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

- **Projects**
  Toric Varieties and Birational Geometry of them (ongoing) — *July 2023 – Aug. 2023*
  - Rewriting my MSc thesis.

  Toric Varieties (MSc Project) — *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*.
- **2023 International Summer School of Algebraic Geometry, Fudan University**
  Algebraic Geometry — *July 2023 – July 2023*
  - **Courses**: *Algebraic K-stability theory*, *Moduli space of derived category*, and *P=W conjecture*.
- **Study Group**
  Birational Geometry — *Oct. 2022 – Apr. 2023*
  - Attended a weekly reading group supervised by Professor Paolo Cascini at Imperial College London.
  - **Topics**: *Log pairs* and *boundedness of certain classes of Fano varieties*.

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

  Representation Theory — *May. 2020 – Jan. 2021*
  - Co-organized weekly reading groups supervised by Professor Daniel Wong at CUHK(SZ).
  - **Topics**: *Lie algebras and matrix Lie groups*, *classification of semisimple Lie algebras*, *Bott periodicity of spheres* and *higher homotopy groups*.

Other Personal Interests Related to Mathematics

- **Physics and Mathematical Physics**
  Quantum Mechanics and Hamiltonian Mechanics (Representation Theory and Symplectic Geometry) — *Aug. 2021*
  Causal properties of General Relativity (Riemannian Geometry and Conformal Geometry) — *March 2023*
- **Mathematics Popularising**
  - Writing Mathematics popularising blogs on Wechat and Zhihu on both Algebraic Geometry and Differential Geometry in Chinese.