

## Lan-Hsuan Huang

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- RESEARCH      Geometry, Analysis, Relativity, and Partial Differential Equations
- EMPLOYMENT    **Institute for Advanced Study**  
Member (with the title of von Neumann fellow)      2018-2019
- University of Connecticut**  
Associate Professor      2016-present  
Assistant Professor      2012-2016
- Columbia University**  
Ritt Assistant Professor      2009-2012
- EDUCATION     Ph.D. Mathematics, Stanford University      2009  
Advisor: Professor Richard Schoen
- B.S. Mathematics, National Taiwan University      2004
- GRANTS  
& HONORS      • von Neumann Fellow, Institute for Advanced Study      2018-2019  
                  • Simons Fellow in Mathematics, Simons Foundation      2018-2019  
                  • NSF CAREER Award (PI, \$400,648)      2015-2020  
                  • NSF Grant DMS-1308837 (PI, \$282,249, co-PI Damin Wu)      2013-2016  
                  • MSRI Research Member      2013  
                  • NSF Grant DMS-1005560 and DMS-1301645 (PI, \$125,645)      2010-2013  
                  • US Junior Oberwolfach Fellow (travel support)      2012  
                  • AWM-NSF Travel Grant      2009  
                  • Mary V. Sunseri Graduate Fellowship at Stanford      Summer 2007
- VISITING  
POSITIONS      • Erwin Schrödinger International Institute      July 2017  
                  • National Taiwan University      Summer 2016  
                  • MSRI Research Member      Fall 2013  
                  • Max-Planck Institute for Gravitational Physics, Germany      Fall 2010  
                  • Institut Mittag-Leffler, Sweden      Fall 2008

JOURNAL  
PUBLICATIONS

- *Existence of harmonic maps into CAT(1) spaces* (with C. Breiner, A. Fraser, C. Mese, P. Sargent, Y. Zhang), arXiv:1701.02350 [math.DG], accepted by **Communications in Analysis and Geometry** special issue in honor of Prof. Uhlenbeck's 75th birthday
- *Regularity of harmonic maps from Polyhedra to CAT(1) Spaces* (with C. Breiner, A. Fraser, C. Mese, P. Sargent, Y. Zhang), **Calculus Variations and Partial Differential Equations** 57 (2018), no. 1
- *Intrinsic flat stability of the positive mass theorem for graphical hypersurfaces of Euclidean space* (with D. Lee and C. Sormani), **Journal für die reine und angewandte Mathematik (Crelle's Journal)** 727 (2017) 269-299
- *Geometric inequalities and rigidity theorems on equatorial spheres* (with D. Wu), **Communications in Analysis and Geometry** 25 (2017), no. 1, 185-206
- *Static potentials and area minimizing hypersurfaces* (with D. Martin and P. Miao), **Proceedings of the American Mathematical Society** 146 (2018), no. 6, 2647-2661.
- *Spacetime positive mass theorem in dimensions less than eight* (with M. Eichmair, D. Lee, and R. Schoen), **Journal of European Mathematical Society**, 18 (2016), no. 1, 83–121.
- *Stability of the positive mass theorem for graphical hypersurfaces of Euclidean space* (with D. Lee), **Communications in Mathematical Physics** 337 (2015), no. 1, 151–169.
- *On the validity of the definition of angular momentum in general relativity* (with P.N. Chen, M.-T. Wang, and S.-T. Yau), **Annales Henri Poincaré**, 17 (2016), no. 2, 253–270.
- *The equality case of the Penrose inequality for asymptotically flat graphs* (with D. Wu), **Transactions of the American Mathematical Society** 367 (2015), 31-47.
- *Hypersurfaces with nonnegative scalar curvature* (with D. Wu), **Journal of Differential Geometry** 95 (2013) 249-278.  
2017 ICCM BEST PAPER AWARD
- *Specifying angular momentum and center of mass for vacuum initial data sets* (with R. Schoen and M. T. Wang), **Communications in Mathematical Physics** 306 (2011), no. 3, 785-803.
- *Solutions of special asymptotics to the Einstein constraint equations*, **Classical and Quantum Gravity** 27 (2010), no. 24, 245002 (10pp).
- *Rigidity theorems on hemispheres in non-positive space forms* (with D. Wu), **Communications in Analysis and Geometry** 18 (2010), no. 2, 339-363.
- *Foliations by stable spheres with constant mean curvature for isolated systems with general asymptotics*, **Communications in Mathematical Physics** 300 (2010), no. 2, 331-373.

- *On the center of mass of isolated systems with general asymptotics*, **Classical and Quantum Gravity** 26 (2009) 015012 (25pp).

- PROCEEDINGS
- *On the center of mass and constant mean curvature surfaces of an initial data set*, Lecture Notes, to be published by the **Cambridge University Press** as a chapter
  - *On the center of mass in general relativity*. **Fifth International Congress of Chinese Mathematicians**. Part 1, 2, AMS/IP Stud. Adv. Math., 51, pt. 1, vol. 2, Amer. Math. Soc., Providence, RI, 2012, pp. 575-591. (Peer Reviewed)

- SUBMITTED & PREPRINTS
- *Equality in the spacetime positive mass theorem* (with D. Lee), arXiv:1706.03732 [math.DG], submitted.
  - *Localized deformation for initial data sets with the dominant energy condition* (with J. Corvino), arXiv:1606.03078 [math.DG], submitted.

- PHD STUDENTS
- Daniel Martin (2018 PhD, current Visiting Assistant Professor at Trinity College-Hartford)
  - Hyun Chul Jang (PhD expected 2020)

- POST-DOCTORS
- Armando Cabrera (2016-2017, current post-doctor at University Tübingen)
  - Alan Parry (2013-2016, current tenure-track assistant professor at Utah Valley University)

- PROFESSIONAL SERVICES
- Co-organizer of the following events
 

The AMS Session on Convergence of Manifolds at UConn	April 2019
UConn Summer Graduate School in Geometric Analysis	July 2018
UConn Geometry Day	2016, 2017
The AMS Session on General Relativity, Stony Brook	March 2016
UConn Semester in Differential Geometry	2012-2013
General Relativity Seminar at Columbia	2009-2012
Columbia-Stony Brook Joint General Relativity Seminar	2010-2011
  - NSF Panelist 2014, 2016, 2018
  - Referee for the following journals:
    - American Journal of Mathematics
    - Annales Henri Poincaré
    - Bulletin of the Brazilian Mathematical Society
    - Calculus of Variations and Partial Differential Equations
    - Classical and Quantum Gravity
    - Communications in Analysis and Geometry
    - Communications in Contemporary Mathematics
    - Communications in Mathematical Physics
    - Crelle's Journal
    - General Relativity and Gravitation

Journal of the AMS  
 Journal of Differential Geometry  
 Journal of Functional Analysis  
 Journal of Mathematical Physics  
 Journal of Mathematical Analysis and Applications  
 Pacific Journal of Mathematics  
 Transactions of the AMS

- UNIVERSITY AND DEPARTMENTAL SERVICES
- Advisory Committee
  - Geometry/Topology Course Coordinator
  - Hiring Committee
  - Graduate Committee
  - Graduate Admission Committee
  - Neumann Dissertation Award subcommittee (chair)
  - Library Liaison
  - Oral Exam Committee: Malva Asaad, Lisa Naples, Joshua Flynn
  - Defense Committee: Malva Asaad
  - Senior thesis advisor: Filip Dul
  - Other services
    - Panelist “What is math research?” in Major Exploration Week 2018
    - Panelist “Grants and academic jobs” for post-docs 2017
    - Panelist “Jobs in Academia/Teaching” for graduate students 2017
    - ECE Math Workshop talk (to high school teachers) 2017
    - Representations in SIGMA Seminar and Math Club

INVITED TALKS

**Conference and Colloquium**

1. Women in Geometry Workshop, CMO Mexico, July 2019 (expected)
2. Huisken’s 60th birthday conference, ETH, June, 2019 (expected)
3. Conference on Geometric Functionals, IAS, March 4-8, 2019 (expected)
4. ICCM annual meeting, Taipei, December 2018 (expected)
5. Conference in honor of Galloway, Miami, December 2018 (expected)
6. Alaska Relativity Workshop, May 2018
7. Mass in General Relativity, Simons Center, March 26-30, 2018
8. Colloquium, University of Tennessee, January 2018
9. Conference on Geometric Analysis and General Relativity, ESI, Vienna, July 2017
10. Workshop on Aspects of General Relativity, Harvard, May 2016
11. Geometric Analysis and General Relativity, Banff, July 17-July 22, 2016
12. Women in Geometry Workshop, Banff, November 1-5, 2015

13. Workshop at Imperial College London, July 15-17, 2015
14. General Relativity and Gravitation: A Centennial Perspective, Penn State, June 6-12, 2015
15. University of Oregon AWM Distinguished Speaker Series, May 7-8, 2015
16. Geometric Analysis and Relativity (Plenary Speaker), The University of Science and Technology of China, Hefei, July 6-10, 2014
17. 2013 Taiwan International Conference on Geometry (Plenary Speaker), Taipei, December 16-20, 2013
18. Workshop on Initial Data and Evolution Problems in General Relativity, MSRI, November 18-22, 2013
19. Introductory Workshop: Mathematical Relativity, MSRI, September 9-13, 2013
20. Connections for Women: Mathematical General Relativity (Plenary Speaker), MSRI, September 3-5, 2013
21. Summer School on Mathematical General Relativity in Cortona, Italy, August 5-9, 2013
22. Pacific Northwest Geometry Seminar, Portland State University, May 11-12, 2013
23. Mini Course in Workshop on Geometric Analysis and Nonlinear PDEs, Rutgers, May 4-5, 2013
24. Third Conference of Tsinghua Sanya International Mathematics Forum, Sanya, China, January 5-8, 2013
25. Mathematical Aspects of General Relativity, Oberwolfach, July 29-August 4, 2012
26. Several Lectures in Summer Graduate Workshop on Mathematical General Relativity at MSRI, July 16-20, 2012
27. Colloquium, Duke University, February 2012
28. Colloquium, University of Wisconsin-Madison, February 2012
29. Colloquium, University of Connecticut, February 2012
30. Colloquium, University of North Carolina at Chapel Hill, January 2012
31. Colloquium, University of Minnesota, January 2012
32. Colloquium, University of Colorado at Boulder, January 2012
33. AWM Anniversary Conference at ICERM, Providence, September 2011
34. Workshop on Differential Geometry, Fudan University, China, June 2011
35. Topology/Geometry Seminar, Capital Normal University, China, June 2011
36. Summer Program in Mathematical Relativity, Beijing China, June 2011
37. Fifth International Conference on Complex Analysis & Dynamical Systems, Akko, Israel, May 2011

38. Workshop on Geometric Analysis, Zhejiang University, China, December 2010
39. Fifth International Congress of Chinese Mathematicians, China, December 2010
40. Mathematical Relativity, ICMS, Edinburgh, UK, September 2010
41. Eighth Joint International Meeting of the AMS and the Sociedad Matemática, Berkeley, CA, June 2010
42. Southeast Geometry Seminar XVI, Georgia Institute of Technology, April 2010
43. Workshop on General Relativity and Geometric Analysis, Monash University, January 2010
44. Sino-France Summer Institute on Geometric Analysis, Beijing University, China, July 2009
45. Workshop in String Theory, General Relativity and Partial Differential Equations, Harvard University, May 2009
46. The Ninth Pacific Rim Geometry Conference, Taiwan, December 2008

### **Seminars**

1. Rutgers, November 2018 (expected)
2. University of Tennessee, January 2018
3. University of Chicago, February 7, 2017
4. National Taiwan University, July 21, 2016
5. Fudan University, China, June 20, 2016
6. Pacific Northwest Geometry Seminar, U. Washington, Oct 17-18, 2015
7. Princeton-Rutgers Joint Geometric PDEs Seminar, October 8, 2014
8. U. of Wisconsin-Madison, PDE and Geometry Seminar, Feb 2012
9. Johns Hopkins University, Special Analysis Seminar, January 2012
10. Ohio State University, Geometry and PDE Seminar, November 2011
11. MIT, Geometric Analysis Seminar, October 2011
12. University of Miami, Geometry and Physics Seminar, October 2011
13. Duke, Geometry and Topology Seminar, September 2011
14. Lafayette-Lehigh, Geometry and Topology Seminar, March 2011
15. Brown University, Geometry and Topology Seminar, March 2011
16. Columbia-Stony Brook joint General Relativity Seminar, Nov 2010
17. Geometric Analysis Seminar, AEI at Golm, Germany, Oct 2010
18. Geometry Seminar, Academia Sinica, Taiwan, May 2010
19. Columbia Undergraduate Mathematics Society, April 2010
20. Johns Hopkins University, Analysis Seminar, February 2010
21. Bronx Community College of CUNY, November 2009

22. Princeton Geometric Analysis Seminar, October 2009
23. CUNY Graduate Center, Differential Geometry Seminar, October 2009
24. Stony Brook, Geometry/Topology Seminar, October 2009
25. Duke University, Geometry/Topology Seminar, September 2009
26. Columbia University, Geometry/Analysis Seminar, September 2009
27. UC Irvine, Geometry Seminar, May 2009
28. MIT, Geometry Seminar, November 2008
29. The Ohio State University, Geometry Seminar, November 2008
30. GR Seminar, Institut Mittag-Leffler, October 2008
31. Geometry Seminar, National Taiwan University, June 2008
32. Geometry Seminar, National Taiwan University, December 2007