CURRICULUM VITAE

Mao-Pei Tsui

Official Address

Department of Mathematics
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Research Interests

Differential Geometry (53), General Relativity and Gravitation (83) and Partial Differential Equations (35).

Education

- Ph. D. in Mathematics, 2001, Brandeis University

- M.S. in Applied Mathematics, Hsinchu,1989, National Chao-Tung University, Hsinchu, Taiwan.

- B.S. in Applied Mathematics, 1987, National Chao-Tung University, Hsinchu, Taiwan.

Employment

- August, 2011-Present: Associate Professor, Department of Mathematics, University of Toledo.

- Jan, 2007-Dec, 2007: Assistant Professor, Department of Mathematics, National Taiwan University, Taiwan.

- Aug, 2005- July 2011: Assistant Professor, Department of Mathematics, University of Toledo.

- July, 2001-July, 2005: Ritt Assistant Professor, Department of Mathematics,Columbia University.

- July, 2000- July, 2001: Software Engineer, Parametric Technology Corporation .

- Summer, 1998: Graduate student mentor for Ronald E. McNair Scholar's Program, Brandeis University.

- 1993-1998: Instructor, Department of Mathematics, Brandeis University.

- 1991-1992: Lecturer, Department of Applied Mathematics, National Chao-Tung University, Hsinchu, Taiwan.

Publications

1. (With J-E Lee):The geometry and completeness of the two-phase solutions of the nonlinear Schöringer equations, Nonlinear evolution equations and dynamical systems (Kolymbari, 1989), 94–97, Res. Rep. Phys., Springer, Berlin, 1990.

2. On Some Geometric Problems from General Relativity, 2000, Brandeis Thesis.

3. (With M-T Wang) A Bernstein type result for special Lagrangian submanifolds, Math. Res. Lett. 9 (2002), no. 4, 529–535.

4. (With M-T Wang) Mean curvature flows and isotopy of maps between sphere, Comm. Pure. Appl. Math. 57 (2004), no. 8. 1110-1126.

5. (With Tian-Tsong Ng, Shih-Fu Chang, Jessie Hsu, Lexing Xie) Physics-Motivated Features for Distinguishing Photographic Images and Computer Graphics. In ACM (Association for Computing Machinery) Multimedia, Singapore, November 2005.

6. (With Tian-Tsong Ng, Shih-Fu Chang) Camera Response Function Estimation from a Single-channel Image Using Differential Invariants, ADVENT Technical Report 216-2006-2 Columbia University, March 2006

7. (With Tian-Tsong Ng, Shih-Fu Chang) Using Geometry Invariants for Camera Response Function Estimation, In IEEE Computer Society Conference on Computer Vision and Pattern Recognition, June 2007.

8. (With Tian-Tsong Ng, Shih-Fu Chang) Lessons Learned from Online Classification of Photo-Realistic Computer Graphics and Photographs, In IEEE Workshop on Signal Processing Applications for Public Security and Forensics (SAFE), April 2007.

9. (With J. Loftin) Ancient Solutions of the Affine Normal Flow, J. Differential Geom. 78 (2008), no. 1, 113–162.

10. (With J. Loftin) Limits of Solutions to a Parabolic Monge-Ampere Equation, Recent Advances in Geometric Analysis ALM11, Higher Education Press and International Press, 151-172.

11. (with Tian-Tsong Ng) Camera Response Function Signature for Digital Forensics - Part I: Theory and Data Selection, IEEE Workshop on Information Forensics and Security (WIFS), Dec. 2009.

12. (With Dominic Joyce, Yng-Ing Lee) Self-similar solutions and translating solitons for Lagrangian mean curvature flow, J. Diff. Geom. 84 (2010), 127-161.

13. (with Spiro Karigiannis and Benjamin McKay)) Soliton solutions for the Laplacian co-flow of some G2-structures with symmetry. Differential Geom. Appl. 30 (2012), no. 4, 318-333

14. (with Yng-Ing Lee) Stability of the Minimal Surface System and Convexity of Area Functional, accepted, Transactions of the American Mathematical Society.

Preprints

1. (with Mu-Tao Wang) Entire solutions of minimal surface systems with bounded two-Jacobians

2. (with Henry Wente) A Geometric Proof of the Uniqueness Theorem for Solutions to the Liouville Equation

3. (with Knut Smoczyk and Mu-Tao Wang) Curvature Decay Estimates of Graphical Mean Curvature Flow in Higher Codimensions

Grant Support

1. (co-PI) Mobile Multimedia Forensics (MMF) Research - Towards the next level and the next generation, SERC (Science and Engineering Research Council of Singapore) -funded project (May 2007 to Apr 2010).

2. Collaboration Grants (Simons Foundation) for Mathematicians Project Title: Higher codimensinal Mean Curvature Flow and Minimal Submanifolds $35000, Sep 2012-August 2017

Invited Talks

1. Geometry and Analysis Seminar, Columbia University, Feb.2001

2. Workshop on Geometric Evolution Equations, National Center for Theoretic Center, Hsinchu, Taiwan, Jul. 2003

3. Geometry and Analysis Seminar, Columbia University, March 2001

4. AMS sectional meeting, Courant Institute, New York, Apr. 2003.

5. Geometric Analysis Seminar, Princeton University, May 2004

6. Differential Geometry and Analysis Seminar,CUNY Graduate Center , Octber 2004

7. Analysis Seminar, Cornell University, November 2004

8. Colloquium, University of Oklahoma, Feb. 2005

9. Colloquium, University of Toledo, March 2005

10. Geometric Analysis Conference , CUNY Graduate Center, March 2005

11. Geometric and Analysis Seminar, University of Toledo, September 2005

12. Student Research Seminar, University of Toledo, October 2005

13. Geometry Seminar, University of Toledo, November 2005

14. Natural Images Workshop at IMA,University of Minnesota, March 2006

15. Symplectic Topology and Differential Geometry Seminar, University of Minnesota, March 2006

16. Geometry Seminar, University of Michigan, March 2006

17. Geometry Analysis Seminar, Michigan State University, April 2006

18. Geometry Seminar, National Taiwan University, Taiwan Jan - June 2007

19. Colloquium, National Chung Hsing University, Taiwan March 2007

20. Colloquium, National Chiao-Tung University, Taiwan April 2007

21. Colloquium, National Central University, Taiwan December 2007

22. Invited speaker, the Fourth International Congress of Chinese Mathematicians ICCM-2007 at Zhejiang University, China, December 2007

23. Geometric analysis seminar, Ohio State University, October 2008

24. Geometry and Topology Seminars, University of Waterloo, Canada, May 2009

25. Conference Complex and Differential Geometry , Leibniz Universität Hannover, Germany, Sep. 2009

26. Differential Geometry Seminar, Lehigh University, Oct. 2009

27. Geometric Analysis Seminar and Karcher Special Lecture , University of Oklahoma, May 2010

28. Special Session on Elliptic and Parabolic Problems in Geometry, 2010 Spring Eastern Sectional Meeting, New Jersey Institute of Technology, Newark, NJ, May 2010

29. 2010 NCTS/TPE-TIMS Mini-Course and Workshop on Geometric and Complex Analysis, National Taiwan University, July 2010

30. Geometry Seminar, National Chengkung University, Taiwan, July 2010

31. Workshop on Extrinsic Geometric Flows, Universidad de Valencia, Spain, September 2010

32. Special Session on Geometric Analysis and Flows, 2010 Fall Eastern Sectional Meeting, Syracuse, NY, October 2010

33. Colloquium, Leibniz Universitty Hannover, Germany, June 2011

34. 2011 NCTS/TPE Summer School on Geometry, National Taiwan University, Taiwan, June 2011

35. What is.. Seminar, University of Michigan, March 13 2012

36. Southeast Geometry Conference 2012, College of Charleston, SC, March 17-18 2012

37. Invited participants at a 5 days workshop "Manifolds with Special Holonomy and their Calibrated Submanifolds and Connections", Banff International Research Station, Apr 29-May 4,2012

38. Oberseminar Differentialgeometrie, Leibniz University Hannover, Germany, December 2012

39. Differential Geometry Seminar, UCSD, Feb 21, 2013

40. Special Session on Complex Geometry and Partial Differential Equations, Fall Central Sectional Meeting, University of Akron, Akron, OH October 20-21, 2012

41. Special Session on Geometric Elliptic and Parabolic Partial Differential Equations, Spring Central Sectional Meeting, Iowa State University, Ames, IA, April 26-28, 2013

42. Geometry Analysis Seminar, Columbia University, April, 2013

43. Five days' workshop "Differentialgeometrie im Groen", Oberwolfach, June 30- July 6,2013

44. Special Session on Parabolic Evolution Equations of Geometric Type, Fall Eastern Sectional Meeting, Temple University, Philadelphia, PA, October 12-13, 2013

Teaching experience

1. Numerical Methods and Linear Algebra (Math 2890), Spring 2008, 2009, Fall 2010, Spring 2011, University of Toledo

2. Applied Linear Algebra, Spring 2008, University of Toledo

3. Partial Differential Equations, Fall 2008, Spring 2008, University of Toledo

4. Functional Analysis, Fall 2011, Spring 2012, University of Toledo

5. Differential Geometry I, Fall 2006, University of Toledo

6. Topology, Spring 2006, Fall 2009, Spring 2010, Fall 2013, Spring 2014, University of Toledo

7. Calculus I, Fall 2010, University of Toledo

8. Calculus III, Spring 2006, University of Toledo

9. Modern Geometry for Math Educator, Fall 2011, Spring 2012, University of Toledo

10. Methods Of Mathematical Physics, Fall 2010, Spring 2011, Spring 2014

11. Elementary Differential Equations, Fall 2005, Fall 2006, University of Toledo

12. Ordinary Differential Equations and Partial Differential Equations , 2008, Fall 2011, Spring 2012, University of Toledo

13. Partial Differential Equation, Spring 2005, Columbia University.

14. Analysis and Optimization, Spring 2004, Columbia University.

15. Ordinary differential equations, Fall 2003, Columbia University

16. Calculus: differential and integral calculus for freshman , Fall 2001-Spring 2005, Columbia University.

17. Calculus: differential and integral calculus for freshman , 1993-1998, Brandeis University.

18. Calculus: differential and integral calculus for freshman , 1991-1992, National Chao-Tung University, Taiwan.

Professional Service

1. Referee, Journal of Differential Geometry, Proceeding of the AMS, Transactions of the American Mathematical Society,Journal of Symplectic Geometry, Pure and Applied Mathematics Quarterly, Mathematical Research Letter, and Journal of Computer Science and Technology.

2. Editor (with Yng-Ing Lee and Chang-Shou Lin) for the Proceeding of the 2007 Geometric Analysis Conference

3. Organizer, New Perspectives in Geometric Analysis Conference, May 9-11 2006, University of Toledo.

4. Organizer, 2007 International Conference on Geometric Analysis, June 14-18 2007, National Taiwan University, Taiwan.

5. Organizer, The Ninth Pacific Rim Geometry Conference, Dec 10–14, 2008, , National Taiwan University, Taiwan.

6. Organizer (with Mihai Bailesteanu), Special Session on Geometric Evolution Equations, Fall Eastern Sectional Meeting Rochester Institute of Technology, Rochester, NY September 22-23, 2012

7. Organizer, 2010 NCTS/TPE-TIMS Mini-Course and Workshop on Geometric and Complex Analysis, National Taiwan University, Taiwan.

8. Undergraduate Adviser, University of Toledo, Jan. 2010-Present

9. NSM college diversity committee Fall 2011-Present

10. Department Committee (University of Toledo)

   (a) Department Personnel Committee (Fall 2011-Present): Work on the merit evaluations, annual renewals and 5-year professional assessment of department's personnel.

   (b) Math Major Committee (2009, 2010, 2011, 2012, 2013): Work on awarding the math scholarship and various issues related to math major

   (c) Department strategic planning committee (2012)

   (d) Ad Hoc committee on department's constitution (2012): Work on the modification of departmental constitution

   (e) Undergraduate Curriculum Committee (2005, 2010) : Work on revising the syllabus for Calculus and redesigning math 3190

   (f) Graduate Student Affairs Committee (2005, 2006)

   (g) Research and Scholarly Activities Committee (2008, 2009, 2011, Spring 2008)

   (h) Faculty Search Committee (2010)

   (i) Search committee for visiting faculty (Summer 2008)

   (j) Faculty Senator (Spring 2013, substitute for Paul Hewitt in the spring semester)