**EDUCATIONAL BACKGROUND**

**BS, School of Mathematics, Shandong University**  Jinan, China, 09/2018 – 06/2022

[Ranking 3rd among the 2024 best subjects in China (Mathematics)](https://www.shanghairanking.cn/rankings/bcsr/2024/0701)

**GPA: 90.63/100**

**Ranking: 5/32 (specialization of mathematics and applied mathematics)**

**Core Courses:** Ordinary Differential Equations (99), Complex Variables Functions (96),

Real Variables Functions (98), Probability Theory (97), Partial Differential Equations (95),

Advanced Real Analysis (95), Functional Analysis (99), Abstract Algebra (98),

Mathematical Statistics (98), Differential Geometry (84), Operational Research (94),

Basics of Number Theory (92), Topology (97), Numerical Analysis (99), Graduation Thesis (98).

**Ph.D. candidate, Department of Mathematics, City University of Hong Kong**

Hong Kong, China, 09/2023 - present

**GPA: 4.12/4.30**

**Core Courses:** Advanced Partial Differential Equations I (4.3/4.3),

Advanced Methods for Scientific Computation (4.3/4.3),

Stochastic Calculus (4.0/4.0, this course is accredited by CUHK)

**PUBLICATIONS**

1. [Mathematical modeling of stem cell lineage with aging effect and dedifferentiation, submitted to Journal of Theoretical Biology](https://drive.google.com/file/d/1alyHfKVvMhp6LMGm2fCgknDVlddwJdmT/view?usp=drive_link)

**Research Experience**

The role of angiogenesis in the drug resistance of cancer cells:

a) Apply the Hybrid Discrete Continuous (HDC) method, where agent-based models characterize the tumor and endothelial cells while reaction-diffusion equations describe the drug and oxygen fields.

b) Studies the pre-existing and spontaneous mutation-induced resistance: In the pre-existing case, the development of the angiogenic network near the tumor fosters a microenvironment supporting tumor survival and enhancing drug resistance.

c) In the spontaneous mutation scenario, the earlier and more frequent mutations confer a greater survival advantage upon the tumor population, and the mutual reinforcement between high proliferation rates and high resistance traits, including the dominance and the synchronized appearance of cells with high proliferation rates and high resistance traits. This finding explains two contradicting experimental results about a second mutation, T790M, in the non-small cell lung cancer (NSCLC): the presence of the T790M mutation confers resistance and growth disadvantage, while other experimental results demonstrate granted resistance and growth advantage.

**SUMMER SCHOOLS & CONFERENCES**

[**Summer School on Applied Mathematics at Peking University**](https://www.math.pku.edu.cn/amel/sqxx/157587.htm)

Beijing, China, Jul. 2024 – Jul. 2024

Attended the following four courses:

1. Modern Optimization, lecturer: Yurii Nesterov, Professor, University of Louvain.
2. Computational methods for sampling and analyzing rare and extreme events, lecturer: Jonathan Weare, Professor, NYU Courant.
3. Random Matrix Theory, Joel Tropp, lecturer: Professor, Caltech
4. The Mathematics of Artificial Intelligence, Zhiqin Xu, Associate Professor, Shanghai Jiao Tong University.

[**PolyU-SJTU Joint Conference on Mathematical Biology – Models and Analysis**](https://events.polyu.edu.hk/polyusjtu/home)

Hong Kong, China, 19th - 22nd Jun. 2024

**Summer Research Program at the Hong Kong University of Science and Technology**

Jinan, China, Jul. 2021 – Aug. 2021

Advisor: Jing-song Huang, Professor, Hong Kong University of Science and Technology

Review the works about the McKay correspondence, the Coxeter element, and the representation theory; make up for the knowledge gap, such as Lie algebra, Kac-Moody Lie algebra, matrix Lie groups, representation theory of finite groups, and fill in the details in the paper.

Completed two reports about the program:

1. The correspondence between the finite subgroups of SU(2) and the finite subgroups of SO(3), and the McKay correspondence between the finite subgroups of SU(2) and the simply laced Dynkin diagrams of five types of simple Lie algebras.
2. The universal cover group SU(2) of SO(3): SU(2) is the universal covering space of SO(3). The covering map is a Lie group homomorphism, and the corresponding Lie algebra homomorphism between $\mathfrak{su}(2)$ and $\mathfrak{so}(3)$ is a Lie algebra isomorphism.

**Summer School on Algebraic Topology and Data Analysis**

Jinan, China, Jul. 2020 – Jul. 2020

Advisor: Ziqin Feng, associate professor, Auburn University

Studied algebraic topology in the following three aspects:

1) Fundamental groups of curves and surfaces, universal covering spaces, and the Van-Kampen theorem.

2)Simplicial complex and simplicial homology.

3)Singular complex and singular homology, and the relation between simplicial and singular homology.

**Seminars on Advanced Real Analysis**

Jinan, China, Jan. 2020 – May. 2020

Advisor: Yunrui Zheng, associate researcher, School of Mathematics of Shandong University

Studied real analysis in the following three aspects:

Establishment of σ-algebra and the measure on σ-algebra, the Borel measure on the straight line $\mathbb{R}$, and the Lebesgue-Stieltjes measure.

2) Establishment of integrals of measurable functions from the measurement space and the relationship between the Lebesgue and Riemann integrals.

3) Signed measure together with complex measure, Lebesgue-Radon-Nikodym theorem to establish the differentiation on the Euclidean space.

**HONORS AND AWARDS**

Jul. 2024

[Certificate for Summer School on Applied Mathematics, Peking University,](https://drive.google.com/file/d/1wmoZrBe9GEvWnQUQuhBvESxf9lH_QTHC/view?usp=drive_link)  Beijing, China

Aug. 2021

[Certificate for Summer Research Program in Hong Kong University of Science and Technology](https://drive.google.com/file/d/1jzg2hhD2wNXR0f3kKssnBLpXFFtPhxPU/view?usp=drive_link) (Awarded by the successful completion of the Online Summer Research Program organized by Hong Kong University of Science and Technology in the 2021 summer)

Jul. 2022

[Outstanding Undergraduate Thesis of Shandong University, Shandong University,](https://drive.google.com/file/d/1D0pJfx11NGBHFcgslDWyaQ2VwcJPoqBj/view?usp=drive_link) Jinan, China

Sep. 2021

First-class academic scholarship, Shandong University, Jinan, China

Sep. 2020

First-class academic scholarship, Shandong University, Jinan, China

Sep. 2019

Third-class academic scholarship, Shandong University, Jinan, China

Sep. 2021

National Encouragement Scholarship, Shandong University, Jinan, China

Sep. 2020

National Encouragement Scholarship, Shandong University, Jinan, China

Sep. 2019

National Encouragement Scholarship, Shandong University, Jinan, China

Sep. 2020

Merit Student, Shandong University, Jinan, China

**SKILLS**

Programming: MATLAB, LaTeX