

Damin Wu

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Citizenship: P. R. China
(U. S. Permanent Resident)

Research Interests Differential Geometry

Positions **University of Connecticut**

Professor, August 2018 –
Associate Professor, August 2013 – May 2018
Assistant Professor, August 2012 – May 2013

The Ohio State University

Assistant Professor, September 2006 – June 2012
(Promote to Associate Professor at OSU, effective September 01, 2012)

Stanford University

Postdoctoral member, September 2005 – August 2006

Education **Massachusetts Institute of Technology**

Ph.D. in Mathematics, June 2005.

Tsinghua University

M.S. in Applied Mathematics, July 2000

Tsinghua University

B.Eng. in Hydraulics and Minor in Mathematics, July 1997

Visiting Positions **Institute for Advanced Study**, Member, September 1, 2018 – July 31, 2019

The Erwin Schrödinger International Institute, July 2017

Grants and Honors

- 1) NSF Grant, Title: “Positivity in Complex Geometry”, PI, \$224,300, September 1, 2016 – August 31, 2019.
- 2) NSF Grant, Title: “Geometric Partial Differential Equations in General Relativity”, Co-PI, \$282,249, September 1, 2013 – August 31, 2016.
- 3) NSF Grant, Great Lake Geometry Conference, Co-PI, \$24,610, 2011.
- 4) ICCM Best Paper Award 2018
- 5) MIT Liberty Mutual Fellowship, 2001.
- 6) MIT Presidential Fellowship, 2000.

Publications

- 1) Higher canonical asymptotics of Kähler-Einstein metrics on quasi-projective manifolds, *Comm. Anal. Geom.* **14** (2006), 795–845.
- 2) Kähler-Einstein metrics of negative Ricci curvature on general quasi-projective manifolds, *Comm. Anal. Geom.* **16** (2008), 395–435.

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- 3) Good Kähler metric with prescribed singularities,
Asian J. Math. **13** (2009), 131–150.
- 4) A degenerate Monge-Ampère equation and the boundary classes of Kähler cones,
(with S. T. Yau and F. Zheng), *Math. Res. Lett.* **16** (2009), 365–374.
- 5) A constant rank theorem for Hermitian k -convex solutions of complex Laplace equations,
(with F. Han and X. N. Ma), *Methods Appl. Anal.* **16** (2009), 263–290.
- 6) A second order estimate for complex Hessian equations on a compact Kähler manifold,
(with Z. Hou and X. N. Ma), *Math. Res. Lett.* **17** (2010), 547–561.
- 7) Rigidity theorems on hemispheres in non-positive space forms,
(with L. H. Huang), *Comm. Anal. Geom.* **18** (2010), 339–363.
- 8) Form-type Calabi-Yau equations,
(with J. X. Fu, and Z. Wang), *Math. Res. Lett.* **17** (2010), 887–903.
- 9) The existence of k -convex hypersurface with prescribed mean curvature,
(with F. Han and X. N. Ma), *Calc. Var. and PDE* **42** (2011), 43–72.
- 10) Picard number, holomorphic sectional curvature, and ampleness,
(with P. M. Wong and S. T. Yau), *Proc. Amer. Math. Soc.* **140** (2012), 621–626.
- 11) Semilinear equations, the gamma- k function, and generalized Gauduchon metrics,
(with J. X. Fu, and Z. Wang), *J. Eur. Math. Soc. (JEMS)* **15** (2013), 659–680.
- 12) An example of compact Kähler manifold with nonnegative quadratic bisectional curvature,
(with Q. Li and F. Zheng), *Proc. Amer. Math. Soc.* **141** (2013), 2117–2126.
- 13) Hypersurfaces with nonnegative scalar curvature,
(with L. H. Huang), *J. Differential Geom.* **95** (2013), 249–278.
- 14) The equality case of the Penrose inequality for asymptotic flat graphs,
(with L. H. Huang), *Trans. Amer. Math. Soc.* **367** (2015), 31–47.
- 15) Form-type equations on Kähler manifolds of nonnegative orthogonal bisectional curvature,
(with J. X. Fu, and Z. Wang), *Calc. Var. Partial Differential Equations* **52** (2015), 327–344.
- 16) Negative holomorphic curvature and positive canonical bundle,
(with S. T. Yau), *Invent. Math.*, **204** (2016), 595–604.
- 17) On the boundary behavior of Kähler-Einstein metrics on log canonical pairs,
(with H. Guenacia), *Math. Ann.*, **366** (2016), 101–120.
- 18) A remark on our paper “Negative holomorphic curvature and positive canonical bundle”,
(with S. T. Yau), *Comm. Anal. Geom.*, **24** (2016) no. 4, 901–912.
- 19) Geometric Inequalities and Rigidity Theorems on Equatorial Spheres,
(with L. H. Huang), *Comm. Anal. Geom.* **25** (2017) no.1, 185–207.

Preprints

- 20) Invariant metrics on negatively pinched complete Kähler manifolds,
(with S. T. Yau), arXiv:1711.09475 [math.DG], submitted.
- 21) Complete Kähler-Einstein metrics under certain holomorphic covering and examples,
(with S. T. Yau), to appear in *Ann. Inst. Fourier* in honor of Professor Jean-Pierre Demailly.

Survey

- 22) Negatively curved complex geometry,
(with S. T. Yau), submitted to *Proceedings of the first Annual meeting of International Consortium of Chinese Mathematicians (ICCM)*.

Services

Co-organizer of Conferences:
Uconn Summer School on Minimal Surfaces, Flows, and Relativity, July 16 – 20, 2018
Uconn Geometry Day, February 29, 2016, April 7, 2017
UConn Semester in Differential Geometry, Fall 2013.

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Differential Geometry Seminar at OSU, September 2006 – June 2012.
Great Lake Geometry Conference 2012, Ohio State University, April 14–15, 2012.
Workshop on Differential Geometry, Fudan University, China, June 27 – July 08, 2011.
Great Lake Geometry Conference 2011, Ohio State University, March 05 – 06, 2011.
Geometry Seminar at Stanford, September 2005 – June 2006.

Uconn Math Department:

Graduate Program Commitee, August 2017 – May 2018
Graduate Admission Committee, December 2017 – May 2018
Tenure-track Faculty Mentor, August 2017 – May 2018
Honors Academic Advisor, August 2016 – May 2018
Complex Area coordinator, August 2015 – Present
Undergraduate Program Committee, Aug 2013 – May 2015, Aug 2016 – May 2017
First Year Advisor, August 2015 – May 2017
Colloquium Committee, August 2013 – May 2016
Michael Neumann Dissertation Award Committee, 2015
Regional Campus Committee, Aug 2012 – Dec 2015
Open House Fairs, April 12, 2014, October 19, 2014

NSF Panel, 2017, 2018
NSA-AMS External Reviewer, 2015.

Refereed papers for journals:

Advances in Mathematics
American Journal of Mathematics
Communications in Analysis and Geometry
Compositio Mathematica
Journal of Differential Geometry
Matematica Contemporanea
Mathematical Research Letters
Mathematische Annalen
Pacific Journal of Mathematics
Proceedings of the American Mathematical Society
Science in China, Series A: Mathematic
Transactions of the American Mathematical Society

Ph.D.	Junqing Qian	Ph. D. expected 2020
Students	Gunhee Cho	Ph. D. expected 2021

Invited Talks

- 1) Institute for Advanced Study, Variational Methods in Geometry Seminar, February 2019
- 2) Institute for Advanced Study, Analysis Seminar, February 2019
- 3) The 2nd International Consortium of Chinese Mathematicians meeting, Plenary Speaker, 2018
- 4) AMS Spring Central Sectional Meeting at Ohio State University, Columbus, March 2018
- 5) The 1st International Consortium of Chinese Mathematicians meeting, Plenary Speaker, 2017
- 6) Conference in Celebration of the 90th Anniversary of Math Department of Tsinghua Univ, 2017
- 7) Columbia University, October 2016
- 8) National Taiwan University, July 2016
- 9) UC Irvine, May 2016

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- 10) Harvard University, Differential Geometry Seminar, February 2016
- 11) Young Geometric Analysts' Forum, Special Plenary Speaker, Sanya China, January 2015
- 12) Fudan University, Shanghai, China, January, 2015
- 13) UConn Math Club, April, 2014
- 14) AMS 2013 Eastern Sectional Meeting in Boston College, April 2013
- 15) Tsinghua Sanya International Mathematics Forum, Sanya, China, January 2013
- 16) 2012 Elliptic PDE and Geometric Applications, Huangshan, Anhui, China, December 2012
- 17) UConn Math Club, November, 2012
- 18) AMS 2012 Central Fall Section Meeting at University of Akron, October 2012
- 19) International Conference on Nevanlinna Theory Complex Geometry, Notre Dame, March 2012
- 20) University of Colorado at Boulder, Colloquium, January 2012
- 21) Tsinghua University, Beijing, China, June 2011
- 22) Capital Normal University, Beijing, China, June 2011
- 23) University of Toledo, Colloquium, April 2011
- 24) The 5th International Congress of Chinese Mathematicians, Beijing, China, December 2010
- 25) Workshop in Geometric Analysis, Zhejiang University, Hangzhou, China, December 2010
- 26) AMS Meeting at University of Notre Dame, November 2010
- 27) Columbia University, September 2010
- 28) Wright State University, Colloquium, May 2010
- 29) University of Notre Dame, Colloquium, February 2010
- 30) Fudan University, Shanghai, China, July 2009
- 31) Johns Hopkins University, April 2009
- 32) Fudan University, Shanghai, China, July 2008
- 33) Columbia University, April 2008
- 34) University of Michigan, March 2008
- 35) UC Irvine, February 2008
- 36) The 4th International Congress of Chinese Mathematicians, Hangzhou, China, December 2007
- 37) Journal of Differential Geometry Conference, Lehigh University, October 2007
- 38) The Ohio State University, May 2007
- 39) University of Notre Dame, April 2007
- 40) Journal of Differential Geometry Conference, Lehigh University, June 2006
- 41) UC Irvine, May 2006
- 42) UC Santa Barbara, May 2006
- 43) UC San Diego, February 2006
- 44) Stanford University, September 2005
- 45) Ohio State University, April 2005.
- 46) Johns Hopkins University, February 2005.