

Warren Li

305 Lemonick Ct, Princeton, NJ 08540, USA
Mobile: +1 6093563631, Email: whli@princeton.edu
Webpage: <https://whli.mycpanel.princeton.edu>

I am a 4th year PhD candidate at Princeton University at the Department of Mathematics. My interests are in analysis and partial differential equations, particularly the study of nonlinear wave-type equations such as those arising in general relativity.

More specifically, my research aims to understand the formation and structure of singularities such as those arising inside black holes or at the Big Bang. I am also interested in dispersive PDE and mathematical physics more widely.

EDUCATION

PhD in Mathematics

Aug 2020–Present

Princeton University

Current PhD student at Princeton, with focus on partial differential equations and General Relativity. Advised by Professor Mihalis Dafermos.

B.A. & MMath in Mathematics

Sep 2016–Jun 2020

Trinity College, University of Cambridge

Graduated as top of my class for all 3 years of the undergraduate degree (see Senior Wrangler). During the Master's year, I wrote an essay regarding *The Positive Mass Theorem in General Relativity*, proposed by Dr Claude Warnick.

PUBLICATIONS

3. Scattering towards the singularity for the wave equation and the linearized Einstein–scalar field system in Kasner spacetimes, *preprint available at arxiv:2401.08437*.
2. Kasner-like description of spacelike singularities in spherically symmetric spacetimes with scalar matter, *preprint available at arxiv:2304.04802*.
1. Kasner inversions and fluctuating collapse inside hairy black holes with charged matter, (*With M. Van de Moortel*), *preprint available at arxiv:2302.00046*.

PAST AND UPCOMING TALKS

- PDE Seminar, University of Cambridge, 22 January, 2024.
- PDE/Analysis Seminar, BICMR, Peking University, 19 December, 2023.
- Analysis Seminar, Toronto, 3 November, 2023.
- Cretan Waves Workshop, University of Crete, 11 October, 2023.
- London PDE Seminar, University College London, 23 June, 2023.
- Mathematical GR and Hyperbolic PDE Seminar, Online, 16 June, 2023.
- Seminar of Differential Equations and Numerical Analysis, University of Crete, 9 May, 2023.
- Junior Analysis and PDE Seminar, Cambridge, 24 January, 2023.
- Graduate Student Seminar, Princeton, 15 September, 2022.

EMPLOYMENT AND OUTREACH

Tutoring and Outreach

2016–Present

Various, listed

Tutoring for A-Level Mathematics, Olympiad Mathematics and the Cambridge STEP exam in various forms, including both online and in person. Several of my students were admitted to Cambridge to study mathematics. Have also been involved with mathematical olympiad training as part of the UKMT. Includes involvement as a mentor, as well as designing problem sets, for the UKMT advanced mentoring scheme. Have also been involved in organizing and presenting at various Olympiad training events.

Quantitative Research Internships

Jul 2019–Sep 2019 and Jun 2018–Aug 2018

Jump Trading and G-Research, London

2 summer internships in quantitative research and trading. Projects included signal detection and execution strategies using data science techniques.

HONORS AND AWARDS

- Centennial Fellowship, Princeton University, 2020–Present.
- Senior Wrangler, Cambridge University, 2019.
- Medallist at the International Mathematical Olympiad (3 Silver, 1 Gold), 2013–2016.

SKILLS

Languages

English (fluent), Mandarin & Cantonese (conversational)

Software

PYTHON, MATLAB, basic C++, basic Linux, L^AT_EX, Microsoft Excel