Wenkang Xin

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EDUCATION

University of Oxford
2022 — 2026

Master of Science in Physics
UK

- Distinction in first and second year examinations, ranking top 10 in both years.

Nanyang Junior College
2020 — 2021

GCE A-Level
Singapore

- Mathematics, Further Mathematics, Physics, Economics, H3 Physics (AAAA/Dist). 89/90 RP.

EXPERIENCES

Dyson Fellows Programme
Jun 2024 — Present

University of Oxford, supervised by Prof. J. Binney and Dr. Y. Ginat
UK

- Selected for a tailored programme aimed at bringing students to the frontier of astrophysics research.
- Participated in weekly discussion sessions on advanced topics in stellar dynamics and galactic structure.

Summer Research Internship
Jun 2024 — Oct 2024

Oxford Theoretical Physics, supervised by Dr. A. Mummery
UK

- Analysed the relativistic tidal tensor and its application in orbital dynamics and tidal disruption events. Presented findings to the Theoretical Physics group; results pending publication.
- Constructed an analytical framework for deriving the local tidal tensor in any stationary, axisymmetric metric, tested against literature and discovered a range of new results.
- Using Mathematica and C++, developed symbolic/numerical tools for calculating particle geodesics and tidal tensors to a high precision while maintaining speed.

Summer Research Internship
Jun 2023 — Oct 2023

Fudan University, supervised by Prof. C. Bambi
China

- Used C++ to model a non-circular Kerr black hole and numerically simulate motion of nearby photons.
- Improved speed of existing code by 30% by implementing an efficient eighth-order Runge-Kutta method with adaptive step size control, and carried out large-scale simulations to study the effect of various parameters.
- Used observational data and statistical methods to place constraint on property of spacetime.

Research Attachment
Mar 2020 — Dec 2020

A*STAR
Singapore

- Led a team in the research effort and project timeline management.
- Designed and tested a computer vision algorithm system to analyse microstructure images.

Tutoring
Oct 2022 — Present

- Offered tutoring to high school students in physics and mathematics, accumulating over 200 hours of teaching experience.
- Developed customised lesson plans and materials to cater to individual learning needs.

SKILLS

- Python, C++, Mathematica, MATLAB, LaTeX.

ACHIEVEMENTS

- Singapore Physics Olympiad (top 30 nationwide) Gold Medal
- Singapore Young Physicist Tournament Bronze Medal
- S.T. Yau High School Science Award (Asia) Gold Prize