Eric Chen

CONTACT INFORMATION

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WEBPAGE

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RESEARCH INTERESTS

Differential geometry, geometric analysis, partial differential equations: geometric flows, conformal geometry

APPOINTMENTS

University of Illinois Urbana Champaign

Assistant Professor, 2025-present

Simons Laufer Mathematical Sciences Institute (formerly MSRI)

Research Member, 2024

University of California, Berkeley

NSF Postdoctoral Fellow, 2021–2024

Postdoctoral mentor: Richard Bamler

University of California, Santa Barbara

Ky Fan Visiting Assistant Professor, 2019–2021

Postdoctoral mentor: Rugang Ye

EDUCATION

Princeton University

Ph.D. in Mathematics, June 2019

Thesis: Some regularity properties for two equations arising from flows
Thesis advisor: Sun-Yung Alice Chang

Princeton University

A.B. with Highest Honors in Mathematics, June 2014

PAPERS

Measuring butterfly velocity in the XY model on emerging quantum computers, with C. McCartney, S. R. Moulik. Submitted. (preprint at arXiv:2411.10206)

Degree theory for 4-dimensional asymptotically conical gradient expanding solitons, with R. Bamler. Submitted. (preprint at arXiv:2305.03154)

The Neumann problem on the Clifford torus in S^3, with J. S. Case, Y. Wang, P, Yang, and P.-L. Yung. **Advanced Nonlinear Studies**, Volume 23, Number 1 (2023). (preprint at arXiv:2304.02823)

The Yamabe flow on asymptotically Euclidean manifolds with nonpositive Yamabe constant, with G. Carron and Y. Wang. **Journal of Functional Analysis**, Volume 284, Issue 6 (2023). (preprint at arXiv 2207.07003)

Ricci flow and Gromov almost flat manifolds, with G. Wei and R. Ye. Submitted. (preprint at arXiv:2203.05107)

Some aspects of Ricci flow on the 4-sphere, with S.-Y. A. Chang. **New Zealand Journal of Mathematics**, Vaughan Jones Memorial Special Issue, Volume 52 (2021), 381–402. (preprint at arXiv 2109.08208)

Small curvature concentration and Ricci flow smoothing, with P.-Y. Chan and M.-C. Lee. **Journal of Functional Analysis**, Volume 282, Issue 10 (2022). (preprint at arXiv 2102.12840)

The Yamabe flow on asymptotically flat manifolds, with Y. Wang. **Journal für die reine und angewandte Mathematik (Crelle's journal)**, Volume 2023, Number 803 (2023), 61–101. (preprint at arXiv 2102.07717)

Ricci flow and a sphere theorem for $L^{n/2}$-pinched Yamabe metrics, with G. Wei and R. Ye. **Advances in Mathematics**, Volume 393 (2021).

Convergence of the Ricci flow on asymptotically flat manifolds with integral curvature pinching. **Annali della Scuola Normale Superiore di Pisa, Classe di Scienze**, Volume 23, Issue 1 (2022), 15–48. (preprint at arXiv 1907.13189)

Partial regularity for the steady hyperdissipative fractional Navier–Stokes equations. **Communications in Mathematical Physics**, Volume 381 (2021), 1–31. (preprint at arXiv 1803.08096)

Tripod configurations of curves, with N. Lourie. **Journal of Geometry and Physics**, Volume 89 (2015), 1–16. (preprint at arXiv 1408.4545)

The splitting subspace conjecture, with D. Tseng. **Finite Fields and their Applications**, Volume 23 (2013), 15–28. (preprint at arXiv 1208.0851)

Talks

2024 December	Banff International Research Station Workshop Conformal and CR Geometry
2024 November	UC Davis Mathematical Physics Seminar
2024 October	Simons Laufer Mathematical Sciences Institute New Frontiers in Curvature Seminar
2024 October	AMS Fall Western Sectional Meeting, UC Riverside Special Session on Conformal Geometry, Einstein Metrics, and General Relativity
2024 April	UT Dallas Geometry/Topology/Dynamical Systems Seminar
2024 April	Texas Tech University (online) Differential Geometry, Probability, and Mathematical Physics Seminar
2024 March	UC Davis Mathematical Physics Seminar
2024 February	Cornell University Analysis Seminar
2023 October	Princeton University Differential Geometry & Geometric Analysis Seminar

2023 October	University of Chicago Geometric Analysis Seminar
2023 July	Oberwolfach Workshop 2327 Differentialgeometrie im Grossen
2023 May	UC San Diego Workshop on Ricci Flow
2023 May	Oberwolfach Workshop 2321 Hypoelliptic Operators in Geometry
2023 April	Banff International Research Station Workshop A unified view of Quasi-Einstein Manifolds (23w5072)
2023 April	UC Berkeley Differential Geometry Seminar
2023 March	Warwick Mathematics Institute Workshop Ricci flow and related topics
2023 March	Stanford University Geometry Seminar
2023 March	UC Santa Cruz Geometry & Analysis Seminar
2022 November	Stanford University Geometry Seminar
2022 November	The Chinese University of Hong Kong (online) Seminar in Geometric Analysis
2022 October	Beijing International Center for Mathematical Research (online) Geometric Analysis Seminar
2022 October	Korea Institute for Advanced Study (online) Geometry Seminar
2022 July	Simons Center for Geometry and Physics Workshop Forty Years of Ricci Flow: The Geometric-Flow Revolution in Global Differential Geometry
2022 May	UT Dallas Geometry, Topology, Dynamical Systems Seminar
2022 April	UC Davis Geometry/Topology Seminar
2021 November	Geometric and Functional Inequalities and Applications Seminar (online) `https://geometricinequalities.com/`
2021 September	UC Berkeley Differential Geometry Seminar
2021 July	Shanghai Jiao Tong University (online) International Conference on Geometric Analysis and Partial Differential Equations
2021 May	IAS(Hangzhou) Workshop 21w5064 (online) Geometric PDE and applications to problems in conformal and CR geometry
2021 April	Princeton University (online) Differential Geometry and Geometric Analysis Seminar
2021 April	University of Massachusetts–Amherst (online) Geometry and Geometric Analysis Seminar
2021 March	UC Santa Barbara (online)

	Differential Geometry Seminar
2020 December	UC San Diego (online) Seminar on Cheeger–Colding theory, Ricci flow, Einstein metrics, and Related Topics
2020 May	UC Santa Barbara (online) Differential Geometry Seminar
2020 March	Rice University Geometry-Analysis Seminar
2020 February	UT Dallas Geometry, Topology, Dynamical Systems Seminar
2020 January	UC Santa Cruz Geometry and Analysis Seminar
2020 January	Taipei-Hsinchu Conference On Geometric Invariance And PDE
2019 December	CMS Winter Meeting, Toronto Special Session on Geometric Analysis and Mathematical Relativity
2019 November	Stony Brook University Geometry/Topology Seminar
2019 November	AMS Fall Western Sectional Meeting, UC Riverside Special Session on Topics in Global Geometric Analysis
2019 October	UC Santa Barbara Differential Geometry Seminar
2019 May	Princeton University Differential Geometry Learning Seminar
2019 April	Johns Hopkins University Analysis and Partial Differential Equations Seminar
2018 May	Princeton University Differential Geometry Learning Seminar
2016 November	Princeton University Graduate Student Seminar
2015 October	Princeton University Differential Geometry Learning Seminar

Honors and Awards

2021	NSF Postdoctoral Fellowship
2020	AMS–Simons Travel Grant
2016	NSF Graduate Research Fellowship
2014	Peter A. Greenberg Prize Princeton University Mathematics Department
2014	Sigma Xi Book Award for Outstanding Research Princeton University Mathematics Department
2013	Barry M. Goldwater Scholarship

Activities

Co-organizer of the SLMath NFC/SGA Flows Seminar, Fall 2024

Organizer of the UC Berkeley Differential Geometry Seminar, Fall 2022, 2023

Co-organizer of the UC Santa Barbara Differential Geometry Seminar, 2019–2021

Co-organizer of the Princeton University Geometry Learning Seminar, 2017–2018

Reviewer for *Anal. PDE*, *Calc. Var. Partial Differential Equations*, *J. Funct. Anal.*, *J. Geom. Anal.*, *Nonlinear Anal.*, *Proc. Amer. Math. Soc.*, *Rev. Mat. Iberoam*, *Trans. Amer. Math. Soc.*

Teaching

Spring 2025	Non Euclidean Geometry	University of Illinois Urbana-Champaign
Spring 2024	Differential Topology	UC Berkeley
Spring 2024	Measure Theory (Reading course)	UC Berkeley
Fall 2023	Real Analysis	UC Berkeley
Fall 2023	Differential Geometry (Reading course)	UC Berkeley
Spring 2023	Complex Analysis	UC Berkeley
Fall 2022	Real Analysis	UC Berkeley
Spring 2021	Real Analysis	UC Santa Barbara
Spring 2021	Linear Algebra	UC Santa Barbara
Winter 2021	Real Analysis	UC Santa Barbara
Fall 2020	Linear Algebra	UC Santa Barbara
Fall 2020	Multivariable Calculus	UC Santa Barbara
Spring 2020	Real Analysis	UC Santa Barbara
Spring 2020	Linear Algebra	UC Santa Barbara
Fall 2019	Linear Algebra	UC Santa Barbara
Fall 2019	Multivariable Calculus	UC Santa Barbara
Fall 2017	Calculus II	Princeton University

Mentoring

Co-advisor (with Sun-Yung Alice Chang) of undergraduate senior thesis at Princeton University of Daniel Granberg, *Diffusion Generators and Associated Inequalities for Powers of the Laplacian Operator*, 2019

Co-advisor (with Subhayan Roy Moulik) of undergraduates Justin Chen (Cambridge), Calum McCartney (Cambridge), Sydney Koutrouba (UC Berkeley) on projects related to Riemannian quantum circuit optimization