

Kyle Wong

Postgraduate student at Sidney Sussex College, University of Cambridge

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EDUCATION

Sidney Sussex College, University of Cambridge, Cambridge, England, United Kingdom 2024 — present

Master of Advanced Study (MASt) in Astrophysics

Expected time of graduation: July 2025

Victoria College, University of Toronto, Toronto, Ontario, Canada 2020 — 2024

Honours Bachelor of Science (HBSoc)

Programs: Physics Specialist (ASSPE1944), Mathematics Major (ASMAJ1165)

Graduated with High Distinction

German Swiss International School, Hong Kong SAR, China 2010 — 2020

International Baccalaureate (IB) in 6 subjects

International Advanced Subsidiary (AS) level in 1 subject

International General Certificate of Secondary Education (IGCSE) in 12 subjects

RESEARCH EXPERIENCE

Master's of Advanced Study Research Project Cambridge, England, United Kingdom

Postgraduate Student

October 2024 — present

Supervised by Prof. Anastasia Fialkov at the Institute of Astronomy, University of Cambridge

- Research topic: implementation and statistical testing of variable initial conditions (cosmologies) and variable resolution in 21cmSPACE code package for simulating the distribution of hydrogen gas clouds from in the early universe, making possible efficient forecasting of future radio astronomy experiments, most notably for the Square Kilometre Array (SKA)
- Relevant skills: simulation, MATLAB, high performance computing, Linux, data visualization, cosmology

Canadian Institute for Theoretical Astrophysics

Summer Undergraduate Research Fellowship

Toronto, Ontario, Canada

Undergraduate Researcher

May 2023 — December 2023

Supervised by Dr. Philippe Landry at the Canadian Institute for Theoretical Astrophysics

- Research topic: probing neutron star tidal deformability from gravitational wave signals using Markov chain Monte Carlo (MCMC) parameter estimation, and incorporating new models for neutron star equation of state correlations in the analysis pipeline of Laser Interferometer Gravitational-Wave Observatory (LIGO) Scientific Collaboration gravitational wave data
- Relevant skills: simulation, MCMC, machine learning, Bayesian inference, high performance computing, Linux

McGill Space Institute Summer Undergraduate Research Award

Montreal, Quebec, Canada

Undergraduate Researcher

May 2022 — April 2023

Supervised by Prof. Adrian Liu at the Trottier Space Institute (formerly McGill Space Institute) of McGill University

- Research topic: incorporating statistical priors into the power spectrum data estimator used in the data pipeline, for analysis of radio astronomy data from the Hydrogen Epoch of Reionization Array (HERA) collaboration's cosmic dawn experiment, using the Python programming language
- Relevant skills: simulation, Fourier transform, radio astronomy

HONOURS, AWARDS AND SCHOLARSHIPS

- Dean's List Scholar in the Faculty of Arts & Science 2022, 2023, 2024
- Canadian Institute for Theoretical Astrophysics
Summer Undergraduate Research Fellowship (CITA SURF) 9,500 CAD, 2023
- Birkenshaw Family Scholarship II 1,000 CAD, 2023
- McGill Space Institute (now Trottier Space Institute)
Summer Undergraduate Research Award (MSI SURA) 7,000 CAD, 2022
- David and Louise Fraser Scholarship 2,500 CAD, 2022
- University of Toronto Scholar 1,500 CAD, 2022
- Birkenshaw Family Scholarship 1,000 CAD, 2022
- Received offer for University of Toronto
Natalia Krasnopolskaia Memorial Summer Undergraduate Research Fellowship
(declined due to commitment with MSI SURA) 2022

SKILLS

- Scientific object oriented programming with Python, MATLAB, and Java, placing emphasis on design, vectorization, and coding practices
- Multi-dimensional data visualization
- Data analysis techniques including fast Fourier transform and numerical methods such as differentiation, integration, root finding, solutions to ordinary/partial differential equations, Monte-Carlo methods
- Symbolic computing
- Extensive use of the Bilby parameter estimation library (authored by the LIGO Scientific Collaboration)
- Extensive use of the 21cmSPACE (authored by the Cosmic Dawn Group at the Institute of Astronomy) cosmological simulation package
- Extensive use of the CAMB and recfast++ astrophysical simulation packages

PRESENTATIONS

- *Impact of Variable Cosmology on the 21-cm Cosmic Dawn Signal*, as the Master's project presentation 2025
- Interim progress presentation, at the Cambridge Cosmic Dawn Group 2024
- *Estimating Neutron Star Tidal Deformability*, at the CITA Undergraduate Research Showcase 2023
- PHY478 Physics Project final presentation 2023
- Two presentations given at the CITA Compact Objects Group, as part of PHY478 Physics Project 2023

SELECTED COURSES

At the University of Cambridge:

- Gravitational Waves and Numerical Relativity Awaiting results (Easter 2025)
- Astrostatistics Awaiting results (Lent 2025)
- Cosmology Awaiting results (Michaelmas 2024)
- General Relativity Awaiting results (Michaelmas 2024)

At the University of Toronto:

- General Relativity (APM426) A (Winter 2024)
- Relativity Theory II (PHY484) A (Winter 2024)
- Relativity Theory I (PHY483) A+ (Fall 2023)
- Physics Project (a continuation of CITA SURF) (PHY478) A+ (Fall 2023)
- Computational Physics (PHY407) A+ (Fall 2023)
- Computational Astrophysics (CTA200H) Audited (Summer 2023)
- Advanced Classical Mechanics (PHY354) A+ (Winter 2023)
- Geometry of Curves and Surfaces (MAT363) A+ (Winter 2023)