Peize Liu

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Date of Birth	20th October 2000		

Education

10/2022 – 10/2026 *(Estimated)* *Coventry, UK*
Ph.D. in Mathematics *University of Warwick*
Supervisors: Dr. Chunyi Li & Dr. Christian Böhning.

10/2021 – 06/2022 *(Estimated)* *Oxford, UK*
Master of Mathematical and Theoretical Physics *St. Peter's College, University of Oxford*
Expected Classification: Distinction
Dissertation: "Deformation Quantisation" supervised by Prof. Christopher Beem.

03/2019 – 06/2021 *Oxford, UK*
B.A. Mathematics *St. Peter's College, University of Oxford*
Public Examination Results:

Preliminary	Distinction	80.00%	Rank: 8/185
Part A	Honours Pass		
Part A & Part B	First Class	75.00%	Rank: 21/128

(*WES GPA 3.89/4.00*)
Transferred to the **MMathPhys** programme.

10/2018 – 03/2019 *Oxford, UK*
B.A. Physics *St. Peter's College, University of Oxford*
Transferred to the **MMath** programme.

09/2015 – 06/2018 *Shenzhen, China*
High School Diploma *Shenzhen Middle School*
GPA: 4.03/4.20. SAT: 1550/1600.
AP Courses: Calculus BC (5), Statistics (5), Computer Science A (5), Physics C: Mechanics (5), Physics C: Electricity & Magnetism (5), Physics 1 (5), Physics 2 (5), Chemistry (5), Biology, Microeconomics (5), Macroeconomics (5), United States History (5).

Research Interests

Algebraic Geometry, Mathematical Physics, Differential Geometry.

Research Experiences

07/2021 – 09/2021 *Oxford, UK (remotely)*
From Breaking Waves to Conformal Mappings via WKB Analysis *Summer Research Project*
Mathematical Institute, University of Oxford

- Supervised by Prof. Lionel J. Mason.
- Funded by the London Mathematical Society and the Mathematical Institute of Oxford.
- Studied the dispersionless limit of the KdV equation using the inverse scattering transform of the Schrödinger equation in the WKB approximation.
- Refining the work of V. V. Geogjaev (1985), the solution was constructed from solving the Riemann-Hilbert problem and was proven equivalent to the classical solution obtained by the method of characteristics.

11/2021 – 05/2022 *(Estimated)* *Oxford, UK*
Deformation Quantisation via Kontsevich Formality Theorem *Master's Dissertation*
Mathematical Institute, University of Oxford

- Supervised by Prof. Christopher Beem.
- Expository work of M. Kontsevich's construction (1997) of deformation quantisation on a Poisson manifold and his proof of formality theorem.

Awards and Scholarships

- **Mathematics CDT Studentship, 2022–2026** *University of Warwick*
- **Undergraduate Research Bursary, 2021** *London Mathematical Society*
- **New Horizon Prize, 2021** *St. Peter's College, University of Oxford*
  Awarded for the best performance among college students in Mathematics Part A Examinations.
- **Domus Scholarship, 2019** *St. Peter's College, University of Oxford*
- **College Collection Prizes** *St. Peter's College, University of Oxford*
  Four times: Feb 2019, June 2019, Feb 2020, June 2020
- **Provincial First Prize, Chinese Physics Olympiad, 2016**
  Ranked 38th out of 10,000+ contestants.

Advanced Courses

- **Geometry & Topology**

Math C2.6	Introduction to Schemes
Math C3.1	Algebraic Topology
Math C3.4	Algebraic Geometry
Math C3.11	Riemannian Geometry
Math C3.12	Low-Dimensional Topology
Math B3.2	Geometry of Surfaces
Math B3.3	Algebraic Curves
Math B3.5	Topology & Groups

- **Algebra & Number Theory**

Math C2.1	Lie Algebras
Math C2.2	Homological Algebra
Math B2.1	Introduction to Representation Theory
Math B2.2	Commutative Algebra
Math B3.1	Galois Theory
Math B3.4	Algebraic Number Theory

- **Analysis**

Math B4.1	Functional Analysis I
Math B4.2	Functional Analysis II
Math B4.3	Distribution Theory
Math B8.1	Probability, Measure & Martingales

- **Physics**

MMathPhys	Quantum Field Theory
MMathPhys	String Theory I
MMathPhys	String Theory II
MMathPhys	Conformal Field Theory
Math C7.6	General Relativity II
Math B7.1	Classical Mechanics
Math B7.3	Further Quantum Theory
Phys B2	Symmetry & Relativity
Phys B4	Nuclear & Particle Physics
Phys B5	General Relativity

Activities

10/2019 – 05/2020 | *Oxford, UK*

Seminar on Algebra and Algebraic Geometry *Organiser*

A reading group of ten people organised by undergraduate students, which met weekly to present and discuss a variety of topics, including commutative algebra, category theory, algebraic topology, and algebraic geometry.

01/2020 | *Online*

International Theoretical Physics Olympiad for Undergraduate Students *Participant*

Collaborated with four physics students in Oxford to participate in the ITPO which lasted for 24 hours. I modelled upward-drifting underwater bubbles and dust deposition in the office, and typeset LaTeX for my teammates. We ranked 9th out of 130 teams.

Skills

- **Natural Languages**

Native	Mandarin, Cantonese
Fluent	English (*TOEFL 113*)
Intermediate	Japanese (*CEFR B1 equivalent*)

- **Programming & Software**

Proficient	LaTeX
Intermediate	MATLAB, R, Java, C++, Batch

Additional Information

- I post articles about mathematics and physics on Zhihu regularly, with ∼16,000 subscribers.
- Visit `pzliusms.wixsite.com/main/notes` for the collection of LaTeX notes I wrote.