Tom Y. Wu

Chapel Hill, NC, US tomwu@unc.edu tomwurdfz.github.io

Education

Ph.D **University of North Carolina - Chapel Hill**, Physics — Chapel Hill, US, Aug 2025 -
- Advisor: Prof. Carl Rodriguez
- Research Interest: Theoretical Astrophysics, Gravitational Waves, Compact Objects

Hons. B.Sc **University of Toronto**, Astrophysics and Computer Science — Toronto, Canada, Sep 2021 - May 2025
- Advisor: Prof. Maya Fishbach
- Degree: Astronomy and Physics Specialist, Computer Science Major
- Graduated with High Distinction

High School **High School Affiliated to Renmin University of China (RDFZ)** — Beijing, China, Sep 2018 - Jul 2021
- Top High School in China
- AP Curriculum Program, 8 APs with score 4+

Leading Author Publications

Are Long Gamma-Ray Bursts Progenitors to Merging Binary Black Holes? — **ApJ**, 2024
T. Y. Wu, M. Fishbach
10.3847/1538-4357/ad98ed

Contributing Publications

GWTC-4.0: Population Properties of Merging Compact Binaries — 2025
The LIGO Scientific Collaboration et al.
10.48550/arXiv.2508.18083
Calculated merger rate of binary neutron stars
News Coverage by CITA

Upper Limits on the Isotropic Gravitational-Wave Background from the first part of LIGO, Virgo, and KAGRA's fourth Observing Run — 2025
The LIGO Scientific Collaboration et al.
10.48550/arXiv.2508.20721
Provided binary neutron star rates under given spin distributions

Research Experience

PhD First Project — Chapel Hill, US, Aug 2025 –
- Advisor: Prof. Carl Rodriguez
- I am using Cluster Monte Carlo (CMC) and COSMIC to study the effect of massive black holes in globular clusters

Supervised Study in Astronomy and Astrophysics — Toronto, Canada, Aug 2023 – Sep 2025
- Advisor: Prof. Maya Fishbach
- My project in 2023-24 focused on understanding black hole populations with gravitational waves and gamma-ray burst, in which I estimated binary black hole merger delay time distribution, the effectiveness factor and spin dependence.
- My project in 2024-25 focused on rates of binary neutron star mergers under dif-

ferent models and assumptions, based on transients and galactic binary neutron stars. Another paper in preparation

Supervised Study in Astroparticle Physics — Toronto, Canada, May 2024 – Sep 2024

- Advisor: Prof. Ziqing Hong / Prof. Maya Fishbach
- My project was on detector simulations for the SuperCDMS experiment, I simulated the real-world behavior of detector electronics using computing clusters and developed a pipeline which I used with acquired data to improve simulation accuracy.
- Presented my research at the Canadian Astroparticle physics Summer Student Talk (CASST) at SNOLAB, Sudbury.

Summer UROPS Research Exchange — Singapore, May 2023 – Jul 2023

- Advisor: Prof. Alexey Berdyugin
- At the National University of Singapore (NUS), I studied the possibility of using machine learning techniques to find and map 2D materials like graphene. I worked on developing software and hardware to automate the tedious graphene flake search process.

Awards and Scholarships

University of Toronto - Dean's List Scholar — 2022, 2023, 2024, 2025

Victoria College - The Regents In-course Scholarship — 2022, 2023, 2024

Undergraduate Summer Research Exchange Award — 2023

University of Toronto Admissions Scholarship — 2021

The International Mathematical Modeling Challenge — 2020

- Global Meritorious (Top 4), from 54 invited teams representing 30 countries
- Greater China Region - Outstanding (Top 8), from 650 teams.