Yangyang Li

Curriculum Vitae

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Employment

2022-Now **Department of Mathematics**, *The University of Chicago*
L.E. Dickson Instructor

Education

2017-2022 **Mathematics**, *Princeton University*
Ph.D. in Mathematics, advised by Fernando Coda Marques
Ph.D. Thesis: *Min-max minimal hypersurfaces in higher dimensions*

2013-2017 **Mathematical Sciences**, *Tsinghua University*, Beijing
Bachelor of Science in Mathematical Sciences

2017 **Mathematics**, *École Normale Supérieure*, Paris
Visiting Program, supervised by Jacques Smulevici

Research Interests

Differential Geometry, Partial Differential Equations

Publications and Preprints

1* *Existence of Infinitely Many Minimal Hypersurfaces in Higher-dimensional Closed Manifolds with Generic Metrics*,
arXiv:1901.08440, 2019 January
J. Differ. Geom. 124 (2) 381 - 395, June 2023. DOI: 10.0.16.214/jdg/1686931604

2* *On the Existence of Minimal Hypersurfaces with Arbitrarily Large Area and Morse Index*,
arXiv:2001.07689, 2020 January
Geom. Topol. 26 (6) 2713 - 2729, 2022. DOI: 10.2140/gt.2022.26.2713

3 *An Improved Morse Index Bound of Min-Max Minimal Hypersurfaces*,
arXiv:2007.14506, 2020 July
Calc. Var. 62, 179 (2023). DOI: 10.1007/s00526-023-02512-8

4 *Generic Regularity of Minimal Hypersurfaces in Dimension 8* (joint with Zhihan Wang),
arXiv:2012.05401, 2020 October (superceded by arXiv:2205.01047)

5 *Equivariant Manifolds with Positive Scalar Curvature* (joint with Tsz-Kiu Aaron Chow),
arXiv:2109.12725, 2021 September
Trans. Am. Math. Soc 377 (2024), 5993-6020. DOI: 10.1090/tran/9181

6* *Minimal hypersurfaces for generic metrics in dimension 8* (joint with Zhihan Wang), arXiv:2205.01047, 2022 May (submitted to Invent. Math.)

7 *A strong multiplicity one theorem in min-max theory* (joint with Adrian C. Chu), arXiv:2309.07741, 2023 September

8* *Existence of 5 minimal tori in 3-spheres of positive Ricci curvature* (joint with Adrian C. Chu), arXiv:2409.09315, 2024 September

9* *Existence and regularity of min-max anisotropic minimal hypersurfaces* (joint with Guido De Philippis and Antonio De Rosa), arXiv:2409.15232, 2024 September

Invited Talks

2025.06 **Milan**, International geometric analysis conference in Milan

2024.11 **Johns Hopkins University**, Analysis & PDE Seminar

2024.07 Existence and Regularity of Anisotropic Minimal Hypersurfaces
BICMR, Workshop on Minimal Surfaces and Mean Curvature Flow 2024

2024.06 Existence and Regularity of Anisotropic Minimal Hypersurfaces
ETH Zurich, CHallenge in ANalysis and GEometry

2024.03 Existence and Regularity of Anisotropic Minimal Hypersurfaces
MIT, Geometric Analysis seminar

2024.03 Existence and Regularity of Anisotropic Minimal Hypersurfaces
NYU Courant Institute, Geometric Analysis and Topology Seminar

2024.03 Existence and Regularity of Anisotropic Minimal Hypersurfaces
Caltech, MAGEC 2024

2023.12 Existence and Regularity of Anisotropic Minimal Hypersurfaces
Princeton University, Differential Geometry and Geometric Analysis seminar

2023.11 Min-max widths of the unit 3-sphere and a strong multiplicity one theorem
BICMR, Geometric Analysis Seminar

2023.10 Min-max widths of the unit 3-sphere and a strong multiplicity one theorem
UTK, Geometric Analysis Seminar

2023.08 Existence and regularity of anisotropic minimal surfaces in Riemannian 3-manifolds
BIRS-UBC-O, "Non-Linear Critical Point Theory in Analysis and Geometry" workshop

2023.06 The geometric structure of min-max minimal hypersurfaces
Tsinghua University, Math Department Colloquium

2023.06 ○ The geometric structure of min-max minimal hypersurfaces
○ Minimal hypersurfaces in a generic 8-dimensional closed Riemannian manifold
○ Existence and regularity of anisotropic minimal surfaces
Chinese Academy of Sciences, Hua Loo-Keng Lecture Series

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*denotes my most significant contributions.

2023.05	Existence and reguarity of anisotropic minimal surfaces **BIRS-IMAG**, "Minimal surfaces in symmetric spaces" workshop
2023.03	Area ratio bounds and the existence of anisotropic minimal surfaces **NCTS**, Differential Geometry seminar
2023.03	Area ratio bounds and the existence of anisotropic minimal surfaces **UConn**, PDE and Differential Geometry seminar
2022.11	Area ratio bounds and the existence of anisotropic minimal surfaces **UToronto**, Geometry and Topology seminar
2022.03	Minimal hypersurfaces in a generic 8-dimensional closed manifold **CUHK**, Joint Geometric Analysis Seminar
2022.02	Minimal hypersurfaces in a generic 8-dimensional closed manifold **Yale University**, Geometric Analysis and Application seminar
2021.11	Minimal hypersurfaces in a generic 8-dimensional closed manifold **UToronto**, Geometry and Topology seminar
2021.10	Minimal hypersurfaces in a generic 8-dimensional closed manifold **CUNY**, Geometric Analysis Seminar
2021.10	Minimal hypersurfaces in a generic 8-dimensional closed manifold **Cornell University**, Analysis and Geometric Analysis Seminar
2021.06	Generic regularity of minimal hypersurfaces in dimension 8 **CMS 75th+1**, Geometric Analysis Session
2021.05	Generic regularity of minimal hypersurfaces in dimension 8 **UChicago**, Geometric Analysis Seminar
2021.04	Generic regularity of minimal hypersurfaces in dimension 8 **UCSD**, Differential Geometry Seminar
2021.02	Generic regularity of minimal hypersurfaces in dimension 8 **The 1st Geometric Analysis Festival**
2020.11	Generic regularity of minimal hypersurfaces in dimension 8 **JHU**, Analysis and Partial Differential Equations Seminar
2020.10	Min-max minimal hypersurfaces in higher dimensions **AMS**, Special Session on Variational Aspects of Geometric Analysis
2020.10	Existence of minimal hypersurfaces with arbitrarily large area and Morse index **Stanford University**, Geometry Seminar
2020.03	Existence of minimal hypersurfaces with arbitrarily large area and Morse index **UCSB**, Differential Geometry Seminar

Organization

2022 - Now	Geometric Analysis Seminar (Co-organizer), *The University of Chicago*

Service

Review for: Geometric and Functional Analysis, Journal of Differntial Geometry, Ars Inveniendi Analytica, Transactions of the American Mathematical Society, Journal of Geometric Analysis, Revista Matemática Iberoamericana.

Teaching

Sprint 2024	MATH 15910, Introduction to Proofs in Analysis, Instructor
Winter 2024	MATH 26500, Introduction to Riemannian Geometry, Instructor
Winter 2024	MATH 20310, Analysis in Rn I (Accelerated), Instructor
Spring 2023	MATH 20300, Analysis in Rn I, Instructor
Winter 2023	MATH 26500, Introduction to Riemannian Geometry, Instructor
Winter 2023	MATH 20500, Analysis in Rn III, Instructor
Spring 2022	MAT 355, Introduction to Differential Geometry, Assistant Instructor
Fall 2021	MAT 214, Numbers, Equations, and Proofs, Assistant Instructor
Spring 2021	MAT 355, Introduction to Differential Geometry, Assistant Instructor
Fall 2020	MAT 202, Linear Algebra, Preceptor
Spring 2020	MAT 330, Complex Analysis with Applications, Assistant Instructor
Fall 2019	MAT 335, Analysis II: Complex Analysis, Assistant Instructor
Spring 2019	MAT 218, Accelerated Honors Analysis II, Assistant Instructor
Fall 2018	MAT 215, Honors Analysis, Assistant Instructor

Selected Awards and Honors

2024	US Junior Oberwolfach Fellows
2023	US Junior Oberwolfach Fellows
2023	The AMS-Simons Travel Grant
2016	S.T. Yau College Student Mathematics Contests
	○ All-Around, Gold Medal
	○ Applied and Computational Mathematics, Gold Medal
	○ Analysis and PDEs, Bronze Medal
2016	Tsinghua Top Grade Scholarship (10 best undergraduate students)
2014-2016	Member of Tsinghua Xuetang Mathematics Program
2014	China National Scholarship