Ian Tobasco

CONTACT INFORMATION

Department of Mathematics
University of Michigan
1854 East Hall
530 Church Street
Ann Arbor, MI 48109 USA

phone: (734) 764-3405
e-mail: itobasco@umich.edu
web: www.iantobasco.com

RESEARCH INTERESTS

Calculus of Variations and Nonlinear Partial Differential Equations,
with specific interests in nonlinear elasticity, fluid dynamics, and spin glasses

EDUCATION

Courant Institute of Math. Sciences, New York University, New York, NY
September 2011 - September 2016

Ph.D. in Mathematics

- Dissertation Topic: Variational analysis of compressed thin elastic sheets and the phase diagrams of mean field spin glasses
- Advisor: Robert V. Kohn

University of Michigan, Ann Arbor, MI
September 2007 - April 2011

B.S.E. in Aerospace Engineering

- Graudated *Summa Cum Laude*
- Minor in Mathematics

PUBLICATIONS

Submitted

1. C. R. Doering and I. Tobasco, *On the Optimal Design of Wall-to-Wall Heat Transport*, preprint arXiv:1712.08945.

Accepted

1. I. Tobasco, D. Goluskin, and C. R. Doering, *Optimal Bounds and Extremal Trajectories for Time Averages in Nonlinear Dynamical Systems*, Phys. Lett. A 382 (2018) 382-386.
2. A. Jagannath and I. Tobasco, *Bounding the Complexity of Replica Symmetry Breaking for Spherical Spin Glasses*, to appear in Proc. Amer. Math. Soc., preprint arXiv:1607.02134.
3. I. Tobasco, *Axial Compression of a Thin Elastic Cylinder: Bounds on the Minimum Energy Scaling Law*, Comm. Pure Appl. Math. 71 (2018) 304-355.
4. I. Tobasco and C. R. Doering, *Optimal Wall-to-Wall Transport by Incompressible Flows*, Phys. Rev. Lett. 118 (2017) 264502.
5. A. Jagannath and I. Tobasco, *Low Temperature Asymptotics in Spherical Mean Field Spin Glasses*, Comm. Math. Phys. 352 (2017) 979-1017.
6. S. Conti, H. Olbermann, and I. Tobasco, *Symmetry Breaking in Indented Elastic Cones,* Math. Models Methods Appl. Sci. 27 (2017) 291-321.
7. A. Jagannath and I. Tobasco, *Some Properties of the Phase Diagram for Mixed p-Spin Glasses,* Probab. Theory Related Fields 167 (2017) 615-672.
8. A. Jagannath and I. Tobasco, *A Dynamic Programming Approach to the Parisi Functional*, Proc. Amer. Math. Soc. 144 (2016), 3135-3150.

9. D. Sanjaya, K. Fidkowski, and I. Tobasco, *Adjoint-accelerated statistical and deterministic inversion of atmospheric contaminant transport*, Computers and Fluids 100 (2014), 291-307.
10. D. Viswanath and I. Tobasco, *Navier-Stokes solver using Green's functions I: Channel flow and plane Couette flow*, J. Computational Physics 251 (2013), 414-431.

Invited Talks

- Analysis of Fluids Seminar, Princeton Univ. (Oct. 2017)
- Applied and Interdisciplinary Math. Seminar, Univ. of Michigan (Sept. 2017)
- GLSIAM Spring Meeting, Oakland Univ. (Apr. 2017)
- Analysis and Applied Math Seminar, Univ. of Toronto (Apr. 2017)
- Applied Math Seminar, Courant Institute (Mar. 2017)
- PDE and Analysis Seminar, Univ. of Pittsburgh (Jan. 2017)
- Differential Equations Seminar, Univ. of Michigan (Dec. 2016)
- APS Division of Fluid Dynamics Annual Meeting, Portland, OR (Nov. 2016)
- Analysis/Probability Seminar, Univ. of Michigan (Oct. 2016)
- SIAM Math. Aspects of Materials Science, Philadelphia, PA (May 2016)
- Applied Math Colloquium & Level Set Collective Group Meeting, UCLA (Jan. 2016)
- SIAM Conference on Analysis of PDE, Scottsdale, AZ (Dec. 2015)
- Applied and Interdisciplinary Math. Seminar, Univ. of Michigan (Dec. 2015)
- KI-Net Young Researchers Workshop, Univ. of Maryland (Nov. 2015)
- PDE–Applied Math Seminar, Univ. of Maryland (Nov. 2015)
- Oberseminar Analysis, Univ. of Bonn IAM (May 2015)
- Materials Working Group, Courant Instiute (Apr. 2015)
- KI-Net Young Researchers Workshop, Univ. of Maryland (Oct. 2014)
- Materials Working Group, Courant Instiute (Oct. 2014)

Poster Sessions

- Nonconvexity, Nonlocaity and Incompatibility—L. Truskinovky's 60th Birthday, Univ. of Pittsburgh (May 2017)
- 6th Midwest Workshop on Control and Game Theory, Univ. of Michigan (Apr. 2017)
- NYU–Oxford Workshop on Math. Models of Defects and Patterns, New York Univ. (Jan. 2016)
- IMA Special Workshop on Mathematics and Mechanics, Eugene, OR (Oct. 2015)
- PIRE Workshop on Grain Boundaries and Stochastic Homogenization, Univ. of Leipzig, Germany (Jul. 2015)

Honors and Awards

2016	Courant Institute Kurt O. Friedrichs Prize "for an outstanding dissertation in mathematics"
2015	Courant Institute Wilhelm T. Magnus Memorial Prize "for significant contributions to the mathematical sciences"
2013–2016	National Science Foundation Graduate Research Fellowship
2011–2016	Henry M. MacCracken Fellowship New York University Graduate School of Arts and Sciences
2010	First place at AIAA Regional Student Conference
2010	Harm Buning Scholarship Univ. of Michigan Aerospace Engineering Dept.
2008–2009	Boeing Scholarship Univ. of Michigan Aerospace Engineering Dept.
2008–2010	Univ. of Michigan James B. Angell Scholar

Professional Experience

University of Michigan, Ann Arbor, MI
Course Instructor

- Honors Ordinary Differential Equations, Winter 2017
- Ordinary Differential Equations, Fall 2016

Courant Institute of Math. Sciences, New York, NY
Teaching Assistant

- Intro. to Partial Differential Equations, Spring 2014
- Transformations and Geometry, Fall 2013
- Honors Calculus I, Fall 2013
- Intro. to Mathematical Analysis II, Spring 2013 (graduate lvl.)
- Intro. to Mathematical Analysis I, Fall 2012 (graduate lvl.)

cSplash Co-organizer

- Senior Advisor, 2014
- Academics Coordinator, 2012–2013

Courant Splash (cSplash) is an annual one-day lecture series aimed at mathematically inclined high school students from New York City and surrounding areas (`http://www.csplash.org`).

University of Michigan, Ann Arbor, MI

- Michigan Math Lab Tutor, 2009–2011
- Michigan Research Community Math/Physics Study Group Leader, 2008–2009