Yangyang Li

Curriculum Vitae

Hayes-Healy 218, 255 Hurley
Notre Dame, IN 46556
✉ yangyangli@nd.edu
🌐 www.yangyanglisite.com

Employment

2025 – Now	**Department of Mathematics**, *University of Notre Dame* Tenure-track Assistant Professor
2022 – 2025	**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, Geometric Measure Theory

Publications

1. *Minimal hypersurfaces for generic metrics in dimension 8* (joint with Zhihan Wang), **Inventiones Mathematicae** 240, 1193-1303 (2025). DOI: 10.1007/s00222-025-01333-0

2. *A strong multiplicity one theorem in min-max theory* (joint with Adrian C. Chu), arXiv:2309.07741, 2023 September
To appear in **Advances in Mathematics** (2025).

3. *Equivariant Manifolds with Positive Scalar Curvature* (joint with Tsz-Kiu Aaron Chow), **Transactions of the American Mathematical Society** 377 (2024), 5993-6020. DOI: 10.1090/tran/9181

4. *An Improved Morse Index Bound of Min-Max Minimal Hypersurfaces*, **Calculus of Variations and Partial Differential Equations** 62, 179 (2023). DOI: 10.1007/s00526-023-02512-8

5. *Existence of Infinitely Many Minimal Hypersurfaces in Higher-dimensional Closed Manifolds with Generic Metrics*, **Journal of Differential Geometry** 124 (2) 381 - 395, June 2023. DOI: 10.0.16.214/jdg/1686931604

6   *On the Existence of Minimal Hypersurfaces with Arbitrarily Large Area and Morse Index*,
Geometry & Topology 26 (6) 2713 - 2729, 2022. DOI: 10.2140/gt.2022.26.2713

Preprints

0   *Existence of genus 2 minimal surfaces in 3-spheres. II: Constructing multiple surfaces via the space of Heegaard splittings* (joint with Adrian C. Chu and Zhihan Wang), In preparation.

1   *Existence of genus 2 minimal surfaces in 3-spheres. I* (joint with Adrian C. Chu and Zhihan Wang),
arXiv:2507.23239, 2025 July

2   *Non-persistence of strongly isolated singularities, and geometric applications* (joint with Alessandro Carlotto and Zhihan Wang),
arXiv:2411.12677, 2024 November

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

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

5   *Generic Regularity of Minimal Hypersurfaces in Dimension 8* (joint with Zhihan Wang),
arXiv:2012.05401, 2020 October (Not for publications, superseded by *Minimal hypersurfaces for generic metrics in dimension 8*)

Invited Talks

2026.05   **University of Minnesota**, Twenty-eighth Riviere-Fabes Symposium on Analysis and PDE

2026.01   **BIRS-CMI**, Workshop on Connections among Spin Geometry, Minimal Surfaces and Relativity

2026.01   **JMM**, AMS Special Session on Recent Advances in Elliptic PDEs and Their Applications

2025.09   Constructing minimal surfaces of prescribed genus in closed Riemannian 3-spheres
Duke, Geometry/Topology Seminar

2025.08   Non-persistence of Strongly Isolated Singularities and Hsiang's minimal hyperspheres
AMS, Special Session on Nonlinear Elliptic PDEs and Geometry

2025.06   Constructing minimal surfaces of prescribed genus in closed Riemannian 3-spheres with positive Ricci curvature
Oberwolfach, Differentialgeometrie im Großen

2025.06   Existence of 5 minimal tori in 3-spheres of positive Ricci curvature
Bocconi University, International geometric analysis conference in Milan

2025.06   Existence of 5 minimal tori in 3-spheres of positive Ricci curvature
          Tsinghua University, 2025 Geometry and Analysis Conference

2025.05   Existence of 5 minimal tori in 3-spheres of positive Ricci curvature
          NYU Courant, Simons Workshop on Geometric Analysis at Courant

2025.04   Non-persistence of Strongly Isolated Singularities and Hsiang's minimal hyperspheres
          Lehigh University, Geometric Analysis seminar

2025.03   Existence of 5 minimal tori in 3-spheres of positive Ricci curvature
          UIUC, Geometric Analysis Seminar

2025.03   Existence of 5 minimal tori in 3-spheres of positive Ricci curvature
          IMPA, Geometric Analysis Seminar

2025.02   Non-persistence of Strongly Isolated Singularities and Hsiang's minimal hyperspheres
          Northwestern University, Analysis Seminar

2024.11   Existence of 5 minimal tori in 3-spheres of positive Ricci curvature
          Johns Hopkins University, Analysis & PDE Seminar

2024.10   Existence and regularity of anisotropic minimal hypersurfaces
          CUNY, Geometric Analysis Seminar

2024.10   Existence of 5 minimal tori in 3-spheres of positive Ricci curvature
          Rutgers University, Geometric Analysis 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

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

2025 – Now   Geometric Analysis Seminar, *University of Notre Dame*

2022 – 2025 Differential Geometry Seminar, *The University of Chicago*

Service

Review for: Inventiones Mathematicae, Geometric and Functional Analysis, Journal of Differential Geometry, Ars Inveniendi Analytica, Advances in Mathematics, American Journal of Mathematics, Transactions of the American Mathematical Society, Journal of Geometric Analysis, Revista Matemática Iberoamericana.

Teaching

Fall 2025	Math 20550, Calculus III
Spring 2025	MATH 20300, Analysis in Rn I
Winter 2025	MATH 26500, Introduction to Riemannian Geometry
Winter 2025	MATH 20310, Analysis in Rn I (Accelerated)
Spring 2024	MATH 15910, Introduction to Proofs in Analysis
Winter 2024	MATH 26500, Introduction to Riemannian Geometry
Winter 2024	MATH 20310, Analysis in Rn I (Accelerated)
Spring 2023	MATH 20300, Analysis in Rn I
Winter 2023	MATH 26500, Introduction to Riemannian Geometry
Winter 2023	MATH 20500, Analysis in Rn III
Spring 2022	MAT 355, Introduction to Differential Geometry
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
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2023 – 2025	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	China National Scholarship