Xiaoyi Zhang

Personal Information:

Current Work Address:	Department of Mathematics 14 Maclean Hall University of Iowa Iowa city, IA, 52242
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Educational and Professional History

2003 Ph.D. in Mathematics, Graduate school of China Academy of Engineering Physics at Beijing.

2003–05 Postdoc at the Institute of Mathematics, Academy of Mathematics and System Sciences(AMSS), Chinese Academy of Sciences(CAS).

2004 Visitor at the Institute of Mathematical Sciences, Chinese University of Hong Kong.

2005 Three weeks visit to UCLA, Los Angeles, CA; guest of Terence Tao.

2005– Faculty of the Institute of Applied Mathematics, AMSS, CAS.

2005 Member of MSRI program in Nonlinear Dispersive Partial Differential Equations, Berkeley, CA (Aug–Dec).

2007-08 Member of Institute for Advanced Study, Princeton.

2008-09 Von Neumann Fellow at Institute for Advanced Study, Princeton.

2009– Assistant Professor, University of Iowa.

Scholarship

Papers published.

- ***Dynamics for the energy critical nonlinear wave equation in high dimensions*, D. Li, ***X. Zhang. Trans. Amer. Math. Soc. 363 (2011), no. 3, 1137C1160.**
- ***Stability of solutions for nonlinear Schrödinger equations in critical spaces*, D. Li, ***X. Zhang. Science in China, Series A. Volume 54, Number 5, Pages 973-986, 2011.**
- *On the focusing mass critical problem in six dimensions with splitting spherically symmetric initial data*, D. Li, ***X. Zhang. Dynamics of PDE, Vol.7, No.4, 345-373, 2010.
- *On a nonlocal aggregation model with nonlinear diffusion.* D. Li, ***X. Zhang. Discrete Contin. Dyn. Syst. 27 (2010), no. 1, 301-323.
- *Exploding solutions for a nonlocal quadratic evolution problem.*D. Li, J. L. Rodrigo, ***X. Zhang. Rev. Mat. Iberoam. 26 (2010), no. 1, 295-332, 35B44.

- *Regularity of almost periodic modulo scaling solutions for mass-critical NLS and applications.* D. Li, ***X. Zhang. Anal. PDE 3 (2010), no. 2, 175-195.
- *Global wellposedness and blowup of solutions to a nonlocal evolution problem with singular kernels.* D. Li, ***X. Zhang. Commun. Pure Appl. Anal. 9 (2010), no. 6, 1591-1606,
- *Smoothing estimates of the radial Schrödinger propagator in dimensions $n \geq 2$.* D. Li, ***X. Zhang. Acta Mathematica Scientia 2010, 30B(6):2103-2109.
- *On the rigidity of minimal mass solutions to the focusing mass critical NLS for rough initial data*, D. Li, ***X. Zhang. Elect. Jour. Diffe. Equa. Vol (2009), No. 78, 1-14.
- *The characterization of minimal-mass blowup solutions to the focusing mass-critical NLS*, R. Killip, D. Li, M. Visan, ***X. Zhang. SIAM J. Math. Anal. Vol. 41,(2009) No. 1, 219-236.
- *Dynamics for the energy critical nonlinear Schrödinger equation in high dimensions*, D. Li, ***X. Zhang. J. Func. Anal. Vol 256, No.6, (2009) 1928-1961.
- *The focusing energy-critical Hatree equation*, D. Li, C. Miao, ***X. Zhang. J. Diffe. Equa. 246 (2009), 1139-1163.
- *On the classification of minimal mass blowup solutions of the focusing mass-critical Hartree equation.* D. Li, ***X. Zhang. Advances in Mathematics. 220(2009), 1171-1192.
- *The energy-critical nonlinear Schrödinger equation with quadratic potentials*, R. Killip, M. Visan, and ***X. Zhang. Comm. Partial Differential Equations 34 (2009), no. 10-12, 1531C1565.
- *The mass-critical nonlinear Schrödinger equation with radial data in dimensions three and higher*, R. Killip, M. Visan, and ***X. Zhang. Analysis and PDE 1 (2008), 229-266. math. AP/0708.0849.
- *Global existence and scattering for rough solutions to generalized nonlinear Schrödinger equations on* $\mathbb{R}$, J. Colliander, J. Holmer, M. Visan and ***X. Zhang, Commun. Pure Appl. Anal. 7 (2008), 467-489.
- *Minimal-mass blowup solutions of the mass-critical NLS*, T. Tao, M. Visan, and ***X. Zhang, Forum Mathematicum 20(2008) 881-919.
- *Global well-posedness and scattering for the mass-critical defocusing NLS with spherical symmetry in higher dimensions*, T. Tao, M. Visan and ***X. Zhang, Duke Math Journal, Vol 140, No 1, 2007.
- *On the blowup for the L^2-critical focusing nonlinear Schrödinger equation in higher dimensions below the energy class*, M. Visan and ***X. Zhang, SIAM J. Math. Anal. 39(2007), 34-56.
- *Global well-posedness and scattering for a class of nonlinear Schrödinger equations*, M. Visan and ***X. Zhang, Differential and Integral Equations 22 (2009), 99-124.
- *A note on the illposedness for anisotropic nonlinear Schrödinger equation*, X. Zhang, Acta. Mathematica Sinica, English series, 23 (2008), NO. 6, 965-972.
- *The nonlinear Schrödinger equation with combined power type nonlinearities*, T. Tao, M. Visan, and ***X. Zhang, Comm. Partial Differential Equations 32 (2007), 1281-1343.

- *On the Cauchy problem of 3-D energy critical nonlinear Schrödinger equations with subcritical perturbations*, X. Zhang, J. Diffe Equa. (230) (2006), 422-445.
- *Global wellposedness and scattering for 3-D energy critical Schrödinger equation with repulsive potential and radial data,* X. Zhang, Forum Mathematicum (19/4), 633-675.
- *The self-similar solution of complex Ginzburg-Landau equation and its limit behavior*, X. Zhang, Acta Mathematica Scientia, **25** (2005), 652-662.
- *The global existence of one type of nonlinear Kirchhoff string equation*, X. Zhang, Mathematicae Applicatae Sinica, English Series, **19** (2003), 477-484.
- *Self-similar solutions for Nonlinear Schrödinger equations,*C. Miao, B. Zhang and X. Zhang, Methods and Applications of Analysis. **10** (2003), 119-136.

Papers submitted.

- ***Stability of solutions for energy critical wave equations in high dimensions*, A. Bulut, M. Czubak, D. Li, N. Pavlović, ***X. Zhang. Submitted.**
- ***Smooth global solutions for the two dimensional Euler-Poisson system*, J. Jang, D. Li, ***X. Zhang. Submitted.**
- ***On the rigidity of solitary waves for the focusing mass-critical NLS in dimensions*** $d \geq 2$**, D. Li, ***X. Zhang, Submitted.**
- *Global wellposedness and scattering for defocusing energy-critical NLS in the exterior of balls with radial data*, D. Li, H. Smith, ***X. Zhang. Preprint.

Papers in preparation. [1]

- ***Wave operators for nonlinear wave equations with null structure.* D. Li, ***X. Zhang. Preprint.**
- ***Local wellposedness and blowup for a class of solutions of Euler equation*, D. Li, C. Miao, ***X. Zhang. Preprint.**
- ***Wave operators for semilinear wave and Klein-Gordon equations with critical nonlinearities,* J. Jang, D. Li, ***X. Zhang. Preprint.**
- ***Global wellposedness and scattering for defocusing energy-critical NLS in the exterior of balls with Neumann boundary condition and radial initial data*, D. Li, ***X. Zhang. Preprint.**
- ***Strichartz estimate for Schrödinger equation with variable coefficient.* Lecture notes. D. Li, ***X. Zhang. In preparation.**

Honors

2010-2013 Sloan Fellowship.
2008-09 Von Neumann Early Career Fellow, IAS.
1994–98 First order Fellowship for excellence (four times), ZhengZhou University.

[1] Contribution:*Major, **Secondary,***Equal,****Minor.

Grants applied

2011-14 NSF grants "Problems in critical nonlinear dispersive and wave equations".
2009 Sloan Fellowship.

Conference and invited talks:

- Program on kinetic equations. Morningside center, AMSS, CAS. 2003, 2004, 2005, 2006.
- Special curriculum on partial differential equations. Beijing University, Beijing, China. 2003, 2004.
- Analysis Seminar in UCLA, 2005.
- Conference on dynamical equations. Capital Normal University, Beijing, China. 2003, 2004.
- Program on nonlinear dispersive equations. MSRI, Berkeley, CA, 2005.
- Lecture series in Xi'an Jiaotong University on nonlinear Schrödinger equations. July, 2007.
- Workshop " Critical Nonlinear Schrödinger equation". Vienna 2007.
- Workshop "Nonlinear Waves and Dispersive Equations" Oberwalfach, Germany, 2007.
- Analysis Seminar, Princeton, 2007.
- Analysis Seminar, Cornell, 2007.
- Workshop "Nonlinear Wave and Dispersive Equations" in Kyoto, Japan, 2008.
- Analysis Seminar, Maryland, 2008.
- Lecture series on critical nonlinear Schrödinger equations. Xi'an Jiaotong University, 2008.
- Analysis Seminar, John Hopkins. 2008.
- Workshop on Fourier Analysis, Wayne State University, 2009.
- Beijing conference on harmonic analysis and partial difference equations. Beijing, China, May 17-May 23, 2010.
- International Conference of Chinese Mathematicians. (ICCM 2011). Beijing QsingHua University, Dec 18-Dec 22, 2010.
- The first International Mathematical Forum, Sanya. Dec 23-Dec 26, 2010.
- Recent developments on Fluid dynamics. Jan 1-Jan 9, 2011.
- Hangzhou workshop on dispersive and wave equation. June 5-June 9, 2011.
- Analysis seminar at UCLA, Los Angeles. Sep 8-13, 2011.
- AWM 40th Anniversary conference at Brown university. Sep 17-18, 2011.

Services

- **Co-advise(with Dong Li) Ph.D student Kai Tsuruta.**
- **Co-organize sectional meeting for AMS, 2011.**
- **Colloquium co-Chair during fall semester in 2010 and spring semester in 2011.**
- Colloquium co-Chair during fall semester in 2009 and spring semester in 2010.
- PDE Lunch seminar co-Chair in spring semester 2010.
- Refereeing papers for the following journals:
  Commun. Pure Appl. Anal.
  Amer. J. Math. Discrete Contin. Dyn. Syst

Duke Math. J.
Dyn. Partial Differ. Equ.
Sce. China Ser. A
J. Amer. Math. Soc.
Acta Math. Appl. Sin.
Acta Math. Appl. Sin. Engl. Ser.
Calc. Var. Partial Differential Equations
J. Funct. Anal. Proc. Amer. Math. Soc.
J. Partial Differential Equations
Siam J. Mathematical Analysis

Teaching

Teaching assignment:
Linear Algebra 027 for fall semester 2009.
Matrix Algebra 033 (two sessions) for spring 2010.
Real Analysis 210 for fall 2010.
Real Analysis 211 and Linear Algebra 027 for spring 2011.

Semester	Course Number, Title	Enrolled	Q 1	Q 2	Q 3	Q 4
Fall, 2009	22M:027, Linear Algebra	28	5.10	5.77	4.83	4.75
Spring, 2010	22M:033, Linear Algebra	55	4.36	5.35	4.46	4.29
Fall, 2010	22M:210, Real Analysis	19	5.70	5.83	5.50	5.50
Spring, 2011	22M:027, Linear Algebra	33	5.33	5.21	5.13	5.13
Spring, 2011	22M:211, Real Analysis	15	5.83	5.95	5.75	5.75

Question 1 The instructor seems interested in teaching the course.
Question 2 This instructor is available to students.
Question 3 The students are encouraged to think for themselves.
Question 4 Class presentations are organized.