Peng Wu

Department of Mathematics
Cornell University

Email: wupenguin@math.cornell.edu
Homepage: https://sites.google.com/site/wupenguin/

RESEARCH INTEREST

Differential Geometry, Geometric Analysis, Partial Differential Equations.

- Rigidity of canonical metrics on four-manifolds ("Einstein" metrics on four-dimensional smooth metric measure spaces), including Einstein metrics, gradient Ricci solitons, quasi-Einstein metrics.
- the Ricci flow.
- Geometry and analysis of smooth metric measure spaces.

EDUCATION

Ph.D. Mathematics, University of California, Santa Barbara, 2007-2012.

- Thesis title: Studies on Einstein manifolds and Ricci solitons.
- Thesis advisors: Xianzhe Dai and Guofang Wei.

M.S. Mathematics, Peking University, 2004-2007.

- Thesis advisor: Yuguang Shi.

B.S. Mathematics, Peking University, 2000-2004.

EMPLOYMENT

H. C. Wang Assistant Professor, Cornell University, July 2012-June 2015.

VISITING

Mathematical Sciences Research Institute, University of California, Berkeley, January-February 2016.

Simons Center for Geometry and Physics, Stony Brook University, October 2014.

East China Normal University, December 2013, December 2015.

Beijing International Center for Mathematical Research, Peking University, July 2013.

FELLOWSHIPS AND AWARDS

AMS-Simons Travel Grant, July 2013–June 2015.

Dissertation Fellowship, University of California, Santa Barbara, Fall 2011.

Block Grant Fellowship, University of California, Santa Barbara, Spring 2011.

PUBLICATIONS

1. Heat kernel on smooth metric measure spaces and applications (with Jia-Yong Wu), Math. Ann. DOI: 10.1007/s00208-015-1289-6.
2. Heat kernel on smooth metric measure spaces with nonnegative Bakry-Emery Ricci curvature (with Jia-Yong Wu), Math. Ann. **362** (2015), 717-742.
3. On volume growth of gradient steady Ricci solitons (with Guofang Wei), Pacific J. Math. **265** (2013), 233-241.
4. On the potential function of gradient steady Ricci solitons, J. Geom. Anal. **23** (2013), 221-228.
5. Asymptotically hyperbolic metrics on a unit ball admitting multiple horizons (with Zhenyang Li and Yuguang Shi), Proc. Amer. Math. Soc. **136** (2008), 4003-4010.

PREPRINTS

All preprints are available at my homepage.

6. Einstein four-manifolds with three-positive curvature operator are half conformally flat, preprint 2013.

7. Gradient shrinking Ricci solitons with half harmonic Weyl curvature are rigid (with Jia-Yong Wu and William Wylie), arXiv:math.DG/1410.7303.

8. On L^p-Liouville property for smooth metric measure spaces (with Jia-Yong Wu), arXiv:math.DG/1410.7305.

9. A Weitzenböck formula for canonical metrics on four-manifolds, arXiv:math.DG/1410.7260.

10. A generalization of the Cai-Galloway splitting theorem to smooth metric measure spaces (with Jeffrey Case), arXiv:math.DG/1307.0848.

11. A note on Einstein four-manifolds with positive curvature, submitted.

12. An upper bound of the first eigenvalue for Einstein four-manifolds with nonnegative curvature, in preparation.

13. Rigidity of quasi-Einstein four-manifolds with half harmonic Weyl curvature, in preparation.

PRESENTATIONS

33. Differential Geometry Seminar, December 2015, Peking University, Beijing, China.

32. Differential Geometry Seminar, December 2015, Tsinghua University, Beijing, China.

31. AMS Eastern Sectional Meeting, November 2015, Rutgers University, NJ.

30. Lehigh University Geometry and Topology Conference, May 2015, Lehigh University, PA.

29. Geometry and Topology Seminar, December 2014, University of Pennsylvania, PA.

28. Geometric Analysis Seminar, October 2014, Massachusetts Institute of Technology, MA.

27. AMS Western Sectional Meeting, October 2014, San Francisco State University, CA.

26. Geometric Flows Program, October 2014, Simons Center for Geometry and Physics, Stony Brook, NY.

25. Nonlinear Analysis Seminar, October 2014, Rutgers University, NJ.

24. Geometric Analysis Seminar, October 2014, Brown University, RI.

23. Differential Geometry Seminar, September 2014, Lehigh University, PA.

22. Geometry and Topology Seminar, September 2014, Stony Brook University, NY.

21. Differential Geometry and Geometric Analysis Seminar, April 2014, Princeton University, NJ.

20. Differential Geometry Seminar, April 2014, Graduate Center, City University of New York, NY.

19. Differential Geometry Seminar, February 2014, University of California, Santa Barbara, CA.

18. Differential Geometry Seminar, December 2013, East China Normal University, Shanghai, China.

17. Analysis Seminar, December 2013, Binghamton University, State University of New York, NY.

16. Geometry and Topology Seminar, October 2013, Syracuse University, NY.

15. Analysis and PDE Seminar, October 2013, Johns Hopkins University, MD.

14. Analysis Seminar, September 2013, Cornell University, NY.

13. Differential Geometry Seminar, July 2013, Capital Normal University, Beijing, China.

12. Geometry Seminar, July 2013, China Agricultural University, Beijing, China.

11. Pacific Rim Mathematical Association Congress, June 2013, Shanghai Jiao Tong University, Shanghai, China.

10. Differential Geometry and Geometric Analysis Seminar, June 2013, University of Science and Technology of China, Hefei, China.

9. Workshop on Geometric and Analytic Properties of the Ricci flow, June 2013, Nanjing University of Science and Technology, Nanjing, China.

8. AMS Eastern Sectional Meeting, September 2012, Rochester Institute of Technology, NY.

7. Geometry Seminar, September 2012, University of Rochester, NY.

6. Geometric Analysis Seminar, September 2012, Cornell University, NY.

5. Analysis Seminar, August 2012, Cornell University, NY.

4. Lehigh University Geometry and Topology Conference, May 2012, Lehigh University, PA.

3. AMS Western Sectional Meeting, October 2011, University of Utah, Salt Lake City, UT.

2. Graduate Student Topology and Geometry Conference, April 2011, Michigan State University, MI.

1. Differential Geometry Seminar, January 2011, University of California, Santa Barbara, CA.

TEACHING

at Cornell University

Introduction to Differential Geometry, Spring 2015.

Calculus II, Fall 2014.

Linear Algebra, Spring 2014.

Introduction to Riemannian Geometry, Fall 2013.

Introduction to Analysis, Spring 2013.

Linear Algebra, Fall 2012.

at University of California, Santa Barbara

Calculus with Applications, Summer 2011.

SERVICES

Co-organizer, AMS Spring Eastern Sectional Meeting Special Session, March 29-30, University of Maryland, Baltimore County, Baltimore, MD.

Co-organizer, AMS Fall Eastern Sectional Meeting Special Session, October 12-13, Temple University, Philadelphia, PA.

Co-organizer, Cornell Geometric Analysis Seminar, Fall 2012–Spring 2014, Cornell University.

Co-organizer, Graduate Differential Geometry Seminar, Fall 2010–Spring 2012, UCSB.

Referee for: Differ. Geom. Appl., Proc. Amer. Math. Soc., J. Geom. Anal.

Reviewer for: MathSciNet.

Service: Advanced Placement Exam Committee, Fall 2012– Spring 2015, Department of Mathematics, Cornell University.

Last updated: November 19, 2015