

Mihaela Ignatova

Curriculum Vitae

Department of Mathematics
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Education

- **University of Southern California**, Los Angeles, CA
Ph.D. in Mathematics, August 2011
Advisor: Prof. Igor Kukavica
- **Sofia University “St. Kliment Ohridski”**, Sofia, Bulgaria
M.Sc. in Mathematics and Mathematical Physics, June 2006
Advisor: Prof. Emil Horozov
- **Université de Nantes**, Nantes, France
Maîtrise de Mathématiques, June 2004
- **Sofia University “St. Kliment Ohridski”**, Sofia, Bulgaria
B.Sc. in Mathematics, June 2004

Appointments

- **Princeton University**, Princeton, NJ
Instructor, September 2014–current
- **Stanford University**, Stanford, CA
Postdoctoral Fellow, September 2012–2014
- **University of California, Riverside**, Riverside, CA
Visiting Assistant Professor, September 2011–2012

Research Interests

- Partial Differential Equations, Mathematical Fluid Dynamics, Harmonic Analysis

Publications

17. P. Constantin and M. Ignatova, *Critical SQG in bounded domains*, M. Ann. PDE, **2** (2016), no 8.
16. M. Ignatova and I. Kukavica, *On the local existence of the free-surface Euler equation with surface tension*, Asymptotic Analysis, **100** (2016), no. 1-2, pp. 63–86.
15. P. Constantin, T. Elgindi, M. Ignatova, V. Vicol, *On some electroconvection models*, arXiv:1512.00676 [math.AP], DOI:10.1007/s00332-016-9329-2, to appear at JNLS, 2016.

14. P. Constantin, T. Elgindi, M. Ignatova, V. Vicol, *Remarks on the inviscid limit for the Navier-Stokes equations for uniformly bounded velocity fields*, SIAM J. Math. Anal. **49** (2017) no. 3, 1932–1946.
13. P. Constantin and M. Ignatova, *Remarks on the fractional Laplacian with Dirichlet boundary conditions and applications*, Int Math Res Notices **2017** (2017), no. 6, 1653–1673.
12. M. Ignatova, I. Kukavica, I. Lasiecka, and A. Tuffaha, *Small data global existence for a fluid-structure model*, Nonlinearity **30** (2017), no. 2, 848–898.
11. M. Ignatova and V. Vicol, *Almost global existence for the Prandtl boundary layer equations*, Archive for Rational Mechanics and Analysis **220** (2016), no. 2, 809–848.
10. M. Ignatova, G. Iyer, J. Kelliher, R. Pego, and A. Zarnescu, *Global well-posedness results for two extended Navier-Stokes systems*, Commun. Math. Sci. **13** (2015), no. 1, 249–267.
9. M. Ignatova, *On the continuity of solutions to advection-diffusion equations with slightly super-critical divergence-free drifts*, Advances in Nonlinear Analysis **3** (2014), no. 2, 81–86.
8. M. Ignatova, I. Kukavica, I. Lasiecka, and A. Tuffaha, *On well-posedness and small data global existence for an interface damped free boundary fluid-structure model*, Nonlinearity **27** (2014), no. 3, 467–499.
7. M. Ignatova, I. Kukavica, and L. Ryzhik, *The Harnack inequality for second-order parabolic equations with divergence-free drifts of low regularity*, Comm. PDEs **41** (2016), no. 2, 208–226.
6. M. Ignatova, I. Kukavica, and L. Ryzhik, *The Harnack inequality for second-order elliptic equations with divergence-free drifts*, Commun. Math. Sci. (2014) **12**, no. 4, 681–694.
5. M. Ignatova, I. Kukavica, I. Lasiecka, and A. Tuffaha, *On the well-posedness for a free boundary fluid-structure model*, J. Math. Phys. **53** (2012), no. 11, 115624, 13pp.
4. M. Ignatova, I. Kukavica, and M. Ziane, *Local existence of solutions to the free boundary value problem for the primitive equations of the ocean*, J. Math. Phys. **53** (2012), no. 10, 103101, 17pp.
3. M. Ignatova and I. Kukavica, *Strong unique continuation for the Navier-Stokes equation with non-analytic forcing*, J. Dynam. and Differential Equations **25** (2013), no. 1, 1–15.
2. M. Ignatova and I. Kukavica, *Strong unique continuation for higher order elliptic equations with Gevrey coefficients*, J. Differential Equations **252**, (2012), no. 4, 2983–3000.
1. M. Ignatova and I. Kukavica, *Unique continuation and complexity of solutions to parabolic partial differential equations with Gevrey coefficients*, Adv. Differential Equations **15** (2010), no. 9, 953–975.

Presentations

- Workshop on *Irregular transport: analysis and applications*, Basel, Switzerland, June 2017
- Workshop on *Essence of $(u \cdot \nabla)u$: Reflections on Mathematical Fluid Dynamics*, University of Virginia, May 2017
- AMS Sectional Meeting, Hunter College, New York, NY, April 2017
- KUMUNU Conference, University of Nebraska-Lincoln, April 2017
- Analysis seminar, University of Pennsylvania, April 2017
- Workshop on *Analysis of PDEs of Fluid Mechanics*, Rice University, May 2016
- International Conference on Evolution Equations at Vanderbilt University, May 2016

- Nonlinear Analysis Seminar, Rutgers University, March 2016
- SIAM Conference on Analysis of Partial Differential Equations, Scottsdale, Arizona, Dec 2015
- AMS Sectional Meeting, Loyola University, Chicago, IL, Oct 2015
- AMS Sectional Meeting, University of Nevada, Las Vegas, April 2015
- AMS Spring Eastern Sectional Meeting, Washington, DC, Mar 2015
- JMM, SIAM Minisymposium on PDEs and Applications, San Antonio, Texas, Jan 2015
- ETSM seminar, Princeton University, Oct 2014
- AIMS conference, SS Mathematical aspects of fluid dynamics, Madrid, Spain, July 2014
- Fourth Workshop on Fluids and PDE, IMPA, Rio de Janeiro, Brazil, May 2014
- PDE colloquium, University of Miami, FL, Jan 2014
- JMM, Session *Regularity Problems for Nonlinear PDEs Modeling Fluids and Complex Fluids*, Baltimore, MD, Jan 2014
- PDE colloquium, University of Miami, FL, Jan 2014
- SIAM conference on Analysis of PDEs, Session *Modeling, Analysis and Control of Fluid/Flow-Structure Interactions*, Orlando, FL, Dec 2013
- AMS Sectional Meeting, Session *Fluids and Boundaries*, Riverside, CA, Nov 2013
- PDE seminar, USC, Los Angeles, CA, Nov 2013
- MRC workshop *Regularity Problems for Nonlinear PDEs Modeling Fluids and Complex Fluids*, Snowbird, UT, Jun 2013
- AWM Research Symposium, SCU, Santa Clara, CA, Mar 2013
- JMM, Session *Nonlinear Evolution Equations and Integrable Systems*, San Diego, CA, Nov 2012
- PDE seminar, UC Berkley, Berkley, CA, Oct 2012
- Workshop on *Mathematical Aspects of Hydrodynamics*, Oberwolfach, Germany, Aug 2012
- Conference on PDEs *Analytic and Geometric Aspects*, in honor of Michael Taylor's 65 birthday, UNC, Chapel Hill, NC, Jul 2012
- CNA seminar, CMU, Pittsburgh, PA, Mar 2012
- IAMIS workshop *Analysis and Applications of Evolutionary PDEs*, UCR, Riverside, CA, May 2012
- SIAM Conference on Analysis of Partial Differential Equations, San Diego, CA, Nov 2011
- Conference on *Incompressible Fluids, Turbulence and Mixing*, in honor of Peter Constantin's 60th birthday, CMU, Pittsburgh, PA Oct 2011
- PDE Seminar, UCR, Riverside, CA, Oct 2011
- International Conference on *PDEs Modeling Fluids and Complex Fluids*, celebrating the 60th birthday of Peter Constantin, Xi'an, China, Jun 2011.
- Nonlinear PDEs Seminar, UCI, Irvine, CA, May 2011
- The Fifth Southern California Symposium on Flow Physics, USC, Los Angeles, CA, Apr 2011
- Women in Mathematics Symposium, Pomona College, Claremont, CA, Nov 2010
- AMS Sectional Meeting, UND, Notre Dame, IN, Nov 2010

- AMS Sectional Meeting, UCLA, Los Angeles, CA, Oct 2010
- Women in Mathematics Symposium, USC, Los Angeles, CA, Feb 2010
- International Conference Dedicated to the Pioneers of Bulgarian Mathematics, L. Chakalov and N. Obreshkov, Sofia University, Sofia, Bulgaria, Jul 2006
- Functional Analysis Seminar, Nantes, France, May 2004

Awards

- Grayson and Judith Manning Fellowship, Graduate School/Provost's Office, USC, Los Angeles, 2011–2012
- Theodore Edward Harris Graduate Research Prize, USC, Los Angeles, Spring 2011
- Women in Science and Engineering (WiSE) Merit Award, College of Letters, Arts, and Sciences Merit Fellowship, USC, Los Angeles, 2010–2011
- College of Letters, Arts, and Sciences Merit Fellowship, USC, Los Angeles, Spring 2010
- Merit-based Full Scholarship, University of Nantes, France, 2003–2004

Teaching Experience

- **Course Instructor at Princeton University**
 - MAT 320, Introduction to Real Analysis, Fall 2017
 - MAT 425, Real Analysis, Spring 2016
 - MAT 201, Multivariable Calculus, Fall 2015
 - MAT 103, Calculus I, Fall 2014
- **Course Instructor at Stanford University**
 - Math 173, Theory of Partial Differential Equations, Spring 2014
 - Math 131P, Partial Differential Equations I, Winter 2014
 - Math 51, Linear Algebra and Multivariable Calculus, Summer 2013
 - Math 42, Calculus (Accelerated), Winter 2013
- **Course Instructor at University of California, Riverside**
 - Math 11, Discrete Mathematics, Spring 2012
 - Math 9B, Calculus II, Spring 2012
 - Math 9C, Calculus III, Winter 2011
 - Math 8B, College Mathematics for Science, Winter 2011
 - Math 46, Ordinary Differential Equations, Fall 2011
 - Math 9A, Calculus I, Fall 2011
- **Course Instructor at University of Southern California**
 - Math 040, Basic Mathematical Skills, Fall 2009
- **Teaching Assistant at University of Southern California**
 - Math 475, Theory of Complex Variables and Math 525b, Fall 2011

- Math 126, Calculus II, Fall 2010
- Math 425a, Real Analysis, Spring 2009
- Math 445, Mathematics of Physics and Engineering II, Fall 2008
- Math 245, Mathematics of Physics and Engineering I, Fall 2007 and Spring 2008
- Math 118, Fundamental Principles of Calculus, Fall 2006 and Spring 2007
- **Teaching Assistant at Sofia University**
 - Ordinary Differential Equations, Spring 2005
 - Real Analysis, Fall 2004

Conferences Attended

- Workshop on *Probabilistic Perspectives*, Edinburgh, UK, June 2017
- Workshop on *Mathematical Aspects of Hydrodynamics*, Oberwolfach, Germany, Aug 2015
- Clifford Lectures, Tulane University, New Orleans, LA, Nov 2013
- Clay Mathematics Institute Conference and Workshop on *The Navier-Stokes equations and Related Topics*, University of Oxford, UK, Sep 2013
- Summer School and Workshop *Recent Advances in PDEs and Fluids*, Stanford University, Aug 2013
- AIM workshop on *Stochastic in Geophysical Fluid Dynamics*, Palo Alto, CA, Feb 2013
- Madison Autumn Analysis and PDE workshop, Madison, WI, Nov 2012
- The Fourth Southern California Symposium on the Mathematics of Fluids, UCR, CA, Oct 2011
- AMS Sectional Meeting, University of Nevada, Las Vegas, NV, Apr 2011
- Joint Mathematics Meetings, New Orleans, LA, Jan 2011
- Riviere-Fabes Symposium, UM, Minneapolis, MN, Apr 2010
- Southern California Symposium on the Mathematics of Fluids, Caltech, Pasadena, CA, Apr 2010
- AMS Sectional Meeting, UCR, Riverside, CA, Nov 2009
- AMS Sectional Meeting, Baylor University, Waco TX, Oct 2009
- AMS Sectional Meeting, SFSU, San Francisco, CA, Oct 2009
- AMS Sectional Meeting, UCSB, Santa Barbara, CA, Sep 2009

Skills and Abilities

- **Languages**
 - Bulgarian: native
 - English: fluent in written and spoken
 - French: advanced in written and spoken
 - Russian: working knowledge
- **Computer Skills**
 - Mathematica, Maple, Matlab, L^AT_EX