

# 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) Stanford Postdoctoral Research Fellowship, 2005 – 2006.  
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) AMS Spring Central Sectional Meeting at Ohio State University, Columbus, March 2018
- 2) The 1<sup>st</sup> International Consortium of Chinese Mathematicians meeting, Planery Speaker, 2017
- 3) Conference in Celebration of the 90th Anniversary of Math Department of Tsinghua Univ, 2017
- 4) Columbia University, October 2016
- 5) National Taiwan University, July 2016
- 6) UC Irvine, May 2016
- 7) Harvard University, Differential Geometry Seminar, February 2016
- 8) Young Geometric Analysts' Forum, Special Plenary Speaker, Sanya China, January 2015
- 9) Fudan University, Shanghai, China, January, 2015

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