

Curriculum Vitae

MING XIAO

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Research Interests

Several Complex Variables, Complex Geometry, Partial Differential Equations.

Education

- 2009 - May 2015 Ph.D. in Mathematics, Rutgers University-New Brunswick, USA.
Thesis Advisor: Xiaojun Huang.
- 2005 - 2009 B.S. in Mathematics, University of Science and Technology of China, Hefei, China.

Appointment

- July 2021-present Associate Professor,
Department of Mathematics, University of California, San Diego.
- July 2017-June 2021 Assistant Professor,
Department of Mathematics, University of California, San Diego.
- August 2015-June 2017 J. L. Doob Research Assistant Professor,
Department of Mathematics, University of Illinois at Urbana-Champaign.

Publications and Preprints

1. (joint with Shiferaw Berhanu), *On the C^∞ version of reflection principle for CR mappings between CR manifolds*, American Journal of Mathematics, 137 (2015), no. 5, 1365-1400.
2. (joint with Xiaojun Huang and Xiaoshan Li), *Nonembeddability into a fixed sphere for a family of compact real algebraic hypersurfaces*, International Mathematics Research Notices (IMRN), 16 (2015), 7382-7393.
3. (joint with Shiferaw Berhanu), *On the regularity of CR mappings between CR manifolds of hypersurface type*, Transactions of the AMS, 369 (2017), no. 9, 6073-6086.
4. (joint with John D'Angelo and Zhenghui Huo), *Proper holomorphic maps from the unit disk to some unit ball*, Proceedings of the AMS, 145 (2017), no. 6, 2649-2660.
5. (joint with John D'Angelo), *Symmetries in CR complexity theory*, Advances in Mathematics, 313 (2017), 590-627.
6. (joint with Shantai Chan and Yuan Yuan), *Holomorphic isometries between products of complex unit balls*, International Journal of Mathematics 28 (2017), no. 9, 1740010, 22 pp.

7. (joint with Xiaojun Huang), *Chern-Moser-Weyl tensor and embeddings into hyperquadrics*, Harmonic Analysis, Partial Differential Equations and Applications, 79-95, Appl. Numer. Harmon. Anal. Birkhäuser/Springer, Cham., 2017.
8. (joint with John D'Angelo), *Symmetries and Regularity for holomorphic maps between balls*, Mathematical Research Letters, 25 (2018), 1389-1404.
9. (joint with Ilya Kossovskiy), *On the embeddability of real hypersurfaces into hyperquadrics*, Advances in Mathematics, 331 (2018), 239-267.
10. (joint with Yuan Yuan), *Complexity of holomorphic maps from the complex unit ball to classical domains*, Asian Journal of Mathematics, 22 (2018), 729-760.
11. (joint with Xiaojun Huang), *A CR embedding problem for an algebraic Levi non-degenerate hypersurface into a hyperquadric*, Geometric Complex Analysis, pp 185-198, Springer Proceeding in Mathematics & Statistics, vol 246, Springer, Singapore, 2018.
12. (joint with Hanlong Fang and Xiaojun Huang), *Volume-preserving maps between Hermitian symmetric spaces of compact type*, Advances in Mathematics, 360 (2020), 106885.
13. (joint with Yuan Yuan), *Holomorphic maps from the complex unit ball to type IV classical domains*, Journal de Mathématiques Pures et Appliquées, 133 (2020), 139-166.
14. *Regularity of mappings into classical domains*, Mathematische Annalen, 378 (2020), 1271-1309.
15. (joint with Xiaojun Huang), *A uniformization theorem for Stein spaces*, Complex Analysis and its Synergies, (2020), 6:6, doi.org/10.1007/s40627-020-00044-x.
16. (joint with Xiaojun Huang, Jin Lu and Xiaomin Tang), *Boundary characterization of holomorphic isometric embeddings between indefinite hyperbolic spaces*, Advances in Mathematics, 374 (2020), 107388.
17. (joint with Ilya Kossovskiy and Bernhard Lamel), *Regularity of CR-mappings of codimension one into Levi-degenerate hypersurfaces*, Communications in Analysis and Geometry, 29 (2021), 151-181.
18. *A high order Hopf lemma for mappings into classical domains and applications*, Communications in Analysis and Geometry, 29 (2021), 1937-1977.
19. *Bergman-harmonic functions on classical domains*, International Mathematics Research Notices (IMRN), 2021 (2021), 17220-17255.
20. (joint with Xiaojun Huang), *Bergman-Einstein metrics, a generalization of Kerner's theorem and Stein spaces with spherical boundary*, Journal für die reine und angewandte Mathematik (Crelle), 770 (2021), 183-203.
21. (joint with Peter Ebenfelt and Hang Xu), *On the classification of normal Stein spaces and finite ball quotients with Bergman-Einstein metrics*, International Mathematics Research Notices (IMRN), 2022 (2022), 15240-15270.
22. (joint with Xiaojun Huang), *Holomorphic mappings between hyperquadrics with positive signature*, Pure and Applied Mathematics Quarterly, 18 (2022), 599-616.
23. (joint with Xiaojun Huang, Jin Lu and Xiaomin Tang), *Proper mappings between indefinite hyperbolic spaces and type I classical domains*, Transactions of the AMS, 375 (2022), 8465-8481.
24. *Holomorphic isometric maps from the complex unit ball to reducible bounded symmetric domains*, Journal für die reine und angewandte Mathematik (Crelle), 789 (2022), 187-209.
25. *A theorem on Hermitian rank and mapping problems*, Mathematical Research Letters, 30 (2023), 945-968.

26. (joint with Peter Ebenfelt and Hang Xu), *Kähler-Einstein metrics and obstruction flatness of circle bundles*, Journal de Mathématiques Pures et Appliquées, 177 (2023), 368-414.
27. (joint with Peter Ebenfelt and Hang Xu), *Algebraicity of the Bergman kernel*, Mathematische Annalen (2023), <https://doi.org/10.1007/s00208-023-02720-9>.
28. (joint with Xiaojun Huang), *Rigidity of mappings between degenerate and indefinite hyperbolic spaces*, Journal of Geometric Analysis, 23 (2023). <https://doi.org/10.1007/s12220-022-01080-1>.
29. (joint with Peter Ebenfelt and Hang Xu), *Algebraic Bergman kernels and finite type domains in \mathbb{C}^2* , accepted for publication by Indiana University Mathematics Journal, arXiv: 2111.07175, 2022.
30. (joint with Peter Ebenfelt and Hang Xu), *Kähler-Einstein metrics and obstruction flatness II: unit sphere bundles*, accepted for publication by Journal of Functional Analysis, <https://arxiv.org/abs/2303.06408>, 2024.
31. (joint with Peter Ebenfelt and Hang Xu), *On the analytic and geometric aspects of obstruction flatness*, accepted for publication by Acta Math. Sinica, English Series, <https://arxiv.org/abs/2212.04034>, 2024.
32. (joint with Peter Ebenfelt), *Bergman logarithmically flat and obstruction flat hypersurfaces and their CR structures*, Geometric Analysis of PDEs and Several Complex Variables, Latin Amer. Math. Ser., Springer Nature, 2024.
33. *A new Poincaré type rigidity phenomenon with applications*, submitted, <https://arxiv.org/abs/2309.13768>, 2023.
34. (joint with Nikhil Savale), *Kähler-Einstein Bergman metrics on pseudoconvex domains of dimension two*, submitted, <https://arxiv.org/abs/2309.10595>, 2023.

Synergistic Activities

International Conference Organizing:

- Co-organizer: Shenzhen International Workshop on Several Complex Variables and CR geometry, Shenzhen, China, September 2024.
- Co-organizer: Virtual Conference in Several Complex Variables, August 2020.
- Co-organizer: Tianyuan International Conference in Several Complex Variables at Changchun, 2019.
- Co-organizer: International Workshop on Several Complex Variables at Jilin Normal University, Changchun, 2017.
- Co-organizer: International Workshop in Complex Geometry at Capital Normal University, Beijing, May 2016.

Domestic Conference Organizing:

- Co-organizer: Special Session on Several Complex Variables on Geometric Analysis in Several Complex Variables, Joint Mathematics Meetings, San Francisco, January, 2024.

- Co-organizer: Special Session on Several Complex Variables at AMS Spring Central and Western Joint Sectional Meeting, Honolulu, HI, March, 2019.
- Co-organizer: Southern California Analysis and PDE conference (SCAPDE), University of California, San Diego, 2018.
- Co-organizer: Special Session on CR geometry and PDE in complex analysis at AMS Fall Eastern Sectional Meeting, Buffalo, NY, September, 2017.

Program and event Organizing:

- Assisting AWM (Association for Women in Mathematics) UCSD chapter in organizing a one-day event for local high school students, Summer 2024.
- Co-organizer (with AWM UCSD chapter): a UCSD Math Field Day event for local high school students, July 29, 2023.
- Co-organizer: A math summer program for high school students, summer, 2023.
- Co-organizer: A math summer program for high school students, summer, 2022.
- Co-organizer: An Affair with Mathematics: High School Teachers and Mathematicians Get Together, 2021-2022.

Seminar Organizing:

- Co-organizer: Analysis seminar, University of California, San Diego, 2017-present.
- Co-organizer: Several Complex Variables and CR Geometry seminar at UIUC, 2015-2017.

Departmental and University Service

- Served as the SEW Postdoc Program Coordinator alongside Prof. Todd Kemp, Spring 2024.
- Served as Chair of the Undergraduate Honors & Awards Committee, 2023-2024.
- Served on the committee for the joint Math-Econ Senior Honors Essay presentations, January 2024.
- Served on the Undergraduate Honors & Awards Committee, 2022-2023.
- Served on the Course Textbook and Syllabi Committee, 2022-2023.
- Served as the representative for Warren College to the San Diego Divisional Representative Assembly, 2022-2023.
- Served as the alternate representative for Warren College to the San Diego Divisional Representative Assembly, 2021-2022.
- Served on the Warren College Executive Committee, 2021-2023.
- Served as the Area Course Coordinator-Analysis, 2021-2022.

- Served on the SEW postdoc hiring committee, UCSD, 2021-2022.
- Served as a Complex Analysis PhD Qualifying Test Examiner, UCSD, 2018-2020, 2023-2024.
- Served on the Graduate admission committee, UCSD, 2017-2024.
- Served on the Graduate Advising committee, UCSD, 2018-2019, 2023-2024.
- Served as Co-Chair of the Doctoral committee for Ph.D. student Soumya Ganguly.
- Served on the Doctoral committee for PhD students Yucheng Tu, Zonglin Han and Junekey Jeon.
- Led an Illinois Geometry Lab research project, UIUC, Fall 2015.

Mentorship

Undergraduate Student mentoring (17 students in total): Kasper Chan, Gloria Wei, Jason Shao, Thuc Nguyen, Atmik Das, Kaiyuan Yang, Xinzhu Wang, Jessica Zhang, Yidong Luo, Wennan Zhang, Daniel Parvini, Mengying Li, Weijia Zeng, Jiayu Yang, Lingqi Huang, Aiyang Lu, Hongyu Mu.

Graduate Students (co-)mentoring: Zhiyuan Jiang, Soumya Ganguly, Laad Sharv, Zechariah Zhu.

Postdocs and junior scholars (co-)mentoring: Hang Xu, Muzhi Jin, John (Nick) Treuer.

Awards and Honors

- UCSD Academic Senate Distinguished Teaching Award, 2023.
- National Science Foundation CAREER grant DMS-2045104, Geometric Function Theory in Several Complex Variables, \$425,000, 2021-2026.
- National Science Foundation grant DMS-1800549, Holomorphic and CR mappings in Several Complex Variables, \$160,783, 2018-2023.
- Invited speaker of the 8th International Congress of Chinese Mathematicians, Beijing, China, 2019.
- Named to list of teachers ranked as excellent by their students, UIUC, 2015, 2016, 2017.
- AMS Graduate Student Chapter Research Award at Rutgers University, 2014-2015.
- TA Teaching Excellence Award, Rutgers University, Fall 2012.

Referee for Journals

Journal of the London Mathematical Society, Bulletin des sciences mathématiques, Science China Mathematics, Crelle's Journal, Journal de Mathématiques Pures et Appliquées, Journal of Mathematical Analysis and Applications, Algebraic Geometry and Physics, Mathematische Annalen, Mathematische Nachrichten, Mathematical Research Letters, Journal of Differential Geometry, Acta Mathematica Scientia, Complex Variables and Elliptic Equations, Geometriae Dedicata, Proceedings of the London Mathematical Society, Complex Analysis and its Synergies, Special Matrices, Proceedings of the AMS, Calculus of Variations and PDEs, Houston Journal of Mathematics, Transactions of the AMS, Journal of Geometric Analysis, Asian Journal of Mathematics, Pacific Journal of Mathematics, Illinois Journal of Mathematics, International Journal of Mathematics, International Mathematics Research Notices, Complex Analysis and its Synergies, New York Journal of Mathematics, etc.

Invited Talks

- July 2024, 2nd AMS-UMI international joint meetings, Special Session on “Several Complex Variables: Theory and Applications” and Special Session on “Geometric Analysis of SCV and PDEs”, Palermo, Italy.
- June 2024, 3rd conference of Complex Analysis, Geometry, and Dynamics, Portoroz, Slovenia.
- May 2024, Workshop on SCV, Complex Geometry, and related PDE, College Park, MD.
- November 2023, Workshop on Analysis and Geometry in Several Complex Variables, Vienna, Austria.
- July-August 2023, 11th Workshop on Geometric Analysis of PDEs and Several Complex Variables, Serra Negra, Brazil.
- July 2023, HAYAMA Symposium on Complex Analysis in Several Variables XXIV, Hayama, Japan.
- May 2023, Conference on Partial Differential Equations and Complex Analysis, St. Louis, MO.
- December 2022, Complex Analysis and Geometry Seminar, Rutgers University-New Brunswick, NJ.
- November 2022, Analysis Seminar, University of California, Irvine, CA.
- June 2022, Several Complex Variables Seminar (online), IBS Center for Complex Geometry, Korea.
- April 2022, AMS Special Session on Several Complex Variables, Geometric PDE and CR geometry, Joint Mathematics Meetings, Seattle, WA (changed to online).
- October, 2021, Brazilian Webinar on Approximation Theory, Harmonic Analysis and related topics (online), Brazil.

- March, 2021, PDE and Differential Geometry Seminar (online), University of Connecticut, CT.
- March 2021, Seminar semiklassische Analysis und Darstellungstheorie (online), University of Cologne, Germany.
- September 2020, Virtual East-West Several Complex Variables Seminar.
- November 2019, AMS Sectional Fall Western Meeting, Special Session on Several Complex Variables and Complex Dynamics, University of California, Riverside, CA.
- June 2019, the 8th International Congress of Chinese Mathematicians, Beijing, China.
- May 2019, Analysis Seminar, University of California, Irvine, CA.
- November 2018, Differential Geometry Seminar, University of California, Riverside, CA.
- July 2018, International Conference on Finite or Infinite Dimensional Complex Analysis and Applications, Fujian normal university, Fuzhou, Fujian, China.
- May 2018, Complex Analysis and Geometry Seminar, Rutgers University-New Brunswick, NJ.
- March 2018, Conference in Complex Geometry and Several Complex Variables, University of Notre Dame, Notre Dame, Indiana.
- November 2017, AMS Fall Western Sectional Meeting, Special Session on Several Complex Variables, University of California, Riverside, CA.
- November 2017, Analysis Seminar, University of California, Irvine, CA.
- October 2017, Midwest Workshop on Asymptotic Analysis, IUPUI, Indianapolis, IN.
- August 2017, 9th Workshop on Geometric Analysis of PDEs and Several Complex Variables, Serra Negra, Brazil.
- January 2017, Analysis and Geometry in Several Complex Variables II, Texas A&M University in Qatar, Doha, Qatar.
- May 2016, Midwest Several Complex Variables Conference, University of Toledo, Toledo, OH.
- April 2016, AMS Spring Western Sectional Meeting, Special Session on CR geometry and Partial Differential Equations in Complex Analysis, University of Utah, Salt Lake City, UT.
- January 2016, International Conference on PDE, Complex analysis and Related topics, Florida International University, Miami, FL.
- May 2015, Analysis Seminar, University of California, San Diego, CA.

- April 2015, Analysis Seminar, University of California, Irvine, CA.
- January 2015, International Conference on Several Complex Variables, Texas A&M University in Qatar, Doha, Qatar.
- November 2014, Analysis Seminar, Temple University, Philadelphia, PA.
- October 2014, AMS Sectional Meeting, Special Session on Recent Progress in Harmonic Analysis and Complex Variables, San Francisco State University, San Francisco, CA.
- September 2014, Analysis Seminar, Syracuse University, Syracuse, NY.
- May 2014, International Conference on Complex Analysis and Geometry, Wuhan University, Wuhan, Hubei, China.
- March 2014, AMS Sectional Meeting, Special Session on Interaction between Complex and Geometric Analysis, University of Maryland, Baltimore, MD.
- October 2013, AMS Fall Eastern Sectional Meeting, Special Session on Several Complex Variables and CR geometry, Temple University, Philadelphia, PA.