

ALEXANDER MICHAEL REAVES

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EDUCATION

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| University of Cambridge <i>Masters of Research in Future Propulsion and Power</i> | Cambridge, UK October 2021 – August 2022 |
| Yale-NUS College <i>Bachelor of Science in Physical Sciences (Physics)</i> | Singapore August 2017 – May 2021 |
| University of Cambridge, Pembroke College <i>Coursework in Mathematics and Theoretical Physics</i> | Cambridge, UK May 2019 – June 2020 |
| Phoenix Country Day School <i>High School Diploma</i> | Arizona, USA August 2014 – June 2017 |
| Arizona State University <i>Coursework in Computer Science</i> | Arizona, USA May – July 2016 |

RESEARCH EXPERIENCE

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| Yale-NUS Physical Sciences Major <i>Capstone Student</i> | Yale-NUS College & University of Cambridge August 2020 – May 2021 |
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- Conducted a yearlong research project modeling the interactions between granular flows and hydropower turbines.
 - Met weekly with supervisors from the University of Cambridge and Yale-NUS College to present relevant findings.
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| NASA Ames Research Center <i>Summer Intern</i> | National Aeronautics and Space Administration June – August 2020 |
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- Used Creo Parametric to design 3D models of components for the International Space Station.
 - 3D printed and tested multiple iterations of a CO₂ sensor which could be manufactured in space.
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| Yale-NUS Sciences Department <i>Summer Research Assistant</i> | Yale-NUS College June – August 2019 |
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- Awarded full funding from the JY Pillay Global-Asia Programme to work under Prof. Chelsea Sharon to research the feasibility of radio astronomy data collection in Singapore.
 - Designed and built a radio telescope which will be used to test the suitability of Singapore's RF environment for radio astronomy observations.
 - Programmed basic data-collection and signal processing interfaces for the telescope.
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| Centre for Advanced 2D Materials <i>Research Assistant</i> | National University of Singapore May 2018 – August 2019 |
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- Awarded full funding from JY Pillay Global-Asia Programme to work under Prof. Shaffique Adam to research superconductivity in twisted bilayer graphene.
 - Created and ran simulations to determine the electronic band properties and lattice structure of superconductive twisted bilayer graphene.
 - Presented relevant papers and research findings in group meetings and weekly journal clubs.
 - Published results of research in *Solid State Communications*. To date, the paper has been cited over 50 times.

- Developed methodologies for optimizing wireless connections on embedded computer systems.
- Wrote wireless transmission code on an arduino in order to support a graduate student on his wireless pH sensor project.

OTHER PROFESSIONAL EXPERIENCE

Open Ventilator System Initiative (OVSI)

Engineer / Engineering Coordinator

University of Cambridge

March 2020 – June 2020

- Assisted in the design and creation of multiple versions of an affordable, hospital-quality, ventilator system that can be sustainably manufactured and maintained in low and middle-income countries.
- Managed information sharing and co-development between engineering groups in the United Kingdom, Kenya, Uganda, and Ethiopia.

United Nations Office for Outer Space Affairs

Online Volunteer

United Nations

December 2018 – March 2019

- Researched various methodologies for wastewater recycling and their potential to be applied in order to help achieve UN Sustainable Development Goal 6: Sustainable Management of Water and Sanitation for All.
- Wrote articles for the UN's Space4Water portal which explain the potential applications of space technologies for water management to a non-technical audience.

PUBLICATIONS AND PRESENTATIONS

Singlet superconductivity enhanced by charge order in nested twisted bilayer graphene

Fermi surfaces Evan Laksono, Jia Ning Leaw, **Alexander Reaves**, Manraaj Singh, Xinyun Wang, Shaffique Adam, Xingyu Gu; Solid State Communications, Volume 282, Pages 38-44, October 2018

<https://doi.org/10.1016/j.ssc.2018.07.013>

Wastewater recycling on the ISS and in Singapore

Alexander Reaves; United Nations Office of Outer Space Affairs, Space4Water, February 2019

<https://www.space4water.org/news/wastewater-recycling-iss-and-singapore>

Magnetotransport properties in twisted bilayer graphene at magic angle

Evan Laksono, **Alexander Reaves**, Manraaj Singh, Xingyu Gu, Jia Ning Leaw, Nimisha Raghuvanshi, Shaffique Adam; American Physical Society, Abstract: S14.00010, March 2019

<http://meetings.aps.org/Meeting/MAR19/Session/S14.10>

HONORS AND AWARDS

President's Special Award for Pandemic Service

2020

- Award given to OVSI from the Royal Academy of Engineering for contributions to addressing the challenges of the COVID-19 pandemic.

JY Pillay Global-Asia Programme Research Award

2018 & 2019

- Received full funding to construct a radio telescope to test the suitability of Singapore's RF environment for radio astronomy observations during summer 2019.
- Received full funding to research superconductivity in twisted bilayer graphene during summer 2018.

TECHNICAL STRENGTHS

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| Computer Languages | C, C++, MATLAB, Python, R |
| Software & Tools | Creo, LabVIEW, L ^A T _E X, Mathematica, Microsoft Office |

EXTRA CURRICULAR

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| Yale-NUS College Student Government (Director of Academics) | May 2020 – May 2021 |
| Yale-NUS Science Society (President) | January 2018 – May 2019 |
| Yale-NUS Sexual Assault Prevention and Education Taskforce | January 2018 – May 2018 |

REFERENCES

James Taylor | Assistant Professor, Department of Engineering | University of Cambridge
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