

# YAP Yong Sheng 葉勇陞

✉ [yongsheng\\_yap@live.com](mailto:yongsheng_yap@live.com) ☎ +44 791 801 6343

## Education

**University of Cambridge** 2023 – Present

Master of Advanced Studies in Mathematics (Theoretical Physics)

– Estimated Date of Completion: June 2024

**National Tsing Hua University** 2019 – 2023

Bachelor of Science, in Physics

– Graduated with Distinction

– GPA: 4.17/4.30 (corresponds to 95.23% in percentage)

## Research Experiences

**Department of Physics, NTHU** 2022 – 2023

Undergraduate Student, PI: Prof. Po-Yen Tseng

– **Cosmological Signatures of Superradiating Primordial Black Holes**

– Exploring the imprints of superradiant clouds formed by rotating primordial black holes on the global 21 cm line in the reionization epoch. I evaluated annihilation amplitudes for axion-photon interactions, and computed its heating effects with the numerical code DarkHistory.

**Institute of Astronomy, NTHU** 2020 – 2022

Undergraduate Student, PI: Prof. Andrew Cooper & Prof. Yuan-Sen Ting

– **Obtaining Stellar Labels with DESI - PAYNE**

– Adapted high-resolution stellar spectra from the Dark Energy Spectroscopic Instrument (DESI) to ‘The Payne’, a pipeline developed by Prof. Yuan-Sen to simultaneously determine stellar labels such as radial velocity, effective temperature, individual chemical abundances, etc.

**National Center of Theoretical Sciences** Summer 2021

Summer Research Student, PI: Dr. Yen-Hsun Lin and Dr. Meng-Ru Wu

– **Exploring Dark Physics with Neutron Stars**

– Investigated the mass-radius relation for dark matter admixed neutron stars by numerically solving the Tolman-Oppenheimer-Volkoff equations for a two-fluid stellar model in Python.

## Teaching

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- **International Olympiad on Astronomy and Astrophysics (IOAA)** 2018 – Present
  - Designed and edited tasks for the IOAA and the national selection for Malaysia.
  - Taught classes on undergraduate level astronomy, problem solving and observation techniques to finalists of the Malaysian selection programme.
  - Trained and led teams representing Malaysia to the IOAA.
- **Teaching Assistant**, National Tsing Hua University 2021 – 2023  
for General Physics, Applied Mathematics, Mechanics, and Thermal & Statistical Physics.
- **Tutor** for International Students, National Tsing Hua University 2022 – 2023
  - Held problem solving sessions on General Physics for international students.
- **Lab Assistant**, Kuen Cheng High School, Malaysia 2018, 2019, 2022

## Awards and Honours

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- **Phi Tau Phi Scholastic Honor Society Honorary Membership** 2023
- **Outstanding Academic Achievement Award, NTHU** 2019, 2021 – 2023  
for being the top 5% of students in Physics, Class of 2023.
- **College of Science Elite Student Award, NTHU** 2020 – 2022  
for being the overall best student in Physics, Class of 2023.
- **Scholarship for Excellent Overseas Chinese Students** 2021
- **Country Heights' Scholarship** 2021  
Four-year full-tuition scholarship awarded for academic excellence in high school.
- **Honorable Mention, International Olympiad of Astronomy and Astrophysics** 2016 & 2017

## Community Engagement

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### Commitments

- **Content Curator**, FrogAsia
  - Led the **Astronomy and Our Future** thematic group in curating a localized astronomy course, **SPACE Series**, for children between ages 10 to 15.
- **Board Member**, Association of the Malaysian Alumni of the International Science Olympiads
  - Initiated the **Youth STEM Cup** (1100+ participants), an effort to utilize friendly competition in team environments to promote STEM education.
  - Co-leading the **Women In STEM Empowerment (WISE)** initiative to facilitate mentorships between female students with professionals working in STEM industry and academia.

- Provided opportunities for connections, as well as academic and administrative support for local Olympiad selection committees.

- **Volunteer**, Star-Finder Astronomical Society

- Volunteered at astronomy outreach events in schools and at public sidewalks.
- Notable events: IAU100 Moon Landing 50 Global Event

## **Presentations**

- *“International Olympiad on Astronomy and Astrophysics (IOAA): Selection, Framework, and Influence”*, Global Malaysian Astronomers Convention (2023)
- *“Gravitational Era of Astronomy”*, Kuen Cheng Astronomy Club, Malaysia (2022)
- *“Home Run Through Our Solar Ballpark”*, Chien Kung Senior High School, Taiwan (2020)
- *“Mining Asteroids”*, Chien Kung Senior High School, Taiwan (2020)
- *“Black Holes: A Peek through Space and Time”*, Hin Hua High School, Malaysia (2019)
- *“Black Holes: A Peek through Space and Time”*, National Planetarium, Malaysia (2019)