ZHENG Renpeng

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EDUCATION

- **Imperial College London**   London, UK
  Master of Science (not yet awarded) in Pure Mathematics.   *Oct. 2021 – Oct. 2022*
    - **MSc Project**: Topic: Toric Variety (Studying), Supervisor: Dr Jonathan Lai
    - **Autumn Semester Courses**: *Algebraic Curves, Manifolds, Commutative Algebra, Group Representation Theory*

- **The Chinese University of Hong Kong, Shenzhen**   Shenzhen, China
  Bachelor of Science in Mathematics and Applied Mathematics: Pure Mathematics stream.   *Aug. 2008 – July. 2012*
    - **Degree**: BSc with Honours, **First Class**
    - **Awards**: AY2019-20/2020-21 Dean's List Award of School of Science and Engineering.
    - **Courses**: *Differential Geometry, Introduction to Geometry and Topology, Advanced Linear Algebra, Abstract Algebra, Complex Variables, Real Analysis, Partial Differential Equations, Probability Theory*
    - **Grade**: Cumulative GPA 3.495/4.000, major GPA 3.794/4.000.

- **Girton College, Cambridge University**   Cambridge, United Kingdom
  Summer Programme   *Summer 2019*

- **University of California, Berkeley**   Berkeley, California, United States
  Summer Session Vistor Student   *Summer 2018*
    - **Courses**: *Abstract Algebra* and *Research & Data Analysis*

ACADEMIC ACTIVITIES

- **(TODO) MSc Project – Algebraic Geometry**
  Toric Variety   *Nov. 2021 – present*
    - Studying toric variety under the supervision of Dr. Lai with the textbook W. Fulton, *Introduction to Toric Varieties.* I'll write a thesis and give a presentation next year on it.

- **Study Group**
  Algebraic Topology   *Aug. – Sept. 2021*
    - Cohosting on a weekly regular reading group with 2 students in CUHK(SZ).
    - **Topics**: *Singular homology theory* (Jan. – Feb. 2021), *complex K-theory and Bott periodicty of suspension* and *Weak homotopy equivalence and CW approximation*
    - **Textbook(s)**: A. Hatcher, *Algebraic Topology* and *Vector Bundles and K-Theory*

  Representation Theory of Semisimple Lie Algebra   *May. 2019 – Jan. 2021*
    - Cohosting on a weekly regular reading group supervised by Prof. Daniel Wong in CUHK(SZ).
    - **Topics**: *Lie algebras and simply connected Lie groups, Classification of complex semisimple Lie algebras* and *Irreducible representations as quotients of verma modules*
    - **Textbook(s)**: B. C. Hall, *Lie Groups, Lie Algebras and Representations: An Elementary Introduction*

OTHER PERSONAL INTERESTS RELATED TO MATHEMATICS

- **Computer Science and Formal Mathematics**
  Trying to use simpler and stricter ways to define and use mathematicical concepts.
    - Implementing a run-able "math-rust" repository in github as "GiacomoZheng". I wrote "Young Tableaux" in 2020 and I'm writing the codes of "Toric Variety" now.
    - Implementing a new programming language *"gm"* in order to write the mathematics I'm learning (and going to learn) in a both machine-recognitiable and human-friendly way.

- **Physics and Mathematicial Physics**
    - Applying my Math knowledge to Theoretical Physics. I learnt Quantum Mechanics and Hamiltonian Mechanics in the Summer of 2021 and I found the representation theory and the baby symplectic geometry I learnt are useful here.