Jinxin Xue

Address: Jingzhai 310, Tsinghua University, 100084, Beijing, China
Email: jxue@tsinghua.edu.cn
Homepage: sites.google.com/view/jxue/home

Fields of Interest

- Dynamical Systems (Hamiltonian, Hyperbolic, Symplectic, etc)
- Mean Curvature Flows
- General Relativity

Experience

Vocational

2020 **Professor**, *Department of Mathematics & Yau Mathematical Sciences Center, Tsinghua University*.

2017–2020 **Associate Professor**, *Department of Mathematics & Yau Mathematical Sciences Center, Tsinghua University*.

2013–2017 **L.E. Dickson Instructor**, *the University of Chicago*.
Mentor: Amie Wilkinson

Miscellaneous

2018 fall **Member**, *MSRI*.

2013 fall **Member**, *MSRI*.

Education

2008–2013 **Ph.D.**, *University of Maryland*, College Park.
Advisor: Dmitry Dolgopyat

2012–Spring **Member**, *IAS*, Princeton.

2010–2011 **Visiting Graduate Student**, *Penn State University*, State College.

2004–2008 **B.S.**, *Nanjing University*, Nanjing.

Honors and Grants

2019 **Beijing Natural Sciences Foundation**, *Z180003*.

2017 **National Natural Science Foundation of China**, *Significent project*, 11790273.

2015 **NSF**, *DMS-1500897*.

Publications

- J. Xue, KAM and geodesic dynamics of blackholes, *Annals of Applied Math*, Vol. 37, No. 3, pp. 291-336, Aug 2021,
- S. Hurtado, J. Xue, Global rigidity of some Abelian-by-Cyclic actions on torus, to appear in *Geometry and Topology*,
- W. Gong, J. Xue, Floer homology in the cotangent bundle of a closed Finsler manifold and noncontractible periodic orbits, *Nonlinearity*, Vol 33, No. 12, Oct 2020. .
- J. Xue, Noncollision singularities in a planar four-body problem, *Acta Mathematica*. 224 (2020), 253–388. (**solution of the Painlevé conjecture**).
- A. Wilkinson, J. Xue, Rigidity of some abelian-by-cyclic solvable group actions on $\mathbb{T}^N$, *Communications in Mathematical Physics* 376, 1223–1259 (2020).
- M.-C. Arnaud, J. Xue, A C^1 Arnold-Liouville theorem, arXiv:1612.08755, to appear in *Astérisque*
- C.-Q. Cheng, J. Xue, Variational approach to Arnold diffusion, *Science China–Mathematics* 62 (11), 2103-2130
- C.-Q. Cheng, J. Xue, Order property and modulus of continuity of weak KAM solutions, *Calculus of variation and PDEs*, 57.2 (2018): 65.
- A. Blumenthal, J. Xue, L.-S. Young, Lyapunov exponents for random perturbations of some area-preserving maps including the standard map. *Annals of Mathematics*, Volume 185, no. 1, pages 285-310, 2017.
- A. Blumenthal, J. Xue, L.-S. Young, Lyapunov exponents and correlation decay for random perturbations of some prototypical 2D maps, *Communications in Mathematical Physics*, 359.1 (2018): 347-373.
- J. Xue, D. Dolgopyat, Noncollision singularities in a planar two-center-two-body problem, *Communications in Mathematical Physics*, August 2016, Volume 345, Issue 3, pp 797-879.
- J. Xue, Existence of noncontractible periodic orbits of Hamiltonian system separating two Lagrangian tori on $T^*\mathbb{T}^n$ with application to non convex Hamiltonian systems, *Journal of Symplectic Geometry*, Volume 15, no. 3, pages 905-936, 2017.
- J. Xue, Continuous averaging proof of the Nekhoroshev theorem, *DCDS-A*, Vol 35, No.8, 2015.
- J. Xue, Arnold diffusion in a restricted planar four-body problem, *Nonlinearity*, 27 (2014) 2887-2908.
- J. Xue, Nekhoroshev estimates for commuting nearly integrable symplectomorphisms, (invited article) *Regular and Chaotic Dynamics*, 22 (2017), no. 3, 248-265.

Preprints

- J. Gerver, G. Huang, J. Xue, More noncollision singularities, preprint
- Ao Sun, J. Xue, Initial Perturbation of the Mean Curvature Flow for conical limit shrinker, Arxiv: 2107.05066
- Ao Sun, J. Xue, Initial Perturbation of the Mean Curvature Flow for closed limit shrinker, Arxiv: 2104.03101
- J. Xue, Arnold diffusion and geodesic dynamics of blackholes, arXiv: 2020.03047

- C.-Q. Cheng, J. Xue, Arnold diffusion in nearly integrable Hamiltonian systems of arbitrary degrees of freedom, arXiv:1503.04153. (**solution of the Arnold diffusion conjecture in the smooth category**).
- A. Blumenthal, J. Xue, Y. Yang, Lyapunov exponents for random perturbations of coupled standard maps, Arxiv: 2004.10626.

Conferences and Seminars

2021 Jul.	Geometry Seminar at ShanDong U	
2021 May.	Workshop on dynamics, Sustech	
2021 May.	Conference in memory of S. S. Chern, Nankai U	
2021 May.	Workshop at Southeast U	
2021 May.	Colloquium at PKU	
2021 Mar.	Analysis Seminar at NUS, Singapore	
2020 Jan.	Workshop on Hamiltonian dynamics, Nanjing U	
2019 Dec.	Significant project annual meeting, Shandong U	
2019 Oct.	Low dimensional topology and dynamics, Fudan U	
2019 Sep.	The second northeast dynamics conference, Tsinghua	
2019 Jun.	The eighth International Congress of Chinese Mathematicians, Amherst	*Plenary talk*
2019 May.	Dynamics beyond uniform hyperbolicity, Marseille	
2019 Apr.	Penn State-Maryland joint dynamics conference	
2019 Feb.	Geometry Seminar at MIT, Invited by T. Colding	
2019 Feb.	Seminar talk at UMass, Amherst	
2019 Jan.	Colloquium at Chinese Academy of Sciences	
2019 Jan.	Conference on dynamical systems at Chern institute at Nankai University	
2018 Dec.	The second annual meeting of ICCM at National Taiwan University	
2018 Dec.	Seminar talk at Shanghai Jiaotong University	
2018 Dec.	Conference on dynamical systems at Soochow University	
2018 Jul.	AIMS 2018, Taipei	
2018 Jul.	International conference on infinite dimensional dynamics, Sichuan University	
2018 Jun.	Conference on dynamical systems, Sustech, Shenzhen	
2018 Oct.	Joint meeting of AMS-CMS, Fudan, Shanghai	
2018 Mar.	Seminar talk and Dalian University of Science and Technology	
2017 Dec.	Seminar talk at Beijing Normal University	
2017 Dec.	First annual meeting of ICCM, Guangzhou	
2017 Nov.	Workshop on dynamical systems, Nanjing Universit	
2017 Nov.	Workshop on dynamical systems, Peking University	
2017 Jun.	Dynamics beyond uniform hyperbolicity, BYU, Utah	
2017 Feb.	Special mathematics seminar at Rice	
2017 Feb.	Special mathematics seminar at UMass-Boston	

2017 Jan. Seminar talk at UIC (opening speech)
2016 Dec. Special mathematics seminar at MIT
2016 Oct. Seminar talk at UC-Irvine
2016 Jul. AIMS Conference on dynamical systems and differential equations, Orlando
2016 Mar. Global forum of young scientists at Sustech, Shenzhen
2016 Jan. Seminar talk at Univerisity of Alberta
2015 Sep. Colloquium at Georgia Tech
2015 July. Conference EquaDiff 2015, Lyon, France
2015 May. Conference dedicated to the memory of Chernov, U of Alabama
2015 Mar. Joint seminar of symplectic geometry and dynamics, U of Toronto
2015 Jan. Workshop on Hamiltonian dynamical systems, Fudan, Shanghai
2014 Sep. L.-S. Young's seminar CIMS, NYU, (opening speech)
2014 Jul. Dynamics seminar in Nanjing University
2014 Apr. Dynamics seminar in the University of Chicago
2014 Mar. Dynamics seminar in Northwestern University
2013 Oct. Villani's seminar on optimal transport, MSRI
2013 Sep. C. L. Evan's seminar at MSRI
2013 Jun. Conference on dynamics beyond uniform hyperbolicity, Bedlewo, Poland
2013 Mar. First international conference on dynamics of differential equations, Gatech
2013 Feb. L.-S. Young's seminar, CIMS, NYU
2013 Jan. New Perspectives on the N-body Problem, BIRS, Alberta, Canada
2012 Oct. Fall workshop on Dynamical systems, PSU
2012 Sep. Dynamics seminar in UMD, (opening speech)
2012 Aug. MIT-RTG Geometry Workshop, (opening speech), Pajaro Dunes
2012 Mar. Sinai's seminar, Princeton
2011 Jun. Workshop on Instabilities in Hamiltonian Systems, Fields institute
2011 Apr. 2011 AMS Spring Eastern Sectional Meeting, Boston
2010 Dec. Dynamics seminar in UMD
2010 Oct. Fall workshop in Dynamical systems, PSU
2010 Apr. Conference on Celestial Mechanics,UMD
2010 Mar. School on Celestial Mechanics, UMD
2009 Oct. Fall workshop on Dynamical systems, PSU

Mini-courses

2018 Oct. Nine-hour Mini-course on Arnold diffusion, MSRI
2017 Aug. Nine-hour Mini-course on symplectic dynamics, YMSC
2014 Jun. Eight-hour Mini-course on Arnold diffusion, CUHK, invited by Paul Lee

Teachings

2021 Fall	Mathematical Analysis I, Tsinghua
2021 Spring	Dynamics of Geometric Flows, Tsinghua
2020 Fall	Mathematical Analysis I, Tsinghua
2020 Spring	Nonlinear functional analysis, Tsinghua
2019 Fall	ODE, Tsinghua
2019 Spring	Nonlinear functional analysis, Tsinghua
2018 Fall	Homogeneous space dynamics, Tsinghua
2018 Spring	Dynamical Systems, Tsinghua
2017 Spring	Introduction to proofs, UChicago
2017 Winter	Math methods for Phy-Sci-1, UChicago
2017 Winter	Math methods for Phy-Sci-2, UChicago
2016 Fall	Calculus-3, UChicago
2016 Spring	Math methods for Phy-Sci-2, UChicago
2016 Spring	Analysis in $\mathbb{R}^n$, UChicago
2015 Fall	Calculs-3, UChicago
2015 Spring	Math methods for Phy-Sci-2, UChicago
2015 Winter	Multivariable Calculus, UChicago
2015 Winter	Analysis on $\mathbb{R}^n$, UChicago
2014 Fall	Complex analysis for math department, UChicago
2014 Spring	Honors Calculus, UChicago
2014 Spring	Linear algebra, UChicago
2014 Winter	Multivariable Calculus, UChicago
2012 Summer	Ordinary differential equations, UMD
2010 Summer	Ordinary differential equations, UMD

Languages

Chinese	Native
English	Fluent
French	Reading

Publications