

# ALEXANDER C. W. GOUGH

## EDUCATION

**Oxford University: Balliol College** **2016-2020**  
*BA Phys – 1st class* *2016–2019*  
Received the Ken Allen prize for experimental work in third year, based on project “Colour magnitude diagrams for open clusters.”  
*MMathPhys* *2019–2020*

## RESEARCH EXPERIENCE/SKILLS

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

- Studied a parametric moment expansion to model polarised galactic foregrounds.
- Paper in preparation: *A moment expansion approach to spatially varying CMB foreground spectral dependencies.*

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

The Manoharan Lab’s research focuses on experimental techniques to study a variety of soft matter systems.

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

### Computing skills

- Familiarity with Python, basic familiarity with Matlab and Mathematica.

## TEACHING EXPERIENCE

**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-Present**  
*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.
- Help run weekend science workshops for children.

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

- Designed and ran demonstrations for children ages 5–10 at a summer camp.
- Planned discussion and accommodations for different ages and learning abilities.

<b>Lincoln-Sudbury Regional High School, Sudbury, MA</b>	<b>2015–2016</b>
<i>Academic Support Centre Tutor</i>	2016
<i>METCO Mathematics and Science Tutor</i>	2016
<i>Accelerated Physics Teaching Assistant</i>	2015–2016
<ul style="list-style-type: none"><li>• Worked with students on homework and school work, particularly focusing on mathematics and sciences.</li><li>• Helped METCO students with school work, teaching mathematics from introductory algebra through calculus, and sciences including earth science, biology, chemistry, and physics.</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>Boston Museum of Science, Boston, MA</b>	<b>2015–2016</b>
<i>Early Childhood Interpretation Intern</i>	Summer 2016
<i>Youth Volunteer</i>	2015–2016
<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.</li><li>• Worked in the Discovery Centre which specialises in ages 0–8, engaging both children and adults in activities, demonstrations, and experiments about science and engineering.</li><li>• Received a “MOScar” award for “Best Example of Volunteer Mission and Spirit.”</li></ul>	

## OTHER EXPERIENCE

<b>Oxford University Taekwondo School</b>	<b>2018–2019</b>
<i>Treasurer</i>	
<ul style="list-style-type: none"><li>• Organised finances for the University Taekwondo club.</li></ul>	

<b>Giorgio’s Taekwon-do, Sudbury, MA</b>	<b>2010–2016</b>
<i>Black Belt Class Director</i>	2014–2016
<i>Lead Instructor of the KidKwon-Do Program</i>	2012–2016
<i>Taekwon-Do Instructor</i>	2012–2016
<i>Assistant Taekwon-Do Instructor</i>	2010–2012
<ul style="list-style-type: none"><li>• Designed and developed the black belt class program, for the most advanced students and adults.</li><li>• Ran the program specialising in children aged 2-6.</li><li>• Prepared high ranking students for internationally recognized testing.</li><li>• Communicated requirements between local school and regional headquarters.</li><li>• Taught weekly classes, aimed at both adults and children.</li><li>• Taught private and semi-private lessons and test preparation for both adult students and children.</li></ul>	

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