Baoping Liu

CONTACT INFORMATION

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APPOINTMENTS

2022 - Associate Professor at Department of Mathematics, **Peking University**, Beijing, China

2021 - 2022 Associate Professor at Beijing International Center for Mathematical Research **Peking University**, Beijing, China

2015 - 2021 Assistant Professor at Beijing International Center for Mathematical Research **Peking University**, Beijing, China

2012 - 2015 Dickson Instructor at **University of Chicago**

EDUCATION

2006 - 2012 University of California, Berkeley, Berkeley, California USA

Ph.D. Mathematics.

Advisor: Daniel Tataru

2002 - 2006 Peking University, Beijing, China

Bachelor of Science in Mathematics.

GRANTS

NSFC 12571254, Principal Investigator, 2026.1 - 2029.12

NSFC 12341102, Member, 2024.1 - 2028.12

NSFC 12071010, Principal Investigator, 2021.1 - 2024.12

Thousand Young Talents, Principal Investigator, 2018.1 - 2021.12

NSFC 11601017, Principal Investigator, 2017.1 - 2019.12

NSFC 11631002, Member, 2017.1 - 2021.12

RESEARCH INTERESTS

Nonlinear partial differential equations, harmonic analysis, dynamical system, mathematical physics.

RESEARCH PAPERS

[14] B. Liu and Xu. Zheng *Symmetric hyperbolic Schrödinger equations on tori.* arXiv:2604.00403

[13] B. Liu and Xu. Zheng *On sharp Strichartz estimate for hyperbolic Schrodinger equation on* T^3. arXiv:2510.01886

[12] B. Liu and A. Soffer, *The Large Times Asymptotics of NLS type Equations.* arXiv:2501.07732

[11] F. Klaus, H. Koch and B. Liu, *Well-posedness for the KdV hierarchy.* arXiv:2309.12773

[10] B. Liu and A. Soffer, *A General Scattering theory for Nonlinear and Non-autonomous Schrödinger Type Equations- A Brief description .*

Applied Numerical Mathematics.

[9] Z. Li and B. Liu, *On Threshold Solutions of equivariant Chern-Simons-Schrödinger Equation.* Ann. Inst. H. Poincaré C Anal. Non Linéaire 39 (2022), no. 2, 371–417.

[8] H. Jia, B. Liu, W. Schlag and G. Xu. *Global center stable manifold for the defocusing energy critical wave equation with potential.*
Amer. J. Math. 142 (2020), no. 5, 1497–1557.

[7] H. Jia, B. Liu, W. Schlag and G. Xu. *Generic and non-generic behavior of solutions to the defocusing energy critical wave equation with potential in the radial case.*
International Mathematics Research Notices, Vol. 2017, No. 19, pp. 5977-6035.

[6] B. Liu and P. Smith. *Global wellposedness of the equivariant Chern-Simons-Schrödinger equation.* Rev. Mat. Iberoam. 32 (2016), no. 3, 751–794.

[5] C. Kenig, A. Lawrie, B. Liu and W. Schlag. *Channels of energy for the linear radial wave equation.*
Adv. Math. 285 (2015), 877–936

[4] C. Kenig, A. Lawrie, B. Liu and W. Schlag. *Stable soliton resolution for exterior wave maps in all equivariance classes.*
Adv. Math. 285 (2015), 235–300.

[3] H. Jia, B.Liu and G. Xu. *Long time dynamics of defocusing energy critical 3 + 1 dimensional wave equation with potential in the radial case.*
Comm. Math. Phys. 339 (2015), no. 2, 353–384.

[2] B. Liu, *A-priori bound for KdV below* $H^{-\frac{3}{4}}$
J. Funct. Anal. 268 (2015), no. 3, 501–554.

[1] B. Liu, P. Smith and D. Tataru. *Low regularity solution for Chern-Simons-Schrödinger equation*
International Mathematics Research Notices, Volume 2014, issue 23, pages 6341-6398

Proceedings and Reports

Low Regularity Local Wellposedness of Chern-Simons-Schrödinger System *Oberwolfach Reports* Volume 10, Issue 3, (2013), 2354–2356.

Awards

2020	HuangTingFang/XinHe Scholarship, Peking University
2017	ShenTong teaching fellowship, Peking University
2010	Outstanding Graduate Student Instructor Award, UC Berkeley.
2006-2007	Simons Graduate Fellowship, UC Berkeley

Teaching Experience

Teaching at Peking University

Spring 2026	Ordinary Differential Equation
Fall 2025	Real Analysis
Spring 2025	Functional Analysis
Fall 2023	Real Analysis

Spring 2024	Functional Analysis
Fall 2023	Functional Analysis II (grad level)
Spring 2023	Partial Differential Equation(II)
Fall 2022	Topics in PDE and Analysis
Spring 2022	Ordinary Differential Equation(H)
Fall 2021	Real analysis (graduate level)
Spring 2021	Functional Analysis
Fall 2020	Calculus III (For EECS)
Spring 2020	Calculus II (For EECS)
Fall 2019	Real analysis (graduate level)
Spring 2019	Topics in PDE and Analysis
Fall 2018	Calculus I (For EECS major)
Spring 2018	Calculus II (For business major)
Fall 2017	Linear Algebra (For economy major)
Fall 2016	Calculus I (For biology major)
Spring 2016	Calculus II (For biology major)

Visits

July 2024, Rutgers University (1 week)

June 2023, Karlsruhe Institute of Technology, Germany(1 week)

July 2023, Rutgers University (1 week)

January 2020, University of Bonn (2 weeks)

November 2019, Rutgers Univerisity (2 weeks)

March 2018, Yamagata University and Tohoku University (one week)

November 2017, Yonsei University, Korea (one week)

August 2017, Fields Institute, Canada (three weeks)

April 2017, Bielefeld University, Germany (two weeks)

July 2016, Institut des Hautes Études Scientifiques, France (two weeks)

November 2015, Mathematical Sciences Research Institute, Berkeley, USA (one month)

July 2014, Hausdorff center of Mathematics, Bonn, Germany (one month)

July 2009, Pacific Institute for the Mathematical Sciences, Vancouver, Canada (3 weeks)

June 2009, L'Institut Henri Poincare, Paris, France (one month)

Mentoring

Undergraduate: Zhuolin Li (PhD at Oxford), Xiaodong Li (Master at Ecole Polytechnique), Zexing Li(Master at PKU), Yixuan Pang (PhD at Upenn), Bowen Chen(PhD at Maryland), Hongchen Guo(PhD at UChicago), Chaomeng Zhan(PhD at USTC)

Master: Tao Zhou(2019-2022, now PhD at NUS), Zexing Li(2019-2021, now PhD at Cambridge), Chenjian Wang(2020-2023, now PhD at UBC)

PhD: Haiming Du(2018-2025, now Postdoc at BIMSA) , Xu Zheng(2021-), Yang Luo(2023-), Yao Liu (2024-), Zhibin Gong(2024-)

Postdoc: Tianyi Ren (2018-2020, now tenure track at Beihang University), Jiaxi Huang(2020-2022, now tenure track at Beijing Institute of Technology), Jie Ji(2022-2024, now tenure track at Nanjing University of Aeronautics and Astronautics)

Service

Organize PDE/Analysis Seminar at BICMR and Department of Mathematics, Peking University, Sep 2015- present

Organize Calderon Zygmund Analysis Seminar at University of Chicago, Oct 2013 - June 2015

Instructor for Summer REU at U.Chicago in 2014 with topic *Equilibria in Nonlinear Systems*; Summer REU at U.Chicago in 2015 with topic *Introduction to Wave equation*

Article referee for Acta Sina, Discrete and Continuous Dynamical System - A(2), Communications in Mathematical Physics(5), Nonlinear Analysis Series B, Nonlinearity, Annals of PDE(2), Journal of Math.Study, Communications in Mathematical Research, Journal d'Analyse Mathematique, Journal of the American Mathematical Society, Mathematical Methods in the Applied Sciences, Annales scientifiques de l'École normale supérieure, AIMS Mathematics.

References

Daniel Tataru (Ph.D. advisor), Berkeley, email: `tataru@math.berkeley.edu`

Carlos Kenig (Postdoc mentor), U. Chicago, email: `cek@math.uchicago.edu`

Wilhelm Schlag(Postdoc mentor), U. Chicago, email: `schlag@math.uchicago.edu`

Herbert Koch, Universität Bonn, email: `koch@math.uni-bonn.de`

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