BING WANG'S CURRICULUM VITAE

Institute of Geometry and Physics

University of Science and Technology of China

Hefei, Anhui   Email: topspin@ustc.edu.cn

China, 230026

Academic background

University of Science and Technology of China, Hefei, Anhui, P. R. China
- Professor, 2018 – present.

University of Wisconsin-Madison
- Assistant Professor and Associate Professor,   2012 – 2018.

Simons Center for Geometry and Physics, State University of New York
- Research Assistant Professor,   2011 – 2012.

Princeton University
- Instructor,   2008 – 2011.

University of Wisconsin-Madison
- Ph.D. in Mathematics,   2003 – 2008.

University of Science and Technology of China, Hefei, Anhui, P. R. China
- B. S. in Mathematics, 1998 – 2003.

Research Interests:
- Geometric Flows.
- Complex Monge-Ampere Equation.
- Metric Geometry.
- Algebraic Geometry.

Awards
- YSBR-001, "The analysis on manifolds", 2021-2026.
- NSFC grant 11971452: "On the classification of 4-dimensional Ricci shrinkers", 2020-2023.

- NSF grant DMS-1510401: "Applications of the Ricci Flow in Differential Geometry", 2015-2018.
- NSF grant DMS-1312836: "Investigation of Ricci Flows with Bounded Scalar Curvature", 2013-2014.
- NSF grant DMS-1221330: "Investigation of Ricci Flows with Bounded Scalar Curvature", 2012-2013.
- NSF grant DMS-1006518: "Investigation of Ricci Flows with Bounded Scalar Curvature", 2010-2012.
- The Excellence in Mathematical Research Award, University of Wisconsin-Madison, 2008.

Publications

(1) *Heat kernel on Ricci shrinkers (II)* (in collaboration with Y. Li), Acta Mathematica Scientia, vol.44(2024), no.B5, 1639-1695.

(2) *Rigidity of the round cylinders in Ricci shrinkers*(in collaboration with Y. Li), Journal of Differential Geometry, vol.127(2024), no.2, 817-897.

(3) *Ricci curvature integrals, local functionals, and the Ricci flow* (in collaboration with Y.Q. Ma), Transactions of the American Mathematical Society Series, vol.10(2023), 944-987.

(4) *Canonical diffeomorphisms of manifolds near spheres*(in collaboration with X. R. Zhao), The Journal of Geometric Analysis, vol.33(2023), no.304, 1-31.

(5) *Ricci flow smoothing for locally collapsing manifolds*(in collaboration with S.S. Huang), Calculus of Variations and Partial Differential Equations, vol.61(2022), no.2, article 64.

(6) *On Ilmanen's multiplicity-one conjecture for mean curvature flow with type-I mean curvature* (in collaboration with H.Z. Li), Journal of the European Mathematical Society, vol.24(2022), no.1, 37-135.

(7) *On the structure of Ricci shrinkers*(in collaboration with H.Z. Li, Y. Li), Journal of functional analysis, vol.280(2021), no.2021, 108955.

(8) *On the regular-convexity of Ricci shrinker limit spaces* (in collaboration with S.S. Huang, Y. Li), Journal für die reine und angewandte Mathematik, vol.771(2021), no.2021, 99-136.

(9) *Collapsing geometry with Ricci curvature bounded below and Ricci flow smoothing* (in collaboration with S.S. Huang, X.C. Rong), Symmetry, Integrability and Geometry: Methods and Applications(SIGMA), vol.16(2020), no.123, 25.

(10) *Heat Kernel on Ricci Shrinkers*(in collaboration with Y. Li), Calculus of Variations and Partial Differential Equations, vol.59(2020), no.6, 1-84.

(11) *Space of Ricci flows(II)—part B: weak compactness of the flows* (in collaboration with X.X. Chen), Journal of Differential Geometry, vol.116(2020), no.1, 1-123.

(12) *Remarks of weak-compactness along Kähler Ricci flow*(in collaboration with X.X. Chen), Proceedings of the 7th international Congress of Chinese Mathematicians, vol.1(2019), 203-234.

(13) *The extension problem of the mean curvature flow (I)*(in collaboration with H.Z. Li), Inventiones Mathematicae, vol.218 (2019), no.3, 721-777.

(14) *Rigidity of vector valued harmonic maps of linear growth*(in collaboration with S.S. Huang), Geometriae Dedicata, vol.202(2019), no.1, 357-371.

(15) *The Rigidity of Ricci shrinkers of dimension four*(in collaboration with Y. Li), Transactions of American Mathematical Society, vol.371 (2019), 6949-6972.

(16) *The local entropy along Ricci flow—part A: the no-local-collapsing theorems*, Cambridge Journal of Mathematics, vol.6(2018), no.3, 267-346.

(17) *Kähler-Ricci flow, Kähler-Einstein metric, and K-stability*(in collaboration with X.X.Chen, S.Sun), Geometry&Topology, vol.22(2018), no.6, 3145-3173.

(18) *Regularity scales and convergence of the Calabi flow*(in collaboration with H.Z. Li, K. Zheng), The Journal of Geometric Analysis, vol.28(2018), no.3, 2050-2101.

(19) *Space of Ricci flows(II)—part A: moduli of singular Calabi-Yau spaces* (in collaboration with X.X. Chen), Forum of Mathematics, Sigma, vol.5(2017), e32.

(20) *On the structure of almost Einstein manifolds* (in collaboration with G.Tian), Journal of American Mathematical Society, vol.28(2015), no.4, 1169-1209.

(21) *On the conditions to extend Ricci flow(III)*(in collaboration with X.X.Chen), International Mathematics Research Notices, vol.2013 (2013), no.10, 2349-2367, doi: 10.1093/imrn/rns117.

(22) *On the conditions to extend Ricci flow(II)*, International Mathematics Research Notices, vol.2012(2012), no.14, 3192-3223, doi:10.1093/imrn/rnr141.

(23) *Space of Ricci flows(I)* (in collaboration with X.X.Chen), Communications in Pure and Applied Math, vol.65(2012), no.10, 1399-1457.

(24) *The Kähler Ricci flow on Fano manifolds(I)* (in collaboration with X.X.Chen), Journal of European Mathematical Society, vol.14(2012), no.6, 2001-2038, doi: 10.4171/JEMS/353.

(25) *Remarks on Kähler Ricci flow* (in collaboration with X.X.Chen), Journal of Geometric Analysis, vol.20(2010), no.2, 335-353.

(26) *The Kähler Ricci flow on Fano surfaces (I)* (in collaboration with X.X.Chen), Mathematische Zeitschrift, vol.270(2012), no.1-2, 577-587, doi:10.1007/s00209-010-0813-3.

(27) *Kähler-Ricci flow with small initial energy* (in collaboration with X.X.Chen, H.Z. Li), Geometric and Functional Analysis, vol.18(2009), no.5, 1525-1563.

(28) *On the conditions to extend Ricci flow*, International Mathematics Research Notices, vol.2008(2008), no.rnn012.

Preprints(Selected)

(1) *On Kähler Ricci shrinker surfaces* (in collaboration with Y. Li), arXiv preprint arXiv:2301.09784, submitted.

(2) *The local entropy along Ricci flow—Part B: the pseudo-locality theorems*, arXiv:2010.09981, submitted.

(3) *Rigidity of the first Betti number via Ricci flow smoothing*(in collaboration with S.S. Huang), arXiv:2004.09762, submitted.

Invited Talks(Selected)

- **Rigidity of first Betti number via Ricci flow smoothing**, *Geometric Analysis seminar*, Nanjing University, Nanjing, China, November 6th, 2020.
- **Rigidity of first Betti number via Ricci flow smoothing**, *Tianyuan seminar*, SJTU, Shanghai, China, September 19th, 2020.
- **Sphere, Torus, and the Ricci flow**, *Geometric Analysis seminar*, AMSS, Beijing, China, September 13th, 2020.
- **On the structure of Ricci shrinkers**, *Geometric Analysis seminar*, Tsinghua University, Beijing, China, December 24th, 2019.
- **On the structure of Ricci shrinkers**, *2019 Guangzhou seminar for young geometric analysts*, Sun Yat-sen University, Guang zhou, China, November 9th, 2019.
- **The extension problem of the mean curvature flow**, *Colloquium*, ShanghaiTech University, Shanghai, China, July 5th, 2019.
- **On the structure of Ricci shrinkers**, *Current developments in Complex and Analytic Geometry*, Cortona, Italy, June 7th, 2019.
- **Heat Kernel on Ricci shrinkers**, *Geometric Analysis conference for young mathematicians*, Southeast university, Nanjing, China, May 25th, 2019.
- **Heat Kernel on Ricci shrinkers**, *Tianyuan forum for geometry and analysis*, University of Science and Technology of China, Hefei, China, Jan 18th, 2019.

- **On the structure of Ricci shrinkers**, *Geometric Analysis Seminar*, Shanghai Center for Mathematical Science, Shanghai, China, Jan 4th, 2019.
- **On the structure of Ricci shrinkers**, *Geometric Analysis Seminar*, Shantou University, Shantou, China, Dec 17th, 2018.
- **A compactness theorem of Ricci shrinkers**, *Workshop on geometric analysis*, Hunan University, Oct 20, 2018.
- **The extension problem of the mean curvature flow**, *Geometric Analysis Seminar*, Chicago University, Chicago, Illinois, May 22, 2018.
- **The extension problem of the mean curvature flow**, *Analysis Seminar*, Northwestern University, Evanston, Illinois, Nov 27, 2017.
- **On the convergence of Kähler Ricci flow**, *Geometry of Manifolds*, Simons Center for Geometry and Physics, Stony Brook, October 25th, 2017.
- **The entropy method and Ricci flow convergence**, *2017 NCTS mini-course and workshop on Ricci flow and related aspects*, National Center for Theoretical Science, Taipei, June 13th, 2017.
- **On the smooth convergence of geometric flows**, *Conference in Celebration of the 90th Anniversary of Mathematics Disciplines of Tsinghua University*, Tsinghua University, Beijing, April 23, 2017.
- **The extension problem of the mean curvature flow**, *Geometric Analysis Seminar*, Rutgers University, Piscataway, NJ, February 21, 2017.
- **The extension problem of the mean curvature flow**, *PDE and Geometric Analysis Seminar*, University of Wisconsin-Madison, Madison, WI, February 13 , 2017.
- **The extension problem of the mean curvature flow**, *Geometric Analysis Seminar*, University of Oregon, Eugene, OR, January 10th, 2017.
- **The extension problem of the mean curvature flow**, *Geometry and Topology Seminar*, University of Wisconsin-Madison, Madison, WI, September 9th, 2016.
- **On the Kähler Ricci flow**, *The 7th International Congress of Chinese Mathematicians*, Beijing, China, August 8, 2016.
- **On the Kähler Ricci flow**, *The Pacific Rim Conference on Complex and Symplectic Geometry, XI*, USTC, Hefei, China, July 30, 2016.
- **On the Kähler Ricci flow**, *Conference on Differential Geometry*, Dentre De Recherches Mathématiques, Montreal, Canada, July 8, 2016.
- **Frontier topics in the Ricci flow**, *Geometric Analysis summer school*, Academy of Mathematics and Systems Science, Beijing, China, June 15-July 2, 2016.

- **Kähler Ricci flow on Fano manifolds**, *Kähler geometry, Einstein metrics and generalizations*, MSRI, Berkeley, CA, March 22, 2016.
- **Regularity scales and convergence of the Calabi flow**, *Analysis seminar*, Northwestern University, Evanston, Illinois, Nov 23, 2015.
- **Regularity scales and convergence of the Calabi flow**, *Riemannian convergence theory*, Stony Brook University, Stony Brook, NY, Nov 12, 2015.
- **Kähler Ricci flow on Fano manifolds**, *Conference on Analysis and Geometry*, University of Science and Technology of China, Hefei, China, August 5, 2015.
- **Kähler Ricci flow on Fano manifolds**, *Geometric Analysis seminar*, Shanghai Jiao Tong University, Shanghai, China, July 6, 2015.
- **Kähler Ricci flow on Fano manifolds**, *Workshop on Ricci curvature*, Northwestern University, Evanston, Illinois, May 31, 2015.
- **Kähler Ricci flow on Fano manifolds**, *Recent Advances in Kähler geometry*, Vanderbilt University, Nashville, Tennessee, May 18, 2015.
- **Kähler Ricci flow on Fano manifolds**, *Geometric Analysis seminar*, Courant Institute, New York, April 24, 2015.
- **Regularity scales and convergence of the Calabi flow**, *Geometric Flows: Recent Developments and Applications*, Banff, CA, April 14, 2015.
- **Kähler Ricci flow on Fano manifolds**, *Young Geometric Analysts Forum*, Sanya, China, Jan 27, 2015.
- **On the Kähler Ricci flow**, *Geometric Analysis Seminar*, UC-Irvine, Nov 2014.
- **On the Kähler Ricci flow**, *Geometric Analysis Seminar*, Simons Center for Geometry and Physics, Stony Brook, May, 2014.
- **Regularity of limit spaces**, *The Second Pacific Rim Mathematical Association (PRIMA) Congress*, Shanghai Jiao tong University, China, June 2013.
- **Regularity of limit spaces**, *Geometric Analysis Seminar*, UC-Irvine, April 2013.
- **Regularity of limit spaces**, *7th Pacific Rim Complex and Symplectic Geometry Conference*, Kyoto University, Japan, August 2012.

Teaching Experience(Selected)

- Professor   University of Science and Technology of China(2018 — Present)

001701.01: Complex Variable(H), Spring 2024.
MATH3004.01: Functional Analysis, Fall 2023.
MATH3004.01: Functional Analysis, Fall 2022.
MATH3002: Real analysis, Spring 2022.
FS1001: Science and Society, Fall 2021.
001250: Real analysis, Spring 2021.
001365: Introduction to Pure Mathematics, Summer 2020.
Summer School Course of Tsinghua University: Ricci flow and Sphere theorem, Summer 2020.
MA06004.01: Topics in Differential Geometry, Spring 2020.
MA06004.01: Topics in Differential Geometry, Spring 2019.

- **Assistant Professor and Associate Professor**   University of Wisconsin-Madison (2012 – 2018)
  Math 951: Topics in Geometric Analysis, Spring 2018.
  Math 461: College Geometry, Fall 2017.
  Math 461: College Geometry, Spring 2017.
  Math 765: Riemannian Geometry, Spring 2017.
  Math 461: College Geometry, Fall 2016.
  Math 240: Discrete Math, Spring 2016.
  Math 319: Differential Equation, Spring 2016.
  Math 340: Elementary Matrix and Linear Algebra, Fall 2015.
  Math 761: Differentiable Manifolds, Fall 2015.
  Math 234: Calculus III, Spring 2015.
  Math 865: Advanced topics in geometry, Fall 2014.
  Math 234: Calculus III, Fall 2014.
  Math 722: Complex analysis, Spring 2014.
  Math 222: Calculus II, Spring 2014.
  Math 320: Linear Algebra and Ordinary Differential Equations, Spring 2013.
  Math 820: Partial Differential Equations, Spring 2013.
  Math 320: Linear Algebra and Ordinary Differential Equations, Fall 2012.

- **Instructor**   Princeton University (2008 – 2011)
  Mat 202: Linear Algebra with Applications, Spring 2011.
  Mat 201: Multivariable Calculus, Fall 2010.
  Mat 202: Linear Algebra with Applications, Spring 2010.
  Mat 327: Introduction to Differential Geometry, Fall 2009.
  Mat 203: Advanced Multivariable Calculus, Fall 2009.
  Mat 202: Linear Algebra with Applications, Spring 2009.
  Mat 202: Linear Algebra with Applications, Fall 2008.

- **Teaching Assistant**   University of Wisconsin, Madison
  (2004 – 2008)

Math 210: Finite Mathematics, Spring 2008.

Math 320: Linear Algebra and Ordinary Differential Equations,
Fall 2007.

Math 217: Calculus, Spring 2007.

Math 211: Calculus, Fall 2006.

Math 221: Calculus, Summer 2006.

Math 211: Calculus, Spring 2006.

Math 211: Calculus, Fall 2005.

Math 211: Calculus, Spring 2005.

Math 211: Calculus, Fall 2004.

Math 222: Calculus, Spring 2004.