# ZHENG Renpeng

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## EDUCATION

- **Imperial College London** — London, UK

  *Master of Science (MSc) in Pure Mathematics with **Distinction** (79.6/100 (A)).* — *Oct. 2021 – Oct. 2022*

  - **MSc Thesis**: Toric Varieties. Supervisor: Dr Jonathan Lai. Mark: 71.8/100 (A).
  - **Courses**: *Algebraic Curves* (A), *Manifolds* (A+), *Commutative Algebra* (A+), *Group Representation Theory* (A+), *Algebraic Geometry* (A+), *Complex Manifolds* (A), *Differential Topology* (A+) and *Riemannian Geometry* (A+).

- **The Chinese University of Hong Kong, Shenzhen** — Shenzhen, China

  *Bachelor of Science in Mathematics and Applied Mathematics with Honours, **First Class**.* — *Aug. 2017 – May 2021*

  - **Grade**: GPA 3.5/4, major GPA 3.8/4 (rank 1st).
  - **Selected Courses**: *Differential Geometry, Introduction to Geometry and Topology, Advanced Linear Algebra, Abstract Algebra, Complex Variables, Real Analysis, Partial Differential Equations, Probability Theory, Functional Analysis.*
  - **Awards**: AY2019-20/2020-21 Dean's List Award of School of Science and Engineering.

- **University of California, Berkeley** — Berkeley, CA, US

  *Summer Session Visiting Student* — *Jun. 2018 – Aug. 2018*

  - **Courses**: *Abstract Algebra* and *Research & Data Analysis*

## ACADEMIC ACTIVITIES

- **MSc Project**

  *Toric Varieties* — *Nov. 2021 – Sep. 2022*

  - Studied the theory of normal toric varieties and wrote a thesis under the supervision of Dr Lai.
  - **Topics**: *toric monoids, affine and projective toric varieties*; *lattices, cones, fans, and polytopes*; *classical constructions of toric varieties: product, blow-ups, curves and divisors, resolution of singularities and torus fibration*; and *toric surfaces*.

- **Study Group**

  *Birational Geometry* — *Oct. 2022 – Apr. 2023*

  - Attending a weekly reading group supervised by Professor Paolo Cascini at Imperial College London.
  - **Topics**: *Discrepancies of log pairs* and *positive characteristic geometry*.

  *Algebraic Topology* — *Aug. 2021 – Sept. 2021*

  - Co-organized a weekly reading group with two graduates at CUHK(SZ).
  - **Topics**: *Bott periodicity of spheres* and *higher homotopy groups*.

  *Representation Theory* — *May. 2020 – Jan. 2021*

  - Co-organized a weekly reading group supervised by Professor Daniel Wong at CUHK(SZ).
  - **Topics**: *Lie algebras and matrix Lie groups*, and *classification of semisimple Lie algebras*.

- **Summer Programme at Girton College, Cambridge**

  *Engineering Summer Programme* — *July 2019 – Aug. 2019*

  - **Courses**: *Renewable Energy, The Jet Engine, Nanotechnology*, and *Quantum Technologies*.

## OTHER PERSONAL INTERESTS RELATED TO MATHEMATICS

- **Physics and Mathematical Physics**

  *Applying my Math knowledge to Theoretical Physics*

  - I learnt Quantum Mechanics and Hamiltonian Mechanics in the Summer of 2021. My knowledge in representation theory and elementary symplectic geometry was useful.
  - I learnt causal properties of General Relativity in the Spring of 2023. My knowledge in Riemannian geometry was useful.