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▬▬▬ Contact Information

Institute of Mathematics
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▬▬▬ Citizenship

Chinese

▬▬▬ Research Interests

Partial differential equations, fluid mechanics and related topics

▬▬▬ Education

○ Ph.D., Academy of Mathematics & Systems Science, CAS,   June 2005
  Thesis Topic: *The Study on Schrödinger-Poisson Systems and Fourth Order Nonlinear Schrödinger Equations*
  Supervisor: Professor Ling Hsiao

○ B.S. & M.S., Hebei University,   July 1999 & 2002
  Thesis Topic: *Energy Scattering for the Generalized Davey-Stewartson Equations*
  M.S. supervisor: Professor Baoxiang Wang

▬▬▬ Academic Appointments

○ (Position) Professor, University of Chinese Academy of Sciences Oct 2015 to present
○ Associate Professor, AMSS, CAS   Apr 2008 to present
○ Research Associate, AMSS, CAS   Jul 2005 to Mar 2008

▬▬▬ Visiting Positions

○ Visiting Scholar   01/23–02/19/2017
  Department of Mathematics, The City University of Hong Kong, Hong Kong, China
○ Visiting Scholar   09/10–09/23/2014

IMS, The Chinese University of Hong Kong, Hong Kong, China
- ○ Visiting Assistant Professor   03/01–12/31/2007
  School of Mathematics, Georgia Institute of Technology, Atlanta, U.S.A.
- ○ Visiting Scholar   09/01–10/31/2005
  IMS, The Chinese University of Hong Kong, Hong Kong, China
- ○ Visiting Scholar   02/26–04/25/2004
  IMS, The Chinese University of Hong Kong, Hong Kong, China

Published Books

1. (with B.X.Wang, Z.H.Huo and Z.H.Guo) *Harmonic Analysis Method for Nonlinear Evolution Equations (I)*, World Scientific Pub. Co. Inc., 2011.

Journal Publications

Topics in Free Boundary Problems Arising in Continuum Theories

1. On the motion of free interface in ideal incompressible MHD, Arch. Ration. Mech. Anal., 224(2), 515–553, 2017. doi:10.1007/s00205-017-1082-7
2. (with D. Wang) A priori estimates for the free boundary problem of incompressible neo-hookean elastodynamics, J. Differential Equations, 261(1), 712–737, 2016. doi:10.1016/j.jde.2016.03.025
3. Remarks on the free boundary problem of compressible Euler equations in physical vacuum with general initial densities, Discrete Contin. Dyn. Syst. Ser. B, 20(9), 2885–2931, 2015. doi:10.3934/dcdsb.2015.20.2885
4. (with T. Luo) A priori estimates for free boundary problem of incompressible inviscid magnetohydrodynamic flows, Arch. Ration. Mech. Anal., 212(3), 805–847, 2014. doi:10.1007/s00205-013-0718-5

Topics in Compressible Flows with Harmonic Analysis Techniques

5. (with H.-L.Li) Global well-posedness for a viscous liquid-gas two-phase flow model, *SIAM J. Math. Anal.*, **44**(3), 1304–1332, 2012. doi:10.1137/110851602
6. Global well-posedness for a multi-dimensional chemotaxis model in critical Besov spaces, online first, *Z. Angew. Math. Phys.*, **63**, 825–834, 2012. doi:10.1007/s00033-012-0193-0
7. (with Y.Q.Lin and H.-L.Li) Global well-posedness of compressible bipolar Navier-Stokes-Poisson equations, *Acta Math. Sinica, English Ser.*, **28**(5), 925–940, 2012. doi:10.1007/s10114-011-0238-x
8. Well-posedness to the compressible viscous magnetohydrodynamic system, *Nonlinear Anal. RWA*, **12**, 2962–2972, 2011. doi:10.1016/j.nonrwa.2011.04.017
9. Well-posedness for the viscous rotating shallow water equations with friction terms, *J. Math. Phys.*, **52**(2), 023101, 12pp, 2011. doi:10.1063/1.3553187
10. Cauchy problem for viscous shallow water equations with a third-order surface tension term, *Disc. Cont. Dyn. Sys., Ser. B*, **13**(3), 593–608, 2010.

doi:10.3934/dcdsb.2010.13.593

11. (with L.Hsiao and H.-L.Li) Cauchy problem for viscous rotating shallow water equations, *J. Diff. Eqns.*, **247**, 3234–3257, 2009. doi:10.1016/j.jde.2009.09.008

12. (with H.-L.Li) Global existence for compressible Navier-Stokes-Poisson equations in three and higher dimensions, *J. Diff. Eqns.*, **246**, 4791–4812, 2009.
doi:10.1016/j.jde.2008.11.019

Topics in Schrödinger-type Equations

13. (with L.Hsiao and H.-L.Li) Global well-posedness for the Gross-Pitaevskii equation with an angular momentum rotational term, *Math. Meth. Appl. Sci.*, **31**(6), 655–664, 2008. doi:10.1002/mma.931

14. (with L.Hsiao and H.-L.Li) Global well posedness for the Gross-Pitaevskii equation with an angular momentum rotational term in three dimensions, *J. Math. Phys.*, **48**, 102105, 1–11, 2007.
doi:10.1063/1.2795218

15. Well-posedness for one-dimensional derivative nonlinear Schrödinger equations, *Comm. Pure Appl. Anal.*, **6**(4), 997–1021, 2007.

16. (with L.Hsiao and B.X.Wang) Wellposedness of Cauchy problem for the fourth order nonlinear Schrödinger equations in multi-dimensional spaces, *J. Math. Anal. Appl.*, **328**(1), 58–83, 2007. doi:10.1016/j.jmaa.2006.05.031

17. (with B.X.Wang and H.Hudzik) Energy scattering for the nonlinear Schrödinger equations with exponential growth in lower spatial dimensions, *J. Diff. Eqns.*, **228**(1), 311–338, 2006. doi:10.1016/j.jde.2006.05.010

18. (with L.Hsiao and B.X.Wang) Wellposedness for the fourth order nonlinear Schrödinger equations, *J. Math. Anal. Appl.*, **320**(1), 246–265, 2006.
doi:10.1016/j.jmaa.2005.06.091

19. Energy scattering for the generalized Davey-Stewartson equations, *Acta. Math. Appl. Sinica, English Ser.*, **19**(2), 333–340, 2003.

20. Energy scattering for the nonlinear Davey-Stewartson equations (in Chinese), *J. Math. Res. Expo.*, **23**(4), 645–650, 2003.

Topics in Schrödinger-Poisson Systems

21. The initial boundary value problems for quasi-linear Schrödinger-Poisson equations, *Acta Math. Sci., Ser. B*, **26**(1), 115–124, 2006. doi:10.1016/S0252-9602(06)60033-7

22. (with L.Hsiao) Large time behavior and global existence of solution to the bipolar defocusing nonlinear Schrödinger-Poisson system, *Quart. Appl. Math.*, **62**(4), 701–710, 2004.

23. (with L.Hsiao and H.-L.Li) Modified Scattering for Bipolar Nonlinear Schrödinger-Poisson Equations, *Math. Model. Meth. Appl. Sci.*, **14**(10), 1481–1494, 2004.
doi:10.1142/S0218202504003684

24. (with H.-L.Li) On the initial value problem for the bipolar Schrödinger-Poisson systems, *J. Partial Diff. Eqs.*, **17**(3), 283–288, 2004.

Topics in Quantum Euler-Poisson Systems

25. (with H.-L.Li, G.-J.Zhang and M.Zhang) Long-time self-similar asymptotic of the macroscopic quantum models, *J. Math. Phys.*, **49**, 073503, 1–14, 2008. doi:10.1063/1.2949082

26. (with Y.L.Jia and H.-L.Li) Quantum Euler-Poisson system: local existence of solutions, *J. Partial Diff. Eqs.*, **16**(4), 306–320, 2003.

Scientific Activities

◇ Reviewer for "Mathematical Reviews" (MR) of AMS since Oct. 2006
◇ Editorial Board of the Journal "Advances in Pure Mathematics"

Referee Service

○ *Abstract and Applied Analysis*
○ *Acta Applicanda Mathematicae*
○ *Advances in Pure Mathematics* **(APM)**
○ *Advances in Mathematics (China)*
○ *Acta Mathematicae Applicatae Sinica, English Series and Chinese Series*
○ *Acta Mathematica Scientia, Series B: English Edition*
○ *Archive for Rational Mechanics and Analysis* **(ARMA)**
○ *Boundary Value Problems*
○ *Discrete and Continuous Dynamical Systems - Series B* **(DCDS-B)**
○ *Journal of Beijing University of Technology*
○ *Journal of Differential Equations* **(JDE)**
○ *Journal of Function Spaces and Applications*
○ *Journal of Inequalities and Applications*
○ *Journal of Mathematical Physics* **(JMP)**
○ *Journal of Mathematical Analysis and Applications* **(JMAA)**
○ *Journal of Partial Differential Equations* **(JPDE)**
○ *Journal of Sichuan Normal University*
○ *Journal of Systems Science and Complexity, English Series* **(JSSC)**
○ *Mathematische Annalen*
○ *Kinetic and Related Models* **(KRM)**
○ *Mathematical Methods in the Applied Sciences* **(M2AS)**
○ *Mathematische Zeitschrift* **(Math.Z.)**
○ *Nonlinear Analysis: Real World Applications* **(NA-RWA)**
○ *SCIENCE CHINA Mathematics*
○ *SIAM Journal of Mathematical Analysis* **(SIMA)**
○ *The Royal Society of Edinburgh Proceedings A*
○ Zeitschrift für angewandte Mathematik und Physik **(ZAMP)**
○ *Zeitschrift fur Angewandte Mathematik und Mechanik* **(ZAMM)**
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Awards

- LU Jiaxi Young Talent Award by Chinese Academy of Sciences,   2011
  Chinese Academy of Sciences
- The Nomination Dissertation for National Outstanding Doctoral Dissertations, 2008
  Ministry of Education of People's Republic of China
- The Award for Excellent Doctoral Dissertation,   2007
  Chinese Academy of Sciences
- The Special Prize of the President Scholarship,   2004
  Chinese Academy of Sciences
- The First-class Award of the President Scholarship,   2004
  Academy of Mathematics & Systems Science

Research Grants

- 2017.01-2020.12. Principal investigator. The study of free boundary problems in MHD and Navier-Stokes equations and related models,Grant No.:11671384, general project, NSFC.
- 2017.01-2018.12. Co-investigator. Mathematical Analysis of Compressible Fluids. Grant No.:11628103, Overseas, Hong Kong & Macao Scholars Collaborated Researching Fund, NSFC.
- 2016.01-2018.12. Co-investigator. Qualitative Analysis of Compressible Navier-Stokes(-Poisson) Equations, Grant No.:11501323, Foundation for the Youth, NSFC.
- 2015.01-2018.12. Co-investigator. Mathematical theory of compressible fluid dynamics equations. Grant No.:11461161007, International (regional) cooperation and exchange projects, NSFC.
- 01/2012-12/2015. Principal investigator. Studies on compressible Navier-Stokes equations and related fluid dynamical models. Grant No.11171327, general project, NSFC.
- 01/2012-12/2014. Principal investigator. Special Foundation for the Membership of Youth Innovation Promotion Foundation of Chinese Academy of Sciences.
- 01/2007-12/2009. Principal investigator. Studies on Nonlinear Dispersive Equation and Quantum Hydrodynamic Models. Grant No.10601061, Foundation for the Youth, NSFC.
- 07/2006-06/2009. Principal investigator. Nonlinear Evolutionary Equations and Harmonic Analysis Technique. Scientic Research Startup Special Foundation for the Winner of the Award for Excellent Doctoral Dissertation and the Prize of President Scholarship of CAS.
- 01/2008-12/2008. Principal investigator. Studies on Cauchy Problem of Quantum Hydrodynamics Models. Field Front Project for Talented Youth, Chinese Academy of Sciences.

Teaching Experience

University of Chinese Academy of Sciences, Beijing, China

- Instructor for 011D9056Z*: Introduction to Harmonic Analysis, Spring 2016

Graduate University of Chinese Academy of Sciences, Beijing, China

- Instructor for 219002Z#: Introduction to Harmonic Analysis, Spring & Summer 2012
- Instructor for 219004Z*: Singular Integral and Differentiability Properties of Functions, Fall 2010

Capital Normal University, Beijing, China

- Instructor for Singular Integral and Littlewood-Paley Theory, Summer & Fall 2011
- Instructor for Littlewood-Paley Theory and Application, Spring 2008

Georgia Institute of Technology, Atlanta, USA

- Instructor for Math2403-D3&K3: Differential Equations, Fall 2007

Hebei University, Baoding, China

- Instructor for Linear Algebra, Spring 2001
- Instructor for Higher Mathematics, Spring 2001
- Instructor for Higher Mathematics, Fall 2000

Conferences Talks (Selected)

- **Invited Speaker**, 10/28-11/01, 2017
  6th Japan-China Workshop on Mathematical Topics from Fluid Mechanics, Osaka University, Japan.
- **Invited Speaker**, 10/12-15, 2017
  15th Annual Meeting of the China Society for Industrial and Applied Mathematics (CSIAM 2017), Qingdao.
- **Invited Speaker**, 08/01-03, 2017
  15th Summer Workshop on Nonlinear PDEs, Northwest University, Xi'an.
- **Invited Speaker**, 07/09-15, 2017
  14th International Conference on Free Boundary Problems, Shanghai Jiao Tong University, Shanghai.
- **Invited Speaker**, 02/09-10, 2017
  Workshop on Nonlinear PDEs, City University of Hong Kong, Hong Kong.
- **Invited Speaker**, 09/26-30, 2016
  First Chinese-Czech Conference on Mathematical Fluid Mechanics, IAPCM.
- **Invited Speaker**, 07/09-10, 2016
  Workshop on PDE, School of Mathematical Sciences, Capital Normal University.
- **Invited Speaker** 11/17-11/22/2015
  Fifth China-Japan Workshop on Mathematical Topics from Fluid Mechanics, Wuhan University.
- **Invited Speaker** 10/30/2015
  Beijing University of Technology.
- **Invited Speaker** 09/08/2015
  South China Normal University .

- **Invited Speaker** 08/03-08/08/2015
  The 10th International ISAAC Congress, Session 10: Harmonic Analysis and PDEs, University of Macau.
- **Invited Speaker** 12/10-12/12/2014
  Workshop on Nonlinear Partial Differential Equations, Shanghai Jiao Tong University.
- **Invited Speaker** 11/27-11/30/2014
  International Workshop on PDEs in Fluid Dynamics and Related Models, Shanghai Jiao Tong University.
- **Invited Speaker** 11/21-11/23/2014
  Beijing University of Technology.
- **Invited Speaker** 11/11/2014
  Seminar talk,Ximen University,
- **Invited Speaker** 10/31-11/1/2014
  Central China Normal University.
- **Invited Speaker** 10/25/2013
  The First West Chinese Workshop on PDEs,NWU, Xi'an.
- **Invited Speaker** 8/3/2013
  The 11th Summer School and Workshop on Nonlinear PDEs, BJUT, Beijing.
- **Invited Speaker** 06/10/2013
  Seminar talk, Mathematical Sciences Center, Tsinghua University, Beijing.
- **Invited Speaker** 05/20/2013
  Seminar talk,Capital Normal University, Beijing.
- **Invited Speaker** 4/19/2013
  Seminar talk,Mathematical Sciences Center, Tsinghua University, Beijing.
- **Invited Speaker** 06/25–07/13/2012
  CNRS-NSFC joint Sino-France Summer Institute of Mathematics, Beijing International Center for Mathematical Research, Beijing, China.
- **Invited Speaker** 10/24–10/26/2011
  The Third China-Japan Workshop on Mathematical Topics from Fluid Mechanics, Northwest University, Xi'an, China.
- **Invited Speaker** 01/04–01/22/2010
  Chinese-French Summer Research Institute Project on Stress Tensor Effects on Fluid Mechanics, AMSS & Morningside center of Mathematics, CAS, Beijing, China.
- **Invited Speaker** 12/05-12/06/2009
  The 3rd Beijing Regional Workshop on PDEs, Capital Normal University, Beijing, China.
- **Invited Speaker** 08/15–08/20/2009
  Nonlinear PDE in Zhang Jia Jie, Zhangjiajie, China.
- **Invited Speaker** 10/11–10/13/2008
  First China-Japan Workshop on Mathematical Topics from Fluid Mechanics, AMSS, CAS, Beijing, China.
- **Invited Speaker** 10/16/2008

Mini-workshop for PDE and Nonlinear Analysis, Tsinghua University, Beijing, China.

○ **Invited Speaker**   08/10/2008
PDE Seminar, Beijing University of Technology, Beijing, China.

○ **Invited Participant**   09/01–09/21/2008
The French-Chinese Summer Institute on Applied Mathematics, Fudan University, Shanghai, China.

○ **Invited Speaker**   05/01/2007
PDE Seminar, School of Mathematics, Georgia Institute of Technology, Atlanta, Georgia, USA.

○ **Supported Participant**   04/20–04/22/2007
The Tenth Rivière-Fabes Symposium on Analysis and PDE, University of Minnesota, Minneapolis, USA.

○ **Invited Speaker**   07/21/2005
Workshop on Nonlinear partial differential equations, Northeast Normal University, Changchun, China.

○ **Invited Speaker**   03/10–03/12/2005
The 1st Beijing Regional Workshop on PDEs, Beijing University of Technology, Beijing, China.

○ **40-Minute Talk**   02/14–02/18/2005 *Workshop on Partial Differential Equations*, Institute of Mathematics, the University of Potsdam, Potsdam, Germany.

○ **40-Minute Talk**   06/25–06/30/2005
International Workshop on Nonlinear Partial Differential Equations, Zhengzhou University, Zhengzhou, China.

(Updated: October 9, 2017)