Assistant Instructor</i>	<i>2016–2020</i>
<i>Treasurer</i>	<i>2018–2019</i>
<b>Giorgio’s Taekwon-do, Sudbury, MA</b>	<b>2010–2016</b>
<i>Black Belt Class Director</i>	<i>2014–2016</i>
<i>Lead Instructor of the KidKwon-Do Program</i>	<i>2012–2016</i>
<i>Taekwon-Do Instructor</i>	<i>2010–2016</i>

## OTHER AWARDS/QUALIFICATIONS

<b>Ken Allen Prize, Balliol College</b>	<b>2019</b>
<ul style="list-style-type: none"> <li>• For experimental work based on project: <i>Colour magnitude diagrams for open clusters.</i></li> </ul>	
<b>Taekwon-do 4th Dan International Instructor, ITF</b>	<b>2019</b>
<ul style="list-style-type: none"> <li>• Dan number GB-4-355, International Instructor in ITF Taekwon-do.</li> </ul>	
<b>MOScar, Boston Museum of Science</b>	<b>2015</b>
<ul style="list-style-type: none"> <li>• For “best example of volunteer mission and spirit.”</li> </ul>	
<b>Alexandra Massand Award, Giorgio’s Taekwon-do</b>	<b>2010</b>
<ul style="list-style-type: none"> <li>• “To honor outstanding achievement in Taekwon-Do and an indomitable spirit.”</li> </ul>	