CHENYANG ZHAO

(44) · 7951194852 ◇ cz2922@ic.ac.uk ◇ github.com/chenyangzhaoicl ◇ www.felixzhao.com

EDUCATION

Imperial College London October 2022 - Present
BSc in Mathematics (Current Grade: First) *London, United Kingdom*

- Notable second year modules include:
  Groups and Rings(70.43), Multivariable Calculus and Differential Equations(70.75), Analysis 2(72.59), Linear Algebra and Numerical Analysis(78.59), Network Science(64.48), Lebesgue Measure(67.75), Principle of Programming(Audited).
- Third year modules will include:
  Algebraic Curves, Galois Theory, Algebra 3, Dynamical Systems, Geometric curves and surfaces, Algebraic Topology, Data Science, Statistical Learning.

North America International School (Shanghai) September 2020 - June 2022
A-levels *Shanghai, China*

- Mathematics, Further Mathematics and Physics: 3A*. Science society (President).

PROJECTS

Undergraduate Research Opportunity Programme(UROP) June-September 2024
Algebraic Geometry and Cryptography (Supervisor: Dr Soheyla Feyzbakhsh) *Imperial College London*

- Department Funded. Mainly focused on the study of Elliptic Curve Cryptography, and more specifically on finite fields and the deductions of the related properties. Also studied the related maths part including number theory and algebraic geometry (with the book UAG of Miles Reid) at the same time. Learnt about the basics of cryptography, what's the maths behind the trapdoor function and how algebraic geometry, or more specifically, elliptic curve on finite fields act on it to create a strong trapdoor function that can be used as a stronger cryptography system.
- `https://github.com/chenyangzhaoicl/Algebraic-Geometry-and-Cryptography/blob/main/Basic_ECC.pdf`

Second Year Group Research Project (Grade Awarded: First) May-June 2024
Dynamics on Homogeneous Spaces: Ratner's Theorems and Applications *Imperial College London*

- Presented the proof from Ratner's Measure Classification Theorem to Equidistribution Theorem. Applied Homogeneous Dynamics in Number Theory. Proved Margulis' Theorem and visualised its quantitative version through code. `https://github.com/chenyangzhaoicl/ICL-M2R-Visualisation`
- Wrote Sections 5, 7, and Appendices B and D of the paper. Created several visualisations using Python to illustrate the ergodic flow on a torus and the quantitative version of Margulis' Theorem.
- The paper: `https://github.com/chenyangzhaoicl/ICL-M2R-Visualisation/blob/main/Dynamics_on_Homogeneous_Spaces__Ratner_s_Theorems_and_Applications.pdf`

First Year Individual Research Project May-June 2023
Phase transition in one and two dimension Ising model *Imperial College London*

- Performed a poster presentation about: Introduce the basic Knowledge about Ising Model and the related maths knowledge. Explain the reason why there is no phase transition in 1-D Ising Model in a mathematical way. Explain the reason why there is a phase transition in 2-D Ising Model in a mathematical way.

TECHNICAL SKILLS

Technical Skills	Python, R, Julia, Latex, Git, Github
Software	Microsoft Excel & Powerpoint, Wolfram Mathematica, VScode, Citespace
Mathematics	Algebraic Geometry, Dynamical System, Topology, Category Theory

INTERESTS

NeuroImage&TDA Computational Mathematics Languages AI Machine Learning
Travel & Photography: Solo backpacked 40+ countries.
I am very interested in implementing algebraic geometry ideas in theoretical machine learning.
I have a website `www.felixzhao.com`