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 12341102, Member, 2024.1 - 2028.12

NSFC 12071010, Principal Investigator, 2021.1 - 2024.12

Thousand Young Talents, Principal Investigator, 2018.1 -

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

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

[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.

Visits

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)

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

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)

Master and PhD: Haiming Du(2018-), Tao Zhou(2019-2022, now PhD at NUS), Zexing Li(2019-2021, now PhD at Cambridge), Chenjian Wang(2020-2023, going to UBC)

Postdoc: Tianyi Ren (2018-2020, now tenure track at Beihang University), Jiaxi Huang(2020-2022, will start tenure track at Beijing Institute of Technology), Jie Ji(2022-)

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.

Teaching Experience

Teaching at Peking University

Spring 2024	Functional Analysis
Fall 2023	Functional Analysis II
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)

Teaching at University of Chicago

Spring 2015	Math16300 Honor Calculus, two sections, Instructor
Fall 2014	Math16100 Honor Calculus, two sections, Instructor
Winter 2014	Math20400 Real Analysis, two sections, Instructor
Fall 2013	Math20300 Real Analysis, two sections, Instructor
Spring 2013	Math20500 Real Analysis, Math16300 Honor Calculus 3, Instructor
Winter 2013	Math20400 Real Analysis, Instructor
Fall 2012	Math20300 Real Analysis, Instructor

Teaching at University of California, Berkeley

Summer 2012	Math185, Complex Analysis, Instructor
Spring 2012	Math16B, Analytical Geometry and Calculus with Professor J. Harrison
Spring 2011	Math16B, Analytical Geometry and Calculus with Professor D. Sarason
Fall 2009	Math16B, Analytical Geometry and Calculus with Professor J. Silver
Spring 2009	Math54, Linear Algebra and Differential Equations with Professor J.Wagoner
Spring 2008	Math54, Linear Algebra and Differential Equations, with Professor A. Chorin
Fall 2007	Math1A, Calculus with Professor Ole H. Hald

Presentations

Nonlinear dispersive and wave equations, Monash University, Dec 2023

Workshop on Harmonic Analysis, JiaoZuo, Oct 2023

Beijing-Osaka joint workshop for PDE and related topics, Osaka University, Aug 2023

SITE Research Center Seminar, NYU Abu Dhabi, Oct 2022

Analysis and PDE online seminar, HongKong, September 2022

Analysis and PDE seminar,, Beijing Institute of Technology, July 2022

Analysis and PDE seminar, KAIST, May 2022

Analysis and PDE seminar, University of California, Berkeley, March 2022

Analysis and PDE seminar, University of Kentucky, November 2021

Analysis and PDE seminar, China Academy of Sciences, September 2021

Analysis and PDE seminar,, Beijing Institute of Technology, July 2021

Workshop in Analysis PDE, Beihang University, November 2020

Tianyuan PDE seminar (Online), Wuhan University, July 2020

11th Itinerant workshop in Bonn, University of Bonn, Janurary, 2020

12th International ISAAC Congress, University of Averio, July, 2019

The 11th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, April 2019

Joint International Meeting of the Chinese Mathematical Society and the American Mathematical Society, Shanghai, June 2018

Yamagata-Peking-Tohoku Joint workshops for harmonic analysis and PDE, Japan, March 2018

Analysis and PDE seminar, Yonsei University, November 2017

Geometry seminar, Nanjing University, October 2017

PDE seminar, Nanjing Normal University, October 2017

Workshops on PDE, Chinese Mathematical Society 2017 Annual Conference, October 2017

Workshops on Geometric analysis and hyperbolic equations, Academy of Mathematics and System Sciences, Beijing, China, July 2017

PDE Seminar, Bielefeld University, Germany, April 2017

Analysis and PDE seminar, Xiamen Univeristy, December 2016

Analysis and PDE Seminar, Tsinghua University, Beijng, China, April 2016

Analysis and PDE seminar, University of California, Berkeley, USA, Nov 2015

Analysis seminar, Beijing Normal University, Beijing, China, Oct 2015

PDE Seminar, University of Science and Technology, He Fei, China, Oct 2015

Workshop 'Longtime Behavior of Nonlinear Waves', Bielefeld University, June 2015

Colloquium, University of Southern California, Dec 2014

Calderon-Zygmund Analysis Seminar, University of Chicago. October 2014

Closing workshop, Hausdorff Trimester Program 'Harmonic Analysis and PDE' Aug 2014

Colloquium, Georgia Southern University, Nov 2013

PDE seminar, Peking University, Sep 2013

Workshop:Nonlinear Waves and Dispersive Equations, Oberwolfach, August 2013

Analysis Seminar, Wisconsin Madison. March 2013

Analysis Seminar, Northwestern. January 2013

Calderon-Zygmund Analysis Seminar, University of Chicago.October 2012

Analysis seminar, UC Irvine, March 2012

AMS meeting at the University of Hawaii, Honolulu, March 2012

Analysis and PDE Seminar, John Hopkins University, November 2011

Student Harmonic Analysis and PDE Seminar, Berkeley, Sp2011, Fall 2010, Fall 2009, Spring 2009

Conference Attended

Nonlinear dispersive and wave equations, Monash University, Dec 2023

Workshop on Harmonic Analysis, JiaoZuo, Oct 2023

Beijing-Osaka joint workshop for PDE and related topics, Osaka University, Aug 2023

13th International ISAAC Congress(online), August 2021

Workshop in Analysis PDE, Beihang University, November 2020

11th Itinerant workshop in Bonn, University of Bonn, Janurary, 2020

12th International ISAAC Congress, University of Averio, July, 2019

The 11th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, April 2019

Joint International Meeting of the Chinese Mathematical Society and the American Mathematical Society, Shanghai, June 2018

Yamagata-Peking-Tohoku Joint workshops for harmonic analysis and PDE, Japan, March 2018

Focus Program on Nonlinear Dispersive Partial Differential Equations and Inverse Scattering, Fields Institute, Canada, August 2017

Workshops on Geometric analysis and hyperbolic equations, Academy of Mathematics and System Sciences, Beijing, China, July 2017

Nonlinear Waves and Dispersive Equations, Bonn, Oberwolfach, June 2017

Nonlinear waves, Institut des Hautes Études Scientifiques, France, July 2016

Longtime Behaviour of Nonlinear Waves, Bielefeld University, June 2015

Hausdorff Trimester Program 'Harmonic Analysis and PDE' August 2014
Nonlinear Waves and Dispersive Equations, Bonn, Oberwolfach, August 2013
NSF-CBMS Regional Research Conference in the Mathematical Sciences, KSU, June 2013
AMS Spring 2012 Western Sectional Meeting, University of Hawaii, Honolulu, March, 2012
CBMS Conference on Global Harmonic Analysis, Kentucky Summer 2011
Southern California Analysis and PDE conference, UCLA, November 2010
Nonlinear waves and dispersive equations, Oberwolfach, September 2010
The 13th Rivière-Fabes Symposium on Analysis and PDE, University of Minnesota, April 2010
Hot Topics: Black Holes in Relativity, MSRI, Sep 2009
Nonlinear Dispersive and Geometric Evolution Problems, PIMS Workshop, UBC, August 2009
Analysis of nonlinear wave equations and applications in engineering, Banff, August 9-14, 2009
Dispersive Equations and Nonlinear Waves, Institut Henri Poincaré, June 2009
AMS Section Meeting: Special Session on Nonlinear Dispersive Equations, San Francisco, April 2009
Carolina Meeting on Harmonic Analysis and PDE, UNC, Chapel Hill, Jan 2009
Red Raider Mini-symposium: Non-linear Analysis, PDEs and Applications, Texas Tech U., Oct 2009
Analysis on Singular Spaces, MSRI, Aug - Dec 2008
Microprogram on Nonlinear Partial Differential Equations, MSRI, summer 2007.

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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