

# TIANLING JIN

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## EDUCATION

- 2006 – 2012 Ph.D. in Mathematics, Rutgers University- New Brunswick.  
Advisor: YanYan Li
- 2002 – 2006 B.S. in Mathematics, University of Science and Technology of China.

## APPOINTMENTS

- 2021 – present Associate Professor, Hong Kong University of Science and Technology.
- 2015 – 2021 Assistant Professor, Hong Kong University of Science and Technology.
- 2012 – 2015 L.E. Dickson Instructor, University of Chicago.  
Mentor: Luis Silvestre

## VISITS

- 2015 – 2016 Orr Foundation Caltech-HKUST Visiting Scholar,  
California Institute of Technology, USA
- June – July 2012 Aix-Marseille Université, France.

## AWARDS AND FELLOWSHIPS

- 2024 Hong Kong RGC grant GRF 16303624.
- 2023 Hong Kong Mathematical Society Young Scholars Award.
- 2022 Hong Kong RGC grant GRF 16303822.
- 2021 NSFC Excellent Young Scientist (Hong Kong & Macau).
- 2020 Hong Kong RGC grant GRF 16306320.
- 2019 Hong Kong RGC grant GRF 16302519.
- 2018 Hong Kong RGC grant GRF 16306918.
- 2017 Hong Kong RGC grant GRF 16302217.
- 2016 Hong Kong RGC grant ECS 26300716.
- 2014 NSF grant DMS-1362525.
- 2013 AMS-Simons travel grant.

- 2012 Dean's Award for Excellence in Research, Rutgers University.  
 2011 University and Louis Bevier Dissertation Fellowship, Rutgers University.  
 2010 School of Art and Science Excellence Fellowship, Rutgers University.

## **RESEARCH INTERESTS**

Partial Differential Equations.

## **PREPRINTS**

38. T. Jin and J. Xiong, *Extinction profiles for the Sobolev critical fast diffusion equation in bounded domains. I. One bubble dynamics*, arXiv:2407.06757.  
 37. T. Jin and J. Xiong, *Regularity of solutions to the Dirichlet problem for fast diffusion equations*, arXiv:2201.10091.

## **PUBLISHED PAPERS**

36. R. L. Frank, T. Jin and W. Wang, *On the sharp constants in the regional fractional Sobolev inequalities*, to appear in Partial Differential Equations and Applications arXiv:2403.00357.  
 35. T. Jin, X. Ros-Oton and J. Xiong, *Optimal regularity and fine asymptotics for the porous medium equation in bounded domains*, J. Reine Angew. Math. **809** (2024), 269–300.  
 34. T. Jin and J. Xiong, *Hölder regularity for the linearized porous medium equation in bounded domains*, Anal. Theory Appl. **40** (2024), 111–171.  
 33. T. Jin, J. Xiong and X. Yang, *Stability of the separable solutions for a nonlinear boundary diffusion problem*, J. Math. Pures Appl. (9) **183** (2024), 1–43.  
 32. T. Jin and J. Xiong, *Bubbling and extinction for some fast diffusion equations in bounded domains*, Trans. Amer. Math. Soc. Ser. B **10** (2023), 1287–1332.  
 31. X. Du, T. Jin, J. Xiong and H. Yang, *Blow up limits of the fractional Laplacian and their applications to the fractional Nirenberg problem*, Proc. Amer. Math. Soc. **151** (2023), no. 11, 4693–4701.  
 30. X. Du, T. Jin and H. Yang, *Existence of solutions to a conformally invariant integral equation involving Poisson-type kernels*, J. Geom. Anal. **33** (2023), no. 9, Paper No. 286, 21 pp.  
 29. T. Jin and H. Yang, *Local estimates for conformal  $Q$ -curvature equations*, J. Funct. Anal. **285** (2023), no. 2, Paper No. 109940.  
 28. T. Jin and J. Xiong, *Optimal boundary regularity for fast diffusion equations in bounded domains*, Amer. J. Math. **145** (2023), no. 1, 151–219.

27. T. Jin and J. Xiong, *Singular extinction profiles of solutions to some fast diffusion equations*, J. Funct. Anal. **283** (2022), no. 7, Paper No. 109595, 29 pp.
26. T. Jin, D. Kriventsov and J. Xiong, *On a Rayleigh–Faber–Krahn inequality for the regional fractional Laplacian*, Ann. Appl. Math. **37** (2021), no. 3, 363–393.
25. T. Jin and J. Xiong, *Asymptotic symmetry and local behavior of solutions of higher order conformally invariant equations with isolated singularities*, Ann. Inst. H. Poincaré Anal. Non Linéaire **38** (2021), no. 4, 1167–1216..
24. X. Chen, T. Jin and Y. Ruan, *An existence theorem on the isoperimetric ratio over scalar-flat conformal classes*, J. Differential Equations **269** (2020), no. 5, 4116–4136.
23. C. Imbert, T. Jin and L. Silvestre, *Hölder gradient estimates for a class of singular or degenerate parabolic equations*, Adv. Nonlinear Anal. **8** (2019), no. 1, 845–867.
22. T. Jin and J. Xiong, *On the isoperimetric quotient over scalar-flat conformal classes*, Comm. Partial Differential Equations **43** (2018), no. 12, 1737–1760.
21. H. Dong, T. Jin and H. Zhang, *Dini and Schauder estimates for nonlocal fully nonlinear parabolic equations with drifts*, Anal. PDE **11** (2018), no. 6, 1487–1534.
20. R.L. Frank, T. Jin and J. Xiong, *Minimizers for the fractional Sobolev inequality on domains*, Calc. Var. Partial Differential Equations **57** (2018), no. 2, Paper No. 43, 31 pp.
19. T. Y. Hou, T. Jin and P. Liu, *Potential singularity for a family of models of the axisymmetric incompressible flow*, J. Nonlinear Sci. **28** (2018), no. 6, 2217–2247.
18. C. Imbert, T. Jin and R. Shvydkoy, *Schauder estimates for an integro-differential equation with applications to a nonlocal Burgers equation*, Ann. Fac. Sci. Toulouse Math. (6) **27** (2018), no. 4, 667–677.
17. T. Jin, Y.Y. Li and J. Xiong, *The Nirenberg problem and its generalizations: A unified approach*, Math. Ann. **369** (2017), no. 1-2, 109–151.
16. T. Jin and L. Silvestre, *Hölder gradient estimates for parabolic homogeneous  $p$ -Laplacian equations*, J. Math. Pures Appl. (9) **108** (2017), no. 1, 63–87.
15. T. Jin, O. S. de Queiroz, Y. Sire and J. Xiong, *On local behavior of singular positive solutions to nonlocal elliptic equations*, Calc. Var. Partial Differential Equations **56** (2017), no. 1, Paper No. 9, 25 pp.
14. T. Jin and J. Xiong, *Solutions of some Monge-Ampère equations with isolated and line singularities*, Adv. Math. **289** (2016), 114–141.
13. H. Berestycki, T. Jin and L. Silvestre, *Propagation in a non local reaction diffusion equation with spatial and genetic trait structure*, Nonlinearity **29** (2016), no. 4, 1434–1466.
12. T. Jin and J. Xiong, *Schauder estimates for nonlocal fully nonlinear equations*, Ann. Inst. H. Poincaré Anal. Non Linéaire **33** (2016), no. 5, 1375–1407.

11. T. Jin and J. Xiong, *Schauder estimates for solutions of linear parabolic integro-differential equations*, Discrete Contin. Dyn. Syst. -A. **35** (2015), no 12, 5977–5998.
10. T. Jin and J. Xiong, *A sharp Sobolev trace inequality involving the mean curvature on Riemannian manifolds*, Trans. Amer. Math. Soc. **367** (2015), no. 9, 6751–6770.
9. T. Jin, Y.Y. Li and J. Xiong, *On a fractional Nirenberg problem, part II: existence of solutions*, Int. Math. Res. Not. IMRN 2015, no. 6, 1555–1589.
8. T. Jin, A. Maalaoui, L. Martinazzi and J. Xiong, *Existence and asymptotics for solutions of a non-local  $Q$ -curvature equation in dimension three*, Calc. Var. Partial Differential Equations **52** (2015), no. 3-4, 469–488.
7. L. Caffarelli, T. Jin, Y. Sire and J. Xiong, *Local analysis of solutions of fractional semi-linear elliptic equations with isolated singularities*, Arch. Ration. Mech. Anal. **213** (2014), no. 1, 245–268.
6. T. Jin, Y.Y. Li and J. Xiong, *On a fractional Nirenberg problem, part I: blow up analysis and compactness of solutions*, J. Eur. Math. Soc. **16** (2014), no. 6, 1111–1171.
5. T. Jin and J. Xiong, *A Liouville theorem for solutions of degenerate Monge-Ampère equations*, Comm. Partial Differential Equations **39** (2014), no. 2, 306–320.
4. T. Jin and J. Xiong, *A fractional Yamabe flow and some applications*, J. Reine Angew. Math. **696** (2014), 187–223.
3. T. Jin and J. Xiong, *Sharp constants in weighted trace inequalities on Riemannian manifolds*, Calc. Var. Partial Differential Equations **48** (2013), no. 3-4, 555–585.
2. T. Jin, *Symmetry and nonexistence of positive solutions of elliptic equations and systems with Hardy terms*, Ann. Inst. H. Poincaré Anal. Non Linéaire **28** (2011), no. 6, 965–981.
1. T. Jin, V. Maz'ya and J. Van Schaftingen, *Pathological solutions to elliptic problems in divergence form with continuous coefficients*, C. R. Math. Acad. Sci. Paris **347** (2009), no. 13–14, 773–778.

## **INVITED TALKS**

April 2025	NCTS Workshop on PDEs, Dynamical Systems and Applications, Taipei.
April 2025	HKUST-KAIST-NUS Joint Workshop in Mathematics, Singapore.
February 2025	Workshop on Degenerate and Singular PDEs, Erwin Schrödinger International Institute for Mathematics and Physics, Vienna.
January 2025	Hong Kong-Wuhan Joint Workshop on PDEs, HK PolyU.
January 2025	Symposium on Nonlinear Analysis, Beijing Normal University at Zhuhai.
December 2024	The 14th AIMS Conference, Abu Dhabi.

August 2024	Greater Bay Area Conference on Nonlinear PDEs, Shenzhen.
June 2024	First Chinese-Italian Workshop on Elliptic PDEs and Variational Problems, Huangshan.
October 2023	Workshop on degenerate and singular diffusion, Instituto de Ciencias Matemáticas (ICMAT), Madrid.
August 2023	Differential Geometry Youth Forum, Hunan University.
August 2023	Analysis of fluid dynamics and free boundary problems, ICIAM 2023, Tokyo.
July 2023	Non-linear elliptic PDEs, Instituto de Ciencias Matemáticas (ICMAT), Madrid.
May 2023	KAUST Research Conference on Advances in nonlinear elliptic and parabolic PDEs, Alula, KSA.
April 2023	International Conference on Geometry and Partial Differential Equations, Central South University, Changsha.
January 2023	Geometric PDEs and Applications, Okinawa Institute of Science and Technology Graduate University (OIST).
November 2022	Kylin lecture, SUSTech International Center for Mathematics.
November 2022	Symposium on elliptic equations, South China Research Center for Applied Mathematics and Interdisciplinary Studies.
June 2022	International Conference on PDEs and Geometric Analysis, Shanghai Jiao Tong University.
June 2022	International Workshop on Nonlinear PDEs and Geometric Analysis, Shaanxi Normal University.
June 2022	Conference on nonlinear elliptic PDEs and geometric analysis, Harbin Institute of Technology.
March 2022	MFO-RIMS Tandem Workshop “Nonlocality in Analysis, Probability and Statistics”.
March 2022	PDE seminar at KAIST.
March 2022	SIAM Conference on Analysis of Partial Differential Equations.
December 2021	Nonlinear Analysis Seminar, Rutgers University.
May 2021	International Conference on Geometric Analysis and PDEs Sichuan University.
August 2020	Seminar, Nanjing University.
December 2019	Seminar, Xiamen University.
December 2019	Differential Geometry Youth Forum, Guangxi Center for Mathematical Research, Guangxi University.
November 2019	AMS Sectional Meeting, University of California, Riverside.

November 2019	Nonlinear PDEs Seminar, University of California, Irvine.
November 2019	CAMP/Nonlinear PDEs Seminar, University of Chicago.
July 2019	RIMS conference on viscosity solutions, Kyoto, Japan.
July 2019	International Conference on PDEs and applications, Beijing, China.
May 2019	Conference for Advanced PDE seminar, Hangzhou, China.
May 2019	Conference on Geometric Analysis and Nonlinear PDEs, Harbin, China.
March 2019	Workshop of Geometric Analysis of CQU & GXNU, Chongqing, China.
December 2018	SUSTech PDE Workshop, Shenzhen, China.
December 2018	Conference on nonlinear elliptic PDEs, USTC, Hefei, China.
November 2018	KAIST-HKUST-NUS Joint Workshop in Mathematics, South Korea.
June 2018	International workshop on nonlinear PDEs, Xi'an, China.
July 2018	The 12th AIMS Conference, Taipei.
October 2017	Program on Analysis of PDE, Shanghai Center for Mathematical Sciences.
September 2017	Clay Research Conference and Workshops, University of Oxford.
September 2017	AMS Sectional Meeting at University of Central Florida, Orlando, FL.
July 2017	Seminar, National University of Singapore.
June 2017	The 6th BNU-PDE workshop, Beijing Normal University.
June 2017	Seminar, University of Science and Technology of China.
May 2017	Hong Kong Mathematical Society Annual General Meeting.
March 2017	Seminar, City University of Hong Kong.
January 2017	BNU PDE workshop, Beijing Normal University.
December 2016	IMS workshop on PDEs, IMS, Chinese University of Hong Kong.
December 2016	Seminar, Nanjing University.
November 2016	Seminar, Chinese University of Hong Kong.
November 2016	Mini-Workshop on Geometry & PDE, Xiamen University.
January 2016	PDE Geometric Analysis Seminar, University of Wisconsin, Madison.
January 2016	Geometry & Analysis Seminar, University of California, Santa Cruz.
December 2015	SIAM Conference on Analysis of Partial Differential Equations, Scottsdale, AZ.
November 2015	Analysis Seminar, University of California, Irvine.
November 2015	Differential Geometry and Geometric Analysis, Princeton University.
November 2015	Nonlinear Analysis Seminar, Rutgers University.

November 2015	AMS Sectional Meeting at Rutgers University, New Brunswick, NJ.
October 2015	AMS Sectional Meeting at California State University, Fullerton, CA.
October 2015	Mathematical Physics Seminar, Caltech.
March 2015	Rutgers-CUNY symposium on Geometric Analysis.
March 2015	AMS Sectional Meeting at Michigan State University, East Lansing, MI.
March 2015	Analysis and Convexity Seminar, University of Oklahoma.
February 2015	Colloquium, Tulane University.
January 2015	Colloquium, Michigan State University.
January 2015	Colloquium, Iowa State University.
January 2015	Colloquium, University of Kentucky.
January 2015	Colloquium, University of Alabama at Birmingham.
January 2015	Joint Mathematics Meetings (JMM), San Antonio, TX.
December 2014	Seminar on Pure Math, HKUST.
December 2014	Colloquium, Rice University.
December 2014	PDE Seminar, University of Minnesota.
July 2014	The 4th BNU-PDE workshop, Beijing Normal University.
March 2014	Analysis Seminar, Northwestern University.
February 2014	Colloquium, San Francisco State University.
February 2014	Analysis and PDEs seminar, Johns Hopkins University.
February 2014	Applied Mathematics Seminar, University of Illinois at Chicago.
February 2014	Analysis Seminar, Cornell University.
January 2014	Colloquium, Vanderbilt University.
December 2013	SIAM Conference on Analysis of Partial Differential Equations, Lake Buena Vista, FL.
November 2013	Colloquium, University of Wisconsin, Madison.
May 2013	Mini-courses and Conference on Nonlinear Elliptic Equations, Rutgers University and NYU.
March 2013	PDEs Seminar, Brown University.
October 2012	CAMP/Nonlinear PDEs Seminar, University of Chicago.
April 2012	Differential Geometry and Geometric Analysis, Princeton University.
April 2012	Geometry & Analysis Seminar, Columbia University.
January 2012	Analysis Seminar, Courant Institute at NYU.

November 2011    Nonlinear Analysis and PDEs Seminar, Graduate Center at CUNY.  
 October 2011    Nonlinear Analysis Seminar, Rutgers University.

### **TEACHING EXPERIENCE AT HKUST**

#### **Instructor**

- Fall 2024    MATH 1013 Calculus I.
- Fall 2024    MATH 4063 Functional Analysis.
- Spring 2024    MATH 5281 Partial Differential Equations.
- Fall 2023    MATH 4063 Functional Analysis.
- Spring 2023    MATH 5281 Partial Differential Equations.
- Fall 2022    MATH 4063 Functional Analysis.
- Fall 2021    MATH 1013B Calculus I (2 session).
- Spring 2021    MATH 4052 Partial Differential Equations.
- Spring 2021    MATH 1014 Calculus II.
- Fall 2020    MATH 2033 Mathematical Analysis.
- Spring 2020    MATH 5281 Partial Differential Equations.
- Spring 2020    MATH 4052 Partial Differential Equations.
- Fall 2019    MATH 2033 Mathematical Analysis.
- Spring 2019    MATH 5281 Partial Differential Equations.
- Fall 2018    MATH 5011 Advanced Real Analysis.
- Fall 2018    MATH 2033 Mathematical Analysis.
- Spring 2018    MATH 1014 Calculus II (2 sessions).
- Fall 2017    MATH 1013B Calculus I.
- Spring 2017    MATH 6050F Partial Differential Equations (Part II).
- Fall 2016    MATH 6050E Partial Differential Equations (Part I).

### **TEACHING EXPERIENCE AT THE UNIVERSITY OF CHICAGO**

#### **Instructor**

- Spring 2015    Math 20300 Analysis in  $\mathbb{R}^n$ -I.
- Autumn 2014    Math 20300 Analysis in  $\mathbb{R}^n$ -I.
- Spring 2014    Math 20300 Analysis in  $\mathbb{R}^n$ -I.
- Autumn 2013    Math 27000 Basic Complex Variables.
- Winter 2012    Math 19900 Introduction to Analysis and Linear Algebra.
- Autumn 2012    Math 19900 Introduction to Analysis and Linear Algebra.

## **TEACHING EXPERIENCE AT RUTGERS UNIVERSITY**

### Instructor

- Summer 2008 Math 250 Introductory Linear Algebra.

### Teaching Assistant

- Spring 2010 Math 152 Calculus II.
- Fall 2009 Math 135 Calculus I.
- Spring 2009 Math 152 Calculus II.
- Fall 2008 Math 151 Calculus I.
- Spring 2008 Math 135 Calculus I.
- Fall 2007 Math 135 Calculus I.

## **SUPERVISION STUDENTS**

- Mengyu HUO, PhD, 2023 – present.
- Zhen ZHENG, PhD, 2022 – present.
- Yahong YANG, PhD, 2019 – 2023. Co-advise with Yang Xiang. First job: Postdoc at PSU
- Xusheng DU, PhD, 2018 – 2022. First job: Liyun Postdoc at Beijing Normal University

## **MENTORING POSTDOCS**

- Xushan TU, 2022 – present.
- Xuzhou YANG, 2022 – present.
- Yufeng LU, 2021 – present.
- Hui YANG, 2019 – 2022. First job: AP at Shanghai Jiao Tong University.
- Kai YANG, 2017 – 2018, joint with Dong Li. First job: AP at Southeast University, Nanjing.

## **UNIVERSITY SERVICES**

- PG Programs Coordinator, Department of Mathematics, HKUST, 2021 – present.
- Nonlocal UG admission committee, School of Science, HKUST, 2019 – present.
- UG recruitment committee, Department of Mathematics, HKUST, 2019 – present.
- Senate Member, HKUST, 2023 – 2025.

- Postgraduate committee, Department of Mathematics, HKUST, 2017 – 2021.
- Colloquium committee, Department of Mathematics, HKUST, 2018 – 2023.
- PhD thesis committee for Luchan Zhang (2017), Xiaoxue Qin (2020).
- MPhil thesis committee for Ka Wing Chow (2017); Cheuk Wai Yau (2017); Yan Long CHAN (2018).
- JUPAS SSCI Interview (2017, 2018).
- HKUST Information Day (2016, 2018, 2022, 2024).

### **SYNERGISTIC ACTIVITIES**

- Co-organizer of the conference: Frontiers of Theory and Applications of Nonlinear Partial Differential equations, Jockey Club Institute of Advanced Study, HKUST, 2017.
- Organizer of the CAMP/Nonlinear PDEs Seminar at the University of Chicago.
- Refereed articles for: Advances in Mathematics; Analysis & PDE; Annali della Scuola Normale Superiore di Pisa; Annali di Matematica Pura ed Applicata; Bulletin of the London Mathematical Society; Calculus of Variations and Partial Differential Equations; Communications in Contemporary Mathematics; Communications in Mathematical Physics; Communications in Partial Differential Equations; Communications on Pure and Applied Analysis (CPAA); Differential and Integral Equations; Discrete and Continuous Dynamical Systems - Series A; Duke Mathematical Journal; Forum Mathematicum; Funkcialaj Ekvacioj (Functional Equations); Interfaces and Free boundaries; International Journal of Mathematics; International Mathematics Research Notices; Journal de l'École polytechnique–Mathématiques; Journal of Differential Equations; Journal of Differential Geometry; Journal of Evolution Equations; Journal of Functional Analysis; Journal of Geometric Analysis; Journal of Mathematical Study; Journal of the London Mathematical Society; Mathematics in Engineering; Nonlinear Analysis Series A: Theory, Methods & Applications; Nonlinear Differential Equations and Applications; Nonlinearity; Pacific Journal of Math; Potential Analysis; Proceedings of the American Mathematical Society; Proceedings of the Edinburgh Mathematical Society; Science China Mathematics; Transactions of the American Mathematical Society.

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