

Xuwen Chen

Department of Mathematics, University of Rochester
(585) 276-7857 xuwenchen@rochester.edu

Education

Ph.D. in Mathematics, University of Maryland, May 2012.

Advisors: Manoussos Grillakis and Matei Machedon.

Employment

Tenure-track Assistant Professor, University of Rochester, July 2015 to present

J.D. Tamarkin Assistant Professor, Brown University, July 2012 to June 2015.

Publications

Refereed Articles in Journals:

16. (with J. Holmer) *The Rigorous Derivation of the 2D Cubic Focusing NLS from Quantum Many-body Evolution*, to appear in *International Mathematics Research Notices*.
15. (with W. Strauss) *Convergence to Equilibrium of a Body Moving in a Kinetic Sea*, *SIAM Journal on Mathematical Analysis* **47** (2015), 4630–4651. DOI: 10.1137/15M1035549.
14. (with J. Holmer) *Correlation structures, Many-body Scattering Processes and the Derivation of the Gross-Pitaevskii Hierarchy*, *International Mathematics Research Notices* (2015), 60pp, DOI: 10.1093/imrn/rnv228.
13. (with Y. Guo) *On the Weak Coupling Limit of Quantum Many-body Dynamics and the Quantum Boltzmann Equation*, *Kinetic and Related Models* **8** (2015), 443-405. DOI: 10.3934/krm.2015.8.443.
12. (with P. Smith) *On the Unconditional Uniqueness of Solutions to the Infinite Radial Chern-Simons-Schrödinger Hierarchy*, *Analysis & PDE* **7** (2014), 1683-1712. DOI: 10.2140/apde.2014.7.1683.

11. (with W. Strauss) *Velocity Reversal Criterion of a Body Immersed in a Sea of Particles*, Communications in Mathematical Physics **338** (2015), 139-168. DOI: 10.1007/s00220-015-2368-y.
10. (with J. Holmer) *Focusing Quantum Many-body Dynamics: The Rigorous Derivation of the 1D Focusing Cubic Nonlinear Schrödinger Equation*, Archive for Rational Mechanics and Analysis, DOI: 10.1007/s00205-016-0970-6.
9. (with W. Strauss) *Approach to Equilibrium of a Body Colliding Specularly and Diffusely with a Sea of Particles*, Archive for Rational Mechanics and Analysis **211** (2014), 879-910. DOI: 10.1007/s00205-013-0675-z.
8. (with J. Holmer) *On the Klainerman-Machedon Conjecture of the Quantum BBGKY Hierarchy with Self-interaction*, to appear in Journal of the European Mathematical Society.
7. (with J. Holmer) *On the Rigorous Derivation of the 2D Cubic Nonlinear Schrödinger Equation from 3D Quantum Many-Body Dynamics*, Archive for Rational Mechanics and Analysis **210** (2013), 909-954. DOI: 10.1007/s00205-013-0667-z.
6. *On the Rigorous Derivation of the 3D Cubic Nonlinear Schrödinger Equation with a Quadratic Trap*, Archive for Rational Mechanics and Analysis **210** (2013), 365-408. DOI: 10.1007/s00205-013-0645-5.
5. *Collapsing Estimates and the Rigorous Derivation of the 2d Cubic Nonlinear Schrödinger Equation with Anisotropic Switchable Quadratic Traps*, Journal de Mathématiques Pures et Appliquées **98** (2012), 450-478. DOI: 10.1016/j.matpur.2012.02.003.
4. *Second Order Corrections to Mean Field Evolution for Weakly Interacting Bosons in the Case of Three-body Interactions*, Archive for Rational Mechanics and Analysis **203** (2012), 455-497. DOI: 10.1007/s00205-011-0453-8.
3. *Elementary Proofs for Kato Smoothing Estimates of Schrödinger-Like Dispersive Equations*, Contemporary Mathematics **581** (2012), 63-68. DOI: 10.1090/conm/581/11487.
2. *Classical Proofs of Kato Type Smoothing Estimates for the Schrödinger Equation with Quadratic Potential in \mathbb{R}^{n+1} with Application*, Differential and Integral Equations **24** (2011), 209-230.
1. (with Y. P. Xiao, M. M. Lai, J. X. Hou, and Q. H. Liu), *A Secondary Operator Ordering Problem for a Charged Rigid Planar Rotator in Uniform Magnetic Field*, Communication of Theoretical Physics, **44** (2005), 49-50. DOI: 10.1088/6102/44/1/49.

Preprints

17. (with J. Holmer) *Focusing Quantum Many-body Dynamics II: The Rigorous Derivation of the 1D Focusing Cubic Nonlinear Schrödinger Equation from 3D*, arXiv:1407.8457, submitted.

Grants

NSF DMS-1464869 \$162,515

AMS-Simons Travel Grant, 2013 - 2015.

Professional Services

Organizer

August 8-11, 2016, Minisymposium for the SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia. Joint organization with Dionisios Margetis.

Fall 2013 - Spring 2015, Organizer of the Brown PDE Seminar, Brown University.

Fall 2008 - Fall 2010, Organizer of the Student Analysis / PDE Seminar, University of Maryland.

Referee for Journals

Annales Henri Poincaré (2 articles), Communications in Partial Differential Equations, Communications on Pure and Applied Analysis, Communications on Pure and Applied Mathematics, Contemporary Mathematics, Differential and Integral Equations, Discrete and Continuous Dynamical Systems - Series A (2 articles), Journal of Fixed Point Theory and Applications, Journal of Functional Analysis (2 articles), Journal of Physics A, SIAM Journal on Mathematical Analysis (2 articles).

Doctoral Thesis Committee

Younghun Hong (Advisor: Justin Holmer), Brown University, April 2013.

Preliminary Ph.D. Oral Exam Committee

Numann Malik (Advisor: Justin Holmer), Brown University, July 2014.

Departmental Services

Colloquia and Wing Lecture Committee, University of Rochester, 2015 - present

Graduate Admission Committee, Brown University, 2014 and 2015.

Invited Talks and other Academic Presentations

Invited Addresses

- 36.** July. 11th to July 22nd, Applied Math Summer School of Peiking University, Beijing, China.
- 35.** Apr. 13th, 2016, Colloquium, University of Maryland, College Park, MD.
- 34.** Mar. 10th, 2016, Analysis Seminar, University of Illinois, Urbana-Champaign, IL.
- 33.** Dec. 2015, SIAM Conference on Analysis of Partial Differential Equations, Scottsdale, AZ
- 32.** Nov. 20th, 2015, Analysis Seminar, University of Toronto, Toronto, Canada.
- 31.** Nov. 6th, 2015, Analysis Seminar, National Cheng Kung University, Taiwan.
- 30.** Nov. 4th, 2015, Colloquium, National Tsing Hua University, Taiwan.
- 29.** Nov. 2nd, 2015, International Conference on Nonlinear Analysis in Honor of Tai-Ping Liu's 70th Birthday, Academia Sinica, Taiwan.
- 28.** Feb. 6th, 2015, Colloquium, University of Cincinnati, Cincinnati, OH
- 27.** Feb. 3rd, 2015, Colloquium, University of Arizona, Tucson, AZ
- 26.** Jan. 26th, 2015, Colloquium, Michigan State University, East Lansing, MI
- 25.** Jan. 22nd, 2015, Colloquium, University of Rochester, Rochester, NY
- 24.** Dec. 10th, 2014, BU/Brown PDE Seminar, Boston University, Boston, MA.
- 23.** Nov. 17th, 2014, Analysis Seminar, Princeton University, Princeton, NJ.
- 22.** Nov. 14th, 2014, Analysis and PDE Seminar, University of California, Los Angeles, CA.
- 21.** Oct. 13th, 2014, PDE and Geometric Analysis Seminar, University of Wisconsin, Madison, WI.
- 20.** Oct. 7th, 2014, PDE Seminar, Georgia Tech, Atlanta, GA.

19. Sep. 12th, 2014, PDE Seminar, Brown University, Providence, RI.
18. Mar. 4th, 2014, Analysis/PDE Seminar, MIT, Cambridge, MA.
17. Dec. 7th, 2013, 2013 SIAM Conference on Analysis of PDE, Lake Buena Vista, FL.
16. Oct. 10th, 2013, PDE/Applied Math Seminar, University of Maryland, College Park, MD.
15. Oct. 2nd, 2013, Physics Colloquium, University of Massachusetts Boston, Boston, MA.
14. Sep. 13th, 2013, PDE Seminar, Brown University, Providence, RI.
13. Feb. 6th, 2013, Mathematical Physics & Probability Seminar, University of California, Davis, CA.
12. Feb. 4th, 2013, PDE/Analysis Seminar, University of California, Berkeley, CA.
11. Feb. 1th, 2013, PDE Seminar, Brown University, Providence, RI.
10. Oct. 23rd, 2012, BU/Brown PDE Seminar, Brown University, Providence, RI.
9. May 23rd, 2012, PDE Seminar, Tsinghua University, Beijing, China.
8. Mar. 22th, 2012, Department Colloquium, Georgia Southern University, Statesboro, GA.
7. Mar. 18th, 2012, 2012 Spring Eastern AMS Sectional Meeting, George Washington University, Washington, DC.
6. Jan. 17th, 2012, Harmonic Analysis and Differential Equations Seminar, University of Illinois, Urbana, IL.
5. Nov. 30th, 2011, Analysis Seminar, University of Texas, Austin, TX.
4. May 5th, 2011, PDE/Applied Math Seminar, University of Maryland, College Park, MD.
3. March 14th, 2011, Applied PDE RIT, University of Maryland, College Park, MD.
2. May 21st, 2010, Analysis Seminar, SUNY Stony Brook, Stony Brook, NY.
1. April 22nd, 2010, Analysis Seminar, Georgia Southern University, Statesboro, GA.

Contributed Presentations

2. March 17th, 2011, 27th Southeastern Analysis Meeting, University of Florida, Gainesville, FL.
1. March 26th, 2010, 26th Southeastern Analysis Meeting, Georgia Institute of Technology, Atlanta, GA.

AWARDS AND HONORS

11. 2011 - 2012, Ann G. Wylie Dissertation Fellowship, University of Maryland.
10. 2011 - 2012, John Osborn Summer Fellowship, University of Maryland.
9. 2009 - 2012, Kaplan Travelling Fellowship, University of Maryland.
8. June 2008, Evolution Equations Summer School Scholarship, Clay Mathematics Institute.
7. 2007 - 2009, Block Grant Fellowship, University of Maryland.
6. August 2007, CMPS Dean's Fellowship, University of Maryland.
5. August 2007, Excellent Academic Award, University of Maryland.
4. June 2007, 1st Class Excellent Thesis Award, Hunan University, China.
3. 2005 - 2006, Tianyu Special Fellowship, Hunan University, China.
2. 2005 - 2006, 2nd Class Award, Hunan University, China.
1. 2004 - 2005, Monomial Fellowship, Hunan University, China.

Teaching Experiences¹

12. Fall 2015, Instructor of MATH265 (Functions of a Real Variable), University of Rochester. One section, 38 students.
11. Fall 2015, Instructor of MATH164 (Multidimensional Calculus), University of Rochester. One section, 70 students.
10. Spring 2015, Instructor of MATH1010 (Advanced Calculus I), Brown University. One section, 43 students. Course Evaluation (1 is best, 5 is worst): 1.89 for Section 01.
9. Fall 2014, Course Head and Instructor of MATH0180 (Intermediate Calculus / Calculus III), Brown University. Two sections, 118 students. Course Evaluation (1 is best, 5 is worst): 1.46 for Section 02; 1.66 for Section 03.
8. Spring 2014, Instructor of MATH0540 (Honors Linear Algebra), Brown University. One section, 31 students. Course Evaluation (1 is best, 5 is worst): 1.45 for Section 02.
7. Fall 2013, Course Head and Instructor of MATH0180 (Intermediate Calculus / Calculus III), Brown University. Two sections, 113 students. Course Evaluation (1 is best, 5 is worst): 1.42 for Section 01; 1.35 for Section 03.

¹Detailed course evaluation results available upon request.

6. Spring 2013, Instructor of MATH0180 (Intermediate Calculus / Calculus III), Brown University. One section, 36 students. Course Evaluation (1 is best, 5 is worst): 1.58 for Section 03.
5. Fall 2012, Instructor of MATH0180 (Intermediate Calculus / Calculus III), Brown University. Two sections, 115 students. Course Evaluation (1 is best, 5 is worst): 1.69 for Section 01; 1.44 for Section 02.
4. Spring 2011, Discussion Sessions for MATH241 (Calculus III), University of Maryland. Two sections, 56 students. Course Evaluation (4 is best, 0 is worst): 3.68 for Section 0131; 3.88 for Section 0141.
3. Fall & Spring 2010, Review Sessions for the PDE Ph.D. Qualifying Exam and MATH673, 674 (Graduate PDE I, II), University of Maryland.
2. Spring 2007, High School Algebra, Affiliated High School of Hunan University, China.
1. Spring 2005, College Physics, Hunan University, China.

Professional Affiliations

American Mathematical Society (AMS). International Association of Mathematical Physics (IAMP).