Yi Huang

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Nationality: Australian
Date of Birth: December 17, 1986

Education, Fellowship and Employment History

AP (tenure-track), Yau Mathematical Sciences Center (YMSC), Tsinghua University, Sep, 2019 – present.

Postdoctoral fellow, YMSC, Dec 1, 2015 – Dec 31, 2018.

AK Head Mathematical Scientists Travelling Scholar, University of Grenoble, University of Strasbourg, Yale University, University of Illinois at Chicago and Western Illinois University, Jun 14 – Aug 1, 2015.

Australian Mathematical Society Lift-off Travelling fellow, National University of Singapore and Osaka University, Jan 19 – Feb 27, 2015.

Ph.D. in Mathematics (supervisor: Paul Norbury), University of Melbourne, Mar, 2009 – Dec 17, 2014.

BSc. (Honours) in Pure Mathematics, University of Melbourne, Feb, 2005 – Dec, 2008.

Five Selected Publications

1. Joint with Ken'ichi Ohshika and Athanase Papadopoulos, *The infinitesimal and global Thurston geometry of Teichmüller space*, accepted by the Journal of Differential Geometry, 2024.

2. Joint with Bob Penner and Anton Zeitlin, *Super McShane identity*, Journal of Differential Geometry, volume 125, 2023.

3. Joint with Zhe Sun, *McShane identities for higher Teichmüller theory and the Goncharov-Shen potential*, Memoirs of the American Mathematical Society, volume 286, 2023.

4. *McShane-type Identities for Quasifuchsian Representations of Nonorientable Surfaces*, International Mathematics Research Notices, volume 2021 (3), 2021.

5. Joint with Paul Norbury, *Simple geodesics and Markoff quads*, Geometriae Dedicata, volume 186 (1), 2017.

Other Papers and Preprints

1. Joint with Ken'ichi Ohshika, Huiping Pan and Athanase Papadopoulos, *The earthquake metric on Teichmüller space*, arXiv:2404.19515, 2024.

2. *The earthquake metric*, Oberwolfach Report, 2023.

3. *Optimal Lipschitz maps on one-holed tori and the Thurston metric theory of Teichmüller space*, Geometriae Dedicata, volume 214, 2021

4. *McShane identities for convex projective surfaces and beyond*, Oberwolfach Report, 2018.

5. *Mirzakhani's recursion formula on Weil-Petersson volume and applications*, *Handbook of Teichmüller theory, Vol. VI*, 2016.

6. *Moduli Spaces of Surfaces*, Bulletin of the Australian Mathematical Society, volume 92 (1), 2015.

7. *A McShane-type identity for closed surfaces*, Nagoya Mathematical Journal, volume 219, 2015.

Invited Talks and Presentations

Teichmüller Theory and Beyond (Seoul National University), February 17–21, 2025.

University of Melbourne Topology Seminar (University of Melbourne), July 29, 2024.

2024 Zhejiang University Geometry and Moduli Spaces (Zhejiang University), July 1–12, 2024.

BIMSA Differential Geometry Seminar (Beijing Yanqi Lake Institute of Applied Mathematics), April 19, 2024.

Northeastern Topology Seminar (Northeastern University, China), April 18, 2024.

KAIST Geometric Topology Fair 2024 (Busan), January 15–19, 2024.

2023 Geometric Group Theory Summer School (Fudan University), Aug 7–11, 2023.

Oberwolfach workshop on *Teichmüller theory: Classical, Higher, Super and Quantum* (Mathematisches Forschungsinstitut Oberwolfach), Jul 30–Aug 4, 2023.

Character and Moduli of Surfaces (RIMS Kyoto University), Jul 17–19, 2023.

The 18th East Asian Conference on Geometric Topology (online), Feb 6–9, 2023.

2022 Geometric Group Theory Summer School (Fudan University), Aug 15–19, 2022.

The 9th International Congress of Chinese Mathematicians (Southeast University), Jul 31–Aug 5, 2022.

The 17th East Asian Conference on Geometric Topology, Jan 18–21, 2022.

Quantum Curves, Integrability and Cluster Algebras MATRIX, Dec 13–18, 2021.

PKU Topology Seminar, Peking Univesity, May 18, 2021

Geometry of Moduli Space of Low Dimensional Manifolds RIMS (Kyoto University), Jan 7–10, 2019.

The 102th Encounter between Mathematicians and Theoretical Physicists IRMA (University of Strasbourg), September 13–15, 2018.

New Trends in Teichmüller Theory and Mapping Class Groups (Mathematisches Forschungsinstitut Oberwolfach), September 3–7, 2018.

A McShane identity for finite-area convex projective surfaces (Fudan University), April 13, 2018.

Pure Mathematics Seminar (University of Melbourne), February 19, 2018.

Workshop on Grothendieck-Teichmüller Theories – plenary session (Chern Institute of Mathematics, Nankai University), July 24–30, 2016.

Low Dimension Topology Seminar (Osaka University), February 24, 2015.

Riemann surfaces and discontinuous groups (Osaka University), February 14–16, 2015.

Topology and Geometry Seminar (National University of Singapore), January 21, 2015.

Pure Seminar (Monash University), September 15, 2014.

Low Dimension Topology Seminar (Osaka University), July 22, 2014.

N-KOOK Seminar (Osaka City University Cultural Exchange Center), April 5, 2014.

Geometry and Arithmetic Around Teichmüller Theory (Galatasaray University), November 15–19, 2011.

Research Grants

2024 First Batch International Scientists (Beijing Natural Science Foundation): (sole) Principal Investigator, 2024.

Young Scientist Fund (Beijing Natural Science Foundation): (sole) Principal Investigator, 2022.

Special Postdoctoral Financial Grant (China Postdoctoral Science Foundation): (sole) Principal Investigator, 2017.

Class-2 General Postdoctoral Financial Grant (China Postdoctoral Science Foundation): (sole) Principal Investigator, 2016.

Professional services

Referee for

Annales de l'Institut Fourier,
Asian Journal of Mathematics,
Conformal Geometry and Dynamics,
Communications in Mathematical Physics,
International Mathematics Research Notices,
Journal of Differential Geometry, and
Proceedings of the London Mathematical Society.

Previously a reviewer for *zbMATH/Zentralblatt MATH* (I have taken a half year break from this service).

Seminars:

YMSC Topology seminar group (2021–now) – organised with Weiyan Chen, Honghao Gao, Yi Jiang (previously), Jianfeng Lin, Weifeng Sun. Weekly talks, simultaneously on-campus and online, for past recordings click here.

G2T2 (Geometry, Group Theory, and Topology) seminar group (2025–now) – seminar group by my students and postdocs and several others, I help in the background. Here is the seminar website.

2023 International Congress of Basic Science scientific program team: responsible for the scheduling for the mathematics component of the congress.

2024 International Congress of Basic Science Prize announcement team.

2024 Topology Frontiers Conference (June 30–July 10, 2024) organiser.

Helped arrange short courses for Michael Khovanov and Georgios Daskalopoulos.

Mentorship

Postdoctoral fellows:

Sangsan WARAKKAGUN (BIMSA), 2022–2024, he is now a lecturer at Khon Kaen University in Thailand;

Ivan TELPUKHOVSKIY, 2023–present.

Diptaishik CHOUDHURY, 2024–present.

Daxun WANG, 2024–present.

Doctoral students:

Xiao CHEN (Department of Mathematics, Tsinghua University), 2020–present, Thesis title: *Geometric Intersection Complexes*, Arxiv preprint (submitted): *Systems of curves on non-orientable surfaces*, two other papers in preparation.

Yifei CAI (Qiuzhen College, Tsinghua Universty), 2023–present;

Master's students:

Tuo SUN (Qiuzhen College, Tsinghua University), 2023–present.

Teaching

Courses:

YMSC Course *Riemann Surfaces — a Hyperbolic approach*, 2019-2020 Fall, not evaluated.

Departmental Course *Calculus A2 (Eng)*, 2019–2020 Spring, Evaluation score: 82.12.

Departmental Course *Calculus C1*, 2020–2023 Fall, Evaluation score: 89.06.

Departmental Course *Calculus C2*, 2020–2023 Spring, Evaluation score: 92.98.

Departmental Course *Calculus C1*, 2021–2022 Fall, Evaluation score: 90.47.

Departmental Course *Calculus C2*, 2021–2022 Spring, Evaluation Score: 84.17.

Departmental Course *Calculus C1*, 2022–2023 Fall, Evaluation Score: 85.01.

Departmental Course *Calculus C2*, 2022–2023 Spring, Evaluation Score: 88.45.

Departmental Course *Calculus C1*, 2023–2024 Fall, Evaluation Score: 89.17.

Departmental Course *Calculus C2*, 2023–2024 Spring, Evaluation Score: 92.35.

Qiuzhen Course *The Art and Science of Mathematics*, 2023–2024 Spring, Evaluation Score: 95.00.

Qiuzhen Course *Topics in Geometry and Topology*, 2024–2025 Fall, not evaluated.

Qiuzhen Course *The Art and Science of Mathematics*, 2023–2024 Spring, ongoing.

Teaching grants:

Undergraduate teaching grant for "Implementing technology in Calculus A (English)", 2021.

Undergraduate teaching grant for designing a new Qiuzhen course called "The Art and Science of Mathematics"" 2022.

Additional teaching-related contributions:

Homeroom teacher for Qiuzhen 12 Class (2024–2025).

Accompanying teacher for Qiuzhen overseas trip to the US (2024).

Qiuzhen undergraduate academic advisor (2024–2025, this includes weekly meetings to discuss Riemann surfaces with Xilai PANG)

Qiuzhen scholarship determination panel.

Geometry and Topology qualifying exam training class (1 session).

Qiuzhen outreach seminar at Melbourne High School, Australia.

Administrative Rôles

Overseeing the SIGMA Program, a joint secondary education initiative between Qiuzhen College and Tsinghua International School (2025–present).

Chair of the Admissions Committee for Graduate International Intake (2024–present).

Member of the Foreign Affairs Committee (2023–2024).

Qiuzhen College application prescreening and interviewing panels (for both undergraduate and graduate intake).

Departmental Calculus C Teaching group leader, 2021–2023.

Mathematics department Doctoral Candidate interviewing panels.