

Mihaela Ifrim

- CONTACT INFORMATION Department of Mathematics
University of Wisconsin, Madison
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- RESEARCH INTERESTS Nonlinear Dispersive Equations (water-wave equations and related dispersive models), Fluid Mechanics & Elastodynamics, Harmonic Analysis, 1-D Hyperbolic Systems of Conservation Laws, General Relativity.
- PROFESSIONAL APPOINTMENTS
- *Clare Boothe Luce Assistant Professor*, Department of Mathematics, University of Wisconsin, Madison, August 2017-present
 - *Simons Postdoctoral Scholar* - Postdoctoral Advisor: Professor Daniel Tataru, University of California at Berkeley, Department of Mathematics, January 2014 - August 2017
 - *Postdoctoral Fellow* - Canada Research Chair Postdoctoral Fellowship, McMaster University, Department of Mathematics and Statistics; September 2012 - December 2013
- ACADEMIC VISITS
- *ENS Cachan visiting Professor*, collaborative visit May 1 - June 11, 2018, France
 - *University of Bonn collaborative visit*, Mathematics Department, April 1 - 30, June 16 - 29, 2018, Bonn, Germany
 - *University of Paris Sud visiting Professor*, Mathematics Department, collaborative visit, University of Paris-Sud Orsay, collaborative visit March 15 -30, 2018, France
 - *Visiting Member* at Institut des Hautes Études Scientifiques (IHES) in "Nonlinear Waves" trimester, May-July 2016
 - *Research Member* at Mathematical Sciences Research Institute (MSRI)
 - ~ New Challenges in PDE: Deterministic Dynamics and Randomness in High and Infinite Dimensional Systems from August 17, 2015 - December 18, 2015
 - ~ Mathematical General Relativity program, from October 1st to November 31st, 2013 (*on leave from McMaster*)
 - *Research Member* in Hausdorff Trimester Program: Harmonic Analysis and Partial Differential Equations, Bonn, Germany, May 20 - August 22, 2014.
- EDUCATION
- Ph.D. in Mathematics**, Department of Mathematics, University of California at Davis, CA, USA, 2012
- Thesis Topic: *Normal Form Transformations for Quasilinear Wave Equations*
 - PhD Advisor: Professor John K. Hunter

PUBLICATIONS

1. M. Ifrim, H. Koch and D. Tataru, Dispersive decay of small data solutions for the KdV equation, available at <https://arxiv.org/pdf/1901.05934.pdf>, preprint 2019
2. M. Ifrim, D. Tataru, The NLS approximation for two dimensional deep gravity waves, *e-print* available at <https://arxiv.org/abs/1809.05060>, (23 pages), submitted in 2018.
3. M. Ifrim, D. Tataru, No solitary waves in 2-d gravity and capillary waves in deep water, *e-print* available at [arXiv:1808.07916](https://arxiv.org/abs/1808.07916), (15 pages), submitted in 2018.
4. T. Alazard, M. Ifrim, D. Tataru, A Morawetz inequality for water waves, *e-print* available at [arXiv:1806.08443](https://arxiv.org/abs/1806.08443), (71 pages), submitted in 2018.
5. M. Ifrim and D. Tataru, Well-posedness and dispersive decay of small data solutions for the Benjamin-Ono equation, *Annales scientifiques de l'ENS*, *e-print* available at [arXiv:1701.08476](https://arxiv.org/abs/1701.08476), (36 pages), published in 2017.
6. B. Harrop-Griffiths, M. Ifrim, and D. Tataru, Finite depth gravity water waves in holomorphic coordinates, *Ann. PDE*, 3, (82 pages), *e-print* available at [arXiv:1607.02409](https://arxiv.org/abs/1607.02409), published in 2017.
7. M. Ifrim and D. Tataru, Two dimensional gravity water waves with constant vorticity: I. Cubic lifespan, (64 pages), *Analysis & PDE*, *e-print* available at [arXiv:1510.07732](https://arxiv.org/abs/1510.07732), published in 2018.
8. B. Harrop-Griffiths, M. Ifrim, and D. Tataru, The lifespan of small data solutions to the KP-I, *Int. Math. Res. Not.*, no. 1, 1-28, *e-print* available at [arXiv:1409.4487](https://arxiv.org/abs/1409.4487), published in 2017.
9. M. Ifrim and D. Tataru, The lifespan of small data solutions in two dimensional capillary water waves, *Arch. Ration. Mech. Anal.*, 225, no. 3, 1279-1346, *e-print* available at [arXiv:1406.5471](https://arxiv.org/abs/1406.5471), published in 2017.
10. M. Ifrim and D. Tataru, Two dimensional water waves in holomorphic coordinates II: global solutions, *Bull. Soc. Math. France*, 144, no. 2, 369-394, *e-print* available at [arXiv:1404.7583](https://arxiv.org/abs/1404.7583), published in 2016.
11. M. Ifrim and D. Tataru, Global bounds for the cubic nonlinear Schrödinger equation (NLS) in one space dimension, *Nonlinearity*, 28, no. 8, 2661-2675, *e-print* available at [arXiv:1404.7581](https://arxiv.org/abs/1404.7581), published in 2015.
12. J. K. Hunter, M. Ifrim, and D. Tataru, Two dimensional water waves in holomorphic coordinates. *Comm. Math. Phys.*, 346, no. 2, 483-552, *e-print* available at [arXiv:1401.1252](https://arxiv.org/abs/1401.1252), published in 2016.
13. J. K. Hunter, M. Ifrim, D. Tataru, D. T. Wang, A modified energy method proving enhanced lifespan of smooth solutions of a Burgers-Hilbert equation, *e-print* available at <http://arxiv.org/abs/1301.1947>, *Proceedings of the AMS*, Vol. 143(8), pp. 3407-3412, published in 2015.
14. J. K. Hunter, M. Ifrim, Enhanced lifespan of smooth solutions of a Burgers-Hilbert equation, *e-print* available at <http://arxiv.org/abs/1112.0813>, *SIAM Journal on Mathematical Analysis*, Vol 44(3), pp. 1279-2235, published in 2012.

15. J. K. Hunter, M. Ifrim, A quasilinear Schrödinger equation, large amplitude inertial oscillations in a rotating shallow fluid, *IMA Journal of Applied Mathematics*, Vol. 78(4), pp. 762-776, published in 2013.

HONORS AND
AWARDS

- *Clare Luce Boothe Professorship*, August 2017-present
- *Clay Mathematics Institute* travel award for *IHES Summer School on Non-linear Waves*, Bures-sur-Yvette, France, July 18-29, 2016
- *William Karl Schwarze Scholarship in Mathematics*, Department of Mathematics, University of California at Davis, Spring 2010
- *Alice Leung Scholarship in Mathematics*, Department of Mathematics, University of California at Davis, Spring 2009
- *Travel Awards*, Department of Mathematics, University of California at Davis, Fall 2010, Fall 2011
- *Block Grant Fellowship*, Department of Mathematics, University of California at Davis, Fall 2008, Spring 2009, Winter 2010, Winter 2011, Spring 2011 and Winter 2012
- *Scholarship in Mathematics*, Scoala Normala Superioara (SNSB), Institute of Mathematics Simion Stoilow of the Romanian Academy, Bucharest, Fall 2006 - June 2007
- *Scholarship in Mathematics*, SMI, July 31st - September 3rd, Scuola Matematica Interuniversitaria (SMI), Perugia, Italy 2005
- *Scholarship in Mathematics*, Faculty of Mathematics and Computer Science, University of Bucharest, Bucharest, Romania, Fall 2002 - July 2006

PRESENTATIONS
AND
CONFERENCES

- INdAM Meeting “Linear and Nonlinear Wave Phenomena: Stability, Propagation of Regularity and Turbulence”, Cortona, Italy, September 10-14, 2018
- Lund Workshop on Fluid Dynamics and Dispersive Equations, June 25-29, 2018
- Analyse asymptotique des équations aux dérivées partielles d'évolution, Florence, Italy, Mai 7- 11, 2018
- PDE Seminar, University of Paris-Sud Orsay, March 29th 2018
- Joint Mathematics Meetings, San Diego Convention Center and Marriott Marquis San Diego Marina, San Diego, CA, January 10-13, 2018
- SIAM Conference on Analysis of Partial Differential Equations, The Baltimore Convention Center, Baltimore, Maryland, USA, December 9-12, 2017
- Fall Western Sectional Meeting, University of California, Riverside, CA, November 4-5, 2017
- PDE Geometric Analysis seminar, University of Wisconsin, Madison, September 11,

2017

- CIRM: Asymptotic Analysis of Evolution Equations, Luminy, France July 3-7, 2017
- Oberwolfach Workshop: Nonlinear Waves and Dispersive Equations, 11-17 June 2017
- Summer School and Workshop: Mathematical Analysis of Water Waves and Related Models, Bodega Marine Laboratory, Bodega Bay, CA, June 5-9, 2017
- Analysis and PDE seminar, University of Wisconsin, Madison, January 13-14, 2017
- Joint Mathematics Meetings AMS Special Session, AMS Special Session on Recent Progress on Nonlinear Dispersive and Wave Equations, January 4-7, 2017
- Colloquium, University of California at Santa Barbara, November 30th, 2016
- AMS Fall Southeastern Sectional Meeting, North Carolina State University, Raleigh, NC , November 12-13, 2016
- Theoretical and Computational Aspects of Nonlinear Surface Waves, Banff, Canada, October 30-November 4, 2016
- Analysis and PDEs Seminar, University at Paris-Nord, July 13th, 2016
- One trimester long program: Nonlinear Waves, IHES, June 9, 2016
- Nonlinear Evolution Problems, Oberwolfach Workshop, Oberwolfach, Germany, May 29 - June 4, 2016
- International Conference on Evolution Equations in conjunction with the 31st annual Shanks Lecture, Vanderbilt University, during May 16-20, 2016
- Analysis of PDE's of Fluid Mechanics Workshop, Rice University, Houston, TX, May 9 - May 11, 2016
- Colloquium, University of Southern California, California, April 25, 2016
- Analysis and PDEs Seminar, UC Santa Barbara, California, March 11, 2016
- 34th Annual Western States Mathematical Physics Meeting, Caltech, February 15 - February 15, 2016
- Special Seminar, North Carolina State University, NC State University, January 19, 2016
- Colloquium, University of Miami, Miami, January 14, 2016
- SIAM Conference on Analysis of Partial Differential Equations, Scottsdale, Arizona, December 7-10, 2015
- Colloquium, University of North Carolina at Chapel Hill, December 1, 2015
- Postdocs Seminar- MSRI associated to the program: New Challenges in PDE: Deterministic Dynamics and Randomness in High and Infinite Dimensional Systems, Novem-

ber 13, 2015

- Fifth Abel Conference: Celebrating the Mathematical Impact of John F. Nash Jr. and Louis Nirenberg, IMA, Minnesota, November 02-04, 2015
- Shocks, Singularities and Oscillations in Nonlinear Optics and Fluid Mechanics, IN-DAM, Rome, Italy, September 14-15, 2015
- AMS Sectional Meeting AMS Special Session, Spring Eastern Sectional Meeting, Georgetown University, Washington, DC March 7-8, 2015
- AMS Sectional Meeting AMS Special Session, Spring Western Sectional Meeting, University of Nevada, Las Vegas, Las Vegas, NV, April 18-19, 2015
- University of California at Berkeley, Analysis and PDE Seminar, April 27, 2015.
- University of Illinois at Urbana-Champaign, Harmonic Analysis and Differential Equations, Department of Mathematics, IL, February 17, 2015
- University of California, Los Angeles, Analysis and PDE Seminar , February 13, 2015
- The University of North Carolina at Chapel Hill, Analysis Seminar, Department of Mathematics, NC, Nov 12, 2014
- Workshop: Harmonic Analysis Methods in Dispersive PDEs, Hausdorff Institute, Bonn, Germany, June 10-13, 2014
- The Seventeenth Riviere-Fabes Symposium on Analysis and PDE, School of Mathematics, University of Minnesota, April 25-27, 2014
- Analysis and PDE Seminar , School of Mathematics, University of Minnesota, April 23, 2014
- AMS Meeting - Western Spring Sectional Meeting University of New Mexico, Special Session on Harmonic Analysis and Dispersive Equations, Albuquerque, NM, April 4-6, 2014
- Dynamics in Geometric Dispersive Equations and the Effects of Trapping, Scattering and Weak Turbulence, Banff, Canada, May 4-9, 2014
- Berkeley Analysis/PDE Seminar, University of California, Berkeley, November 4, 2013
- AMS Central Sectional Meeting, Washington University, St. Louis, MO, Special Session: PDEs of Fluid Mechanics, October 18-20, 2013
- PDE and Applied Math Seminar, University of California at Davis, California, Nov 19, 2013
- Oberwolfach Workshop: Nonlinear Waves and Dispersive Equations, Germany, Oberwolfach, Germany, August 11 -18, 2013
- Joint International Meeting of the AMS and the Romanian Mathematical Society, Alba Iulia, Romania, June 27-30, 2013

- NSF-CBMS Regional Research Conference in Mathematical Sciences, The Global Behavior of Solutions to Critical Nonlinear Wave Equations, Kansas State University, June 17-21, 2013
- The Sixteenth Riviere-Fabes Symposium on Analysis and PDE, School of Mathematics, University of Minnesota, April 19-21, 2013
- Joint Mathematics Meeting at San Diego, January 9-12, 2013
- AIMS Lab Seminar, McMaster University, Canada, November 12, 2012
- PDE/Analysis Seminar, McMaster University, Canada, November 9, 2012
- Oberwolfach Seminar: Dispersive Equations, Oberwolfach, Germany, October 14-20th, 2012
- Mathematical General Relativity, Summer Graduate Workshop, MSRI, July 9-20, 2012
- The Fifteenth Riviere-Fabes Symposium on Analysis and PDE, School of Mathematics, University of Minnesota, April 20-22, 2012
- Student Harmonic Analysis and Differential Equations Seminar, University of California at Berkeley, January 31, 2012
- PDE and Water Waves Seminar at University of California at Berkeley, November 28, 2011
- SIAM Conference on Analysis of Partial Differential Equations, San Diego Marriott Mission Valley, California, November 14-17, 2011
- Incompressible Fluids, Turbulence and Mixing, Carnegie Mellon University, Pittsburgh, PA, October 13-16, 2011
- PDE and Water Waves Seminar at University of California at Berkeley, weekly meetings August 2011-May 2012
- NSF-CBMS Conference: “Global Harmonic Analysis”, University of Kentucky, June 20-24, 2011
- “New Perspectives in Nonlinear PDE’s”, Mathematics Department, University of Michigan, Ann Arbor, MI, May 2-6, 2011
- Free Boundary Problems, Theory and Applications, MSRI, March 7-11, 2011
- Introductory Workshop: Free Boundary Problems, Theory and Applications, MSRI, January 18-21, 2011
- GGAM Mini-Conference, Math. Dept., University of California at Davis, January 15th, 2011
- Connections for Women: Free Boundary Problems, Theory and Applications, MSRI, January 13-14, 2011

- “66th Midwest Partial Differential Equations Seminar”, UIC, November 13-14, 2010
- Combined Applied Math and PDEs Seminar at University of California at Davis, weekly meetings, Fall 2008 - Spring 2012
- Nonlinear Analysis, Spectrum of Nonlinear Operators, Scuola Interuniversitaria di Perugia, Italy, 2006

ACADEMIC
SERVICE

- Co-organizer for a graduate summer school at MSRI: Introduction to water waves, Summer 2020
- Co-organizer for the MSRI program ‘Mathematical problems in fluid dynamics’ during Spring 2021: <http://www.msri.org/programs/327>
- Association for Women in Mathematics Mentor for the Joint Mathematics Meetings, San Diego Convention Center and Marriott Marquis San Diego Marina, San Diego, CA, January 10-13, 2018
- Co-coach for the Jefferson Middle School MathCounts team, 2017-present (helping by teaching couple of lectures)
- Reviewer for *Mathematical Reviews*, July 2017-present
- Madison Math Circle, University of Wisconsin at Madison instructor, Fall 2017-present
- Co-organizer: Putnam Club, Fall 2017- present
- Seminar co-organizer: The Analysis and PDE Seminar, UC Berkeley, Fall 2014 - Spring 2016
- Graduate Program Committee Representative - Department of Mathematics, University of California at Davis, Spring 2010 - Spring 2012