

# David Michael Ambrose

# Curriculum Vitae

Drexel University, Department of Mathematics  
Korman Center 290, 3141 Chestnut St.  
Philadelphia, PA 19104

ambrose@math.drexel.edu  
phone: 1-215-895-6247  
fax: 1-215-895-1582

## Education

**PhD** Mathematics, 2002, Duke University  
**MA** Mathematics, 1999, Duke University  
**MS** Mathematics, 1997, Carnegie Mellon University  
**BS** Mathematics and Economics, 1997, Carnegie Mellon University

## Experience

**Professor**, Drexel University, Mathematics  
**Associate Department Head**, Drexel University, Mathematics  
**Associate Professor**, Drexel University, Mathematics  
**Assistant Professor**, Drexel University, Mathematics

*Fall 2016 - present*  
*Summer 2013 - present*  
*Fall 2012 - Summer 2016*  
*Fall 2008 - Summer 2012*

Courses taught:

MATH 102	Introduction to Analysis II	Winter 2010
MATH 110	Precalculus	Fall 2012
MATH 121	Calculus I	Fall 2008, Fall 2009, Fall 2010
MATH 123	Calculus III	Winter 2013, Fall 2013, Winter 2014, Summer 2015
MATH 183	Mathematical Analysis III	Summer 2013
MATH 210	Differential Equations	Fall 2008, Winter 2009, Fall 2009, Winter 2010, Winter 2011, Fall 2011, Winter 2012, Fall 2012, Winter 2013, Winter 2016
MATH 283	Differential Equations II	(Independent Study: Winter 2010)
MATH 323	Partial Differential Equations	Winter 2009, Winter 2011
MATH 505	Principles of Analysis I	Fall 2011
MATH 506	Principles of Analysis II	Winter 2012
MATH 620	Partial Differential Equations I	Fall 2017
MATH 621	Partial Differential Equations II	Winter 2018
MATH 622	Partial Differential Equations III	Spring 2015
MATH 633	Real Variables I	Spring 2014
MATH 634	Real Variables II	Fall 2014
MATH 640	Functional Analysis	Winter 2015
MATH 698	Special Topics: Fluid Dynamics	Fall 2010

**Assistant Professor**, Clemson University, Mathematics

*Fall 2005 - Fall 2008*

Undergraduate courses taught: Elementary Functions, Calculus of One Variable II, Linear Algebra, Advanced Calculus I, Advanced Calculus II. Graduate course taught: Linear Analysis.

**Courant Instructor**, Courant Institute, NYU

*Fall 2002 - Spring 2005*

Instructor for one course per semester. Courses taught: Precalculus, Calculus I, Introduction to Mathematical Modeling, Advanced Calculus I, Vector Analysis.

**Instructor**, Duke University Talent Identification Program (TIP) *Summer 2002, 2004*  
TIP courses are taught to academically gifted middle-school and high-school students during the summer in an intensive three-week setting. In 2002, taught a standard Algebra II course. In 2004, designed and taught There's Something About Infinity.

**Graduate Instructor**, Duke University *Spring 1998; Fall 1998, 2000, 2001*  
Primary instructor for one first-year calculus course each semester.

**Java Programmer**, Duke University *various summers*  
Developed Java applets for interactive calculus course materials for the Connected Curriculum Project under the supervision of Lawrence Moore and David Smith.

**Teaching Assistant**, Carnegie Mellon University, Duke University *various semesters*  
Led discussion and problem sessions for three sections of calculus courses, in addition to one section of Models and Methods for Optimization and four sections of Principles of Economics.

### **Mentoring Experience**

**Undergraduate Research Mentor:** Research co-op students: Eesha Das Gupta, Valentina Ozornina, and Jacob Woods, Spring/Summer 2018. Mark Kondrila, Jr. and Michael Valle, Spring/Summer 2011.

### **Graduate Student Advising:**

Current PhD: Benjamin Irwin (Drexel University, expected graduation: June 2021).  
Completed PhD: Timur Milgrom (Drexel University, June 2011),  
Shunlian Liu (Drexel University, December 2016),  
David Sulon (Drexel University, June 2018).  
Completed MS: Timur Milgrom (Clemson University, May 2007).

**Postdoctoral Scholar Mentor:** Mentor for Yang Liu, Winter 2012 - Fall 2013.

### **External Funding: Research Grants**

PI for NSF Grant DMS-1515849, Dynamics of Dispersive PDE. \$269,987. August 15, 2015 – July 31, 2018.

PI for NSF Grant DMS-1016267, Collaborative Research: Efficient Surface-Based Numerical Methods for 3D Interfacial Flow with Surface Tension. \$269,989. October 1, 2010 – September 30, 2015.

PI for NSF Grant DMS-1008387, Dispersive PDE and Interfacial Fluid Dynamics. \$159,000. September 15, 2010 – August 31, 2014.

PI for NSF grant DMS-0707807, Long-Time Behavior of Free-Surface Problems in Fluid Dynamics. \$119,999. June 15, 2007 – May 31, 2010. [Renumbered as DMS-0926378.]

PI for NSF grant DMS-0406130, Analytical and Computational Approaches to Free-Surface Problems in Fluid Dynamics. \$81,143. June 1, 2004 – May 31, 2007. [Renumbered as DMS-0610898.]

### **External Funding: Conference Grants**

PI for NSF Grant DMS-1613965, 2016 Gene Golub SIAM Summer School at Drexel University. \$25,500. July 1, 2016 – June 30, 2017. (Co-PI: Xiaoming Song.)

PI for 2016 SIAM Gene Golub Summer School, Stochastic Differential Equations and Wave Propagation. \$95,000. May 1, 2016 – October 5, 2016. (Co-PI's: Shari Moskow, Gideon Simpson, Xiaoming Song, J. Douglas Wright.)

### **Awards and Other Funding**

2018 T. Brooke Benjamin Prize in Nonlinear Waves, Society for Industrial and Applied Mathematics.

2016 Drexel University Award for Pedagogy and Assessment, for the project, "Increasing the effectiveness of precalculus remediation for calculus success," with Jason Aran.

Research Co-op Funding, Drexel University, Office of the Provost and Steinbright Career Development Center, \$7,052.50. 2011.

Antelo Devereux Award for Young Faculty, Drexel University, College of Arts and Sciences. \$10,000. 2010-2011.

Stein Fellow, \$12,120. Louis and Bessie Stein Family Fellowship for Exchanges with Israeli Universities, for the project Analysis of Nonlinear Dispersion, with J. Douglas Wright, to fund collaborative work with Philip Rosenau of Tel Aviv University. 2010-2011.

NYU Research Challenge Fund Grant. \$6,700. June 1, 2004 – May 31, 2005.

### **Invited Talks: Seminars and Colloquia**

Air Force Institute of Technology (May 2017, October 2014; May 2012); ICERM, Brown University (March 2017); Oregon State University (November 2016; May 2013); University of Pittsburgh (April 2016; October 2010); University of Illinois-Chicago (April 2016, September 2014, April 2013, February 2012, April 2010, December 2007); Pennsylvania State University, State College (January 2016, December 2011, January 2009, March 2007); University of Pennsylvania (November 2015); University of Massachusetts Amherst (November 2014); Boston University (October 2014, November 2012, March 2011, January 2008); Princeton University (April 2014); University of Calgary (June 2013); University of California, Los Angeles (May 2013); University of Delaware (February 2013, October 2006); Temple University (January 2013, October 2010); University of Bath (December 2012, November 2006); Ohio State University (November 2012); McMaster University (March 2012); Fields Institute (March 2012); University of California, Riverside (October 2011); Courant Institute, NYU (October 2010); Arizona State University (September 2010); University of California, Davis (May 2010, November 2006); Indiana University (April 2010); Florida State University (December 2009); University of Maryland, College Park (November 2009); University of Cincinnati (October 2009); Imperial College London (May 2009); New Jersey Institute of Technology (April

2009, June 2004); Carnegie Mellon University (February 2008); University of Wisconsin-Madison (December 2007, March 2007, November 2004); University of North Carolina, Charlotte (November 2007); Université de Bordeaux (November 2006); Georgia Institute of Technology (October 2006); Institut Mittag-Leffler (September 2005); University of British Columbia (January 2005); Université Paris Dauphine (October 2004); Trinity College Dublin (April 2004); Brown University (February 2003)

### **Invited Talks: Conferences**

12th AIMS Conference on Diff. Eq., Session on Nonlinear Nonlocal Problems (July 2018)  
 12th AIMS Conference on Diff. Eq., Session on Nonlinear Evolution Equations (July 2018)  
 Summer School on Mean Field Games, IPAM, UCLA (June 2018)  
 AMS Central Section Meeting, Session on Coherent Structures in Interfacial Flows (March 2018)  
 SIAM Conference on Analysis of PDE, Minisymposium on Mean Field Games (December 2017)  
 Waves, Spectral Theory, and Applications – Part 2, UNC Chapel Hill (October 2017)  
 Workshop on Mean Field Games, IPAM, UCLA (August 2017)  
 Workshop on Water Waves, ICERM, Brown University (April 2017)  
 AMS Southeastern Section Meeting, Special Session on Long-term Behavior (March 2017)  
 AMS Southeastern Section Meeting, Special Session on Advances in Nonlinear Waves (March 2017)  
 Theoretical and Computational Aspects of Nonlinear Surface Waves, Banff, AB (November 2016)  
 Franco-Romanian Applied Math Conference, Free Boundaries Session, Iasi, Romania (August 2016)  
 SIAM Annual Meeting, Minisymposium on Cellular Flows (July 2016)  
 ICSCA 2016, Session on High-Performance Computing, Fields Institute, Toronto, ON (June 2016)  
 Analysis of PDE using Dynamical Systems Techniques, Boston University (June 2016)  
 Mixing and Mixtures in Geo- and Biophysical Flows, CSCAMM, Maryland (May 2016)  
 2nd KUMU Conference on PDE, Dynamical Systems and Applications (April 2016)  
 SIAM Conference on Analysis of PDE, Minisymposium on Coherent Structures (December, 2015)  
 Free Surface and Geophysical Flows, Rennes, France (January, 2015)  
 SIAM Conference on Nonlinear Waves, Minisymposium on Capillary Waves (August 2014)  
 Summer School on Water Waves, Isaac Newton Institute, Cambridge, UK (August 2014)  
 Theory of Water Waves, Isaac Newton Institute, Cambridge, UK (July 2014)  
 Workshop on Dynamics in Geometric Dispersive Equations, Banff, AB (May 2014)  
 SIAM Southeastern Atlantic Section Meeting, Special Session on Multiphase Flows (March 2014)  
 Joint Mathematics Meetings, Special Session on Regularity Problems for Fluids (January 2014)  
 Novel Directions in Inverse Scattering, Minisymposium on Computation, Newark, DE (July 2013)  
 Workshop on Computational Approaches for Water Waves, Banff, AB (July 2013)  
 Workshop on Wave Interactions and Turbulence, Fields Institute, Toronto, ON (May 2013)  
 8th IMACS Nonlinear Evolution Equations Conference, Session on Climate Science (March 2013)  
 Joint Mathematics Meetings, Special Session on Water Waves (January 2013)  
 SIAM Conference on Nonlinear Waves, Minisymposium on Water Waves (June 2012)  
 AMS Southeastern Section Meeting, Special Session on Dispersive Equations (September 2011)  
 Frontiers in Applied and Computational Mathematics, NJIT (June 2011)  
 7th IMACS Nonlinear Evolution Equations Conference, Session on Water Waves (April 2011)  
 SIAM Conference on Nonlinear Waves, Minisymposium on Modulated Equations (August 2010)  
 SIAM Conference on Nonlinear Waves, Minisymposium on Water Waves (August 2010)  
 Second Franco-Brazilian Fluids Summer School, Lyon, France (July 2010)  
 Fluid Dynamics, Analysis, and Numerics (FAN2010), Durham, NC (June 2010)

AMS Southeastern Section Meeting, Special Session on Dispersive PDE (March 2010)  
 AMS Western Section Meeting, Special Session on Fluid Mechanics (November 2009)  
 SIAM Annual Meeting, Minisymposium on Mathematical Hydrodynamics (July 2009)  
 AMS Central Section Meeting, Special Session on Nonlinear PDE (March 2009)  
 Joint Meeting of AMS and SMS, Special Session on Waves, Shanghai, China (December 2008)  
 International Conference on Dispersive and Kinetic Equations, Jinhua, China (December 2008)  
 Shanks Workshop on Interfaces and Structures in Fluid Flows, Vanderbilt (October 2008)  
 Joint Meeting of AMS and SBM, Special Session on Fluids, IMPA, Brazil (June 2008)  
 6th International Conference DEDS, Special Session on Interfaces, Baltimore, MD (May 2008)  
 SIAM Conference on Analysis of PDE, Minisymposium on Oceanography (December 2007)  
 AMS Southeastern Section Meeting, Special Session on Nonlinear PDE (November 2007)  
 AMS Central Section Meeting, Special Session on Fluids (October 2007)  
 5th IMACS Nonlinear Evolution Equations Conference, Session on NLW Equations (April 2007)  
 Workshop on Water Waves, Oberwolfach, Germany (November 2006)  
 SIAM Conference on Nonlinear Waves, Minisymposium on Water Waves (September 2006)  
 Conference on Asymptotic Behavior in Fluid Dynamics, Lausanne, Switzerland (July 2006)  
 International Conference on Mathematical Hydrodynamics, Steklov Institute, Moscow (June 2006)  
 Lefschetz Center Conference on Fluid Dynamics, Brown University (April 2006)  
 Workshop on Partial Differential Equations, LNCC, Petropolis, Brazil (August 2005)  
 SIAM Conference on Analysis of PDE, Minisymposium on Fluids (December 2004)  
 AMS Southeastern Section Meeting, Special Session on Nonlinear PDE (October 2004)  
 Workshop on Wave Motion, Oberwolfach, Germany (January 2004)  
 AMS Central Section Meeting, Special Session on Fluids (April 2003)

### **Contributed Conference Presentations**

#### Contributed Talks:

10th IMACS Nonlinear Evolution Equations Conference (March 2017)  
 SIAM Conference on Nonlinear Waves and Coherent Structures (August 2016)  
 AMS Eastern Section Meeting (October 2013)  
 9th AIMS Conference on Dynamical Systems and Differential Equations (July 2012)  
 3rd Workshop on Fluids and PDEs, Campinas, Brazil (June 2011)  
 AMS Eastern Section Meeting (April 2011)  
 13th International Conference on Hyperbolic Problems, Beijing, China (June 2010)  
 6th IMACS Nonlinear Evolution Equations Conference (April 2009)  
 SIAM Southeastern-Atlantic Section Conference (May 2007)  
 11th International Conference on Hyperbolic Problems, Lyon, France (July 2006)  
 10th International Conference on Hyperbolic Problems, Osaka, Japan (September 2004)  
 23rd Southeastern-Atlantic Regional Conference on Differential Equations (October 2003)

#### Contributed Posters:

Variational and Topological Methods and Water Waves, Bath, England (May 2009)

### **Departmental Service**

Undergraduate Curriculum Committee 2014-present. Chair, 2014-2016.  
 Teaching Innovations Committee, 2014-2015.  
 Program Alignment and Review Committee, 2013-2014.

Tenure-Track Faculty Hiring Committee, 2008-2009, 2012-2013, 2017-2018.  
Graduate Curriculum Committee, including Qualifying Exam Subcommittee, 2009-2014.  
Teaching Faculty Hiring Committee, 2009-2010.  
Colloquium Coordinator, 2011- 2012.  
Assistant Scheduling Coordinator, 2011-2013.

### College and University Service

College of Arts and Sciences Undergraduate Curriculum Committee, 2014-2016.  
University Working Group on Precalculus, Student Success, and Retention, 2015-2016.  
College of Arts and Sciences Committee on Student Success and Retention, 2017-2018.

### Other Activities

**Referee:** Served as a referee for over 40 journals, including the following: *Archive for Rational Mechanics and Analysis*; *Communications in Mathematical Sciences*; *Communications in Partial Differential Equations*; *Communications on Mathematical Physics*; *Communications on Pure and Applied Mathematics*; *International Mathematics Research Notices*; *Journal of Computational Physics*; *Journal of Fluid Mechanics*; *Journal of Mathematical Fluid Mechanics*; *Journal of Non-linear Science*; *New Journal of Physics*; *Nonlinearity*; *Physics of Fluids*; *Proceedings of the Royal Society A*; *SIAM Journal on Applied Mathematics*; *SIAM Journal on Mathematical Analysis*. Also served as a referee for book proposals for the American Mathematical Society, CRC Press, Elsevier, and Springer.

**Reviewer:** Reviewer of mathematical research papers for Mathematical Reviews/MathSciNet.  
Reviewer of mathematical research papers for Zentralblatt MATH.

**Editor:** Guest Editor for an issue of *Mathematics and Computers in Simulation*.  
Guest Editor for an issue of *Discrete and Continuous Dynamical Systems, Series B*.  
Associate Editor, *Journal of Mathematical Analysis and Applications*, 2012-2014.  
Division Editor, *Journal of Mathematical Analysis and Applications*, 2014-present.

**Organizer:** Co-organizer of a session at 12th AIMS Conference on Diff. Eq.; Taipei; July 2018.  
Co-organizer of IPAM Summer School on Mean Field Games, June 2018.  
Co-organizer of a session at Joint Mathematics Meetings; January 2018.  
Co-organizer of a session at IMACS Nonlinear Waves conference; Athens, GA; March 2017.  
Co-chair of SIAM Conference on Nonlinear Waves and Coherent Structures, 2016.  
Co-organizer of Gene Golub SIAM Summer School, Drexel University, Summer 2016.  
Co-organizer of a session at AMS Eastern Sectional Meeting; Philadelphia, PA; October 2013.  
Co-organizer of the PDE/Applied Math Seminar; Drexel University; 2008-2012.  
Co-organizer of a session at 9th AIMS Conference on Diff. Eq.; Orlando, FL; July 2012.  
Organizer of a session at IMACS Nonlinear Waves conference; Athens, GA; April 2011.  
Co-organizer of a session at SIAM Nonlinear Waves conference; Philadelphia, PA; August 2010.  
Organizing committee for Fluid Dynamics, Analysis, and Numerics; Durham, NC; June 2010.  
Co-organizer of a session at AMS Eastern Sectional Meeting; State College, PA; October 2009.  
Co-organizer of a session at IMACS Nonlinear Waves conference; Athens, GA; April 2009.  
Organizer of the Analysis Seminar; Clemson University; 2006-2008.  
Co-organizer of the Applied Mathematics Laboratory Seminar; Courant Institute; 2004-2005.

## Submitted Journal Publications

- (46) **Existence theory for magma equations in dimension two and higher.**  
D.M. Ambrose, G.R. Simpson, J.D. Wright, and D.G. Yang. Submitted, 2017.
- (45) **Sufficiently strong dispersion removes ill-posedness in truncated series models of water waves.**  
S. Liu and D.M. Ambrose. Submitted, 2017.
- (44) **Nonexistence of small, smooth, time-periodic, spatially periodic solutions for nonlinear Schrödinger equations.**  
D.M. Ambrose and J.D. Wright. Submitted, 2017.

## Refereed Journal Publications

- (43) **Periodic traveling interfacial hydroelastic waves with or without mass II: Multiple bifurcations and ripples.**  
B.F. Akers, D.M. Ambrose, and D.W. Sulon. Accepted, *European Journal of Applied Mathematics*, 2018.
- (42) **Confinement of vorticity for the 2D Euler-alpha equations.**  
D.M. Ambrose, M.C. Lopes Filho, and H.J. Nussenzweig Lopes. Accepted, *Journal of Differential Equations*, 2018.
- (41) **Global existence and analyticity for the 2D Kuramoto-Sivashinsky equation.**  
D.M. Ambrose and A.L. Mazzucato. Accepted, *Journal of Dynamics and Differential Equations*, 2018.
- (40) **Global solutions and ill-posedness for the Kaup system and related Boussinesq systems.**  
D.M. Ambrose, J.L. Bona, and T. Milgrom. Accepted, *Indiana University Mathematics Journal*, 2017.
- (39) **Strong solutions for time-dependent mean field games with non-separable Hamiltonians.**  
D.M. Ambrose. *Journal de Mathématiques Pures et Appliquées*, **113**:141-154, 2018.
- (38) **Periodic traveling interfacial hydroelastic waves with or without mass.**  
B.F. Akers, D.M. Ambrose, and D.W. Sulon. *Zeitschrift für angewandte Mathematik und Physik (ZAMP)*, **68**:141, 2017.
- (37) **Well-posedness of two-dimensional hydroelastic waves with mass.**  
S. Liu and D.M. Ambrose. *Journal of Differential Equations*, **262**:4656-4699, 2017.
- (36) **Scattering of electromagnetic waves by thin high contrast dielectrics II: Asymptotics of the electric field and a method for inversion.**  
D.M. Ambrose, J. Gopalakrishnan, S. Moskow, and S. Rome. *Communications in Mathematical Sciences*, **15**:1041-1053, 2017.
- (35) **Convergence of a boundary integral method for 3D interfacial Darcy flow with surface tension.**  
D.M. Ambrose, Y. Liu, and M. Siegel. *Mathematics of Computation*, **86**:2745-2775, 2017.
- (34) **Well-posedness of two-dimensional hydroelastic waves.**  
D.M. Ambrose and M. Siegel. *Proceedings of the Royal Society of Edinburgh, Section A*, **147**:529-570, 2017.
- (33) **Global bifurcation theory for periodic traveling interfacial gravity-capillary waves.**  
D.M. Ambrose, W.A. Strauss, and J.D. Wright. *Annales de l'Institut Henri Poincaré (C) Analyse Non Linéaire*, **33**:1081-1101, 2016.

- (32) **Small strong solutions for time-dependent mean field games with local coupling.**  
D.M. Ambrose. *Comptes Rendus Mathématique, Académie des Sciences – Paris*, **354**:589-594, 2016.
- (31) **Overtaken internal capillary-gravity waves.**  
B.F. Akers, D.M. Ambrose, K. Pond, and J.D. Wright. *European Journal of Mechanics – B/Fluids*, **57**:143-151, 2016.
- (30) **Nonexistence of small doubly periodic solutions for dispersive equations.**  
D.M. Ambrose and J.D. Wright. *Analysis & PDE*, **9**:15-42, 2016.
- (29) **Serfati solutions to the 2D Euler equations on exterior domains.**  
D.M. Ambrose, J.P. Kelliher, M.C. Lopes Filho, and H.J. Nussenzweig Lopes. *Journal of Differential Equations*, **259**:4509-4560, 2015.
- (28) **Local existence theory for derivative nonlinear Schrödinger equations with non-integer power nonlinearities.**  
D.M. Ambrose and G. Simpson. *SIAM Journal on Mathematical Analysis*, **47**:2241-2264, 2015.
- (27) **Computing time-periodic solutions of a model for the vortex sheet with surface tension.**  
D.M. Ambrose, M. Kondrla, and M. Valle. *Quarterly of Applied Mathematics*, **73**:317-329, 2015.
- (26) **Fokas integral equations for three dimensional layered-media scattering.**  
D.M. Ambrose and D.P. Nicholls. *Journal of Computational Physics*, **276**:1-25, 2014.
- (25) **Non-existence of small-amplitude doubly periodic waves for dispersive equations.**  
D.M. Ambrose and J. D. Wright. *Comptes Rendus Mathématique, Académie des Sciences – Paris*, **352**:597-602, 2014.
- (24) **On ill-posedness of truncated series models for water waves.**  
D.M. Ambrose, J.L. Bona, and D.P. Nicholls. *Proceedings of the Royal Society A*, **470**:20130849, 2014.
- (23) **The zero surface tension limit of two-dimensional interfacial Darcy flow.**  
D.M. Ambrose. *Journal of Mathematical Fluid Mechanics*, **16**:105-143, 2014.
- (22) **Gravity perturbed Crapper waves.**  
B.F. Akers, D.M. Ambrose, and J.D. Wright. *Proceedings of the Royal Society A*, **470**:20130526, 2014.
- (21) **Dispersion vs. anti-diffusion: Well-posedness in variable coefficient and quasilinear equations of KdV-type.**  
D.M. Ambrose and J.D. Wright. *Indiana University Mathematics Journal*, **62**:1237-1281, 2013.
- (20) **Traveling waves from the arclength parameterization: Vortex sheets with surface tension.**  
B. Akers, D.M. Ambrose, and J.D. Wright. *Interfaces and Free Boundaries*, **15**:359-380, 2013.
- (19) **Traveling waves and weak solutions for an equation with degenerate dispersion.**  
D.M. Ambrose and J.D. Wright. *Proceedings of the American Mathematical Society*, **114**: 3825-3838, 2013.
- (18) **A small-scale decomposition for 3D boundary integral computations with surface tension.**  
D.M. Ambrose, M. Siegel, and S. Tlupova. *Journal of Computational Physics*, **247**:168-191, 2013.
- (17) **Temporal boundary value problems in interfacial fluid dynamics.**  
T. Milgrom and D.M. Ambrose. *Applicable Analysis*. **92**:922-948, 2013.
- (16) **Scattering of electromagnetic waves by thin high contrast dielectrics: Effects of the object boundary.**  
D.M. Ambrose and S. Moskow. *Communications in Mathematical Sciences*, **11**:293-314, 2013.
- (15) **Ill-posedness of degenerate dispersive equations.**  
D.M. Ambrose, G. Simpson, J.D. Wright, and D.G. Yang. *Nonlinearity*, **25**:2655-2680, 2012.



- (14) **A non-stiff boundary integral method for 3D porous media flow with surface tension.**  
D.M. Ambrose and M. Siegel. *Mathematics and Computers in Simulation*, **82**:968-983, 2012.
- (13) **Well-posedness of a model for water waves with viscosity.**  
D.M. Ambrose, J.L. Bona, and D.P. Nicholls. *Discrete and Continuous Dynamical Systems, Series B*, **17**:1113-1137, 2012.
- (12) **Computation of time-periodic solutions of the Benjamin-Ono equation.**  
D.M. Ambrose and J. Wilkening. *Journal of Nonlinear Science*, **20**:277-308, 2010.
- (11) **Computation of symmetric, time-periodic solutions of the vortex sheet with surface tension.**  
D.M. Ambrose and J. Wilkening. *Proceedings of the National Academy of Sciences of the USA*, **107**:3361-3366, 2010.
- (10) **Transport of interfaces with surface tension by 2D viscous flows.**  
D.M. Ambrose, M. Lopes Filho, H. Nussenzveig Lopes, and W. Strauss. *Interfaces and Free Boundaries*, **12**:23-44, 2010.
- (9) **Preservation of support and positivity for solutions of degenerate evolution equations.**  
D.M. Ambrose and J.D. Wright. *Nonlinearity*, **23**:607-620, 2010.
- (8) **Global paths of time-periodic solutions of the Benjamin-Ono equation connecting pairs of traveling waves.**  
D.M. Ambrose and J. Wilkening. *Communications on Applied Mathematics and Computational Science*, **4**:177-215, 2009.
- (7) **Singularity formation in a model for the vortex sheet with surface tension.**  
D.M. Ambrose. *Mathematics and Computers in Simulation*, **80**:102-111, 2009.
- (6) **The zero surface tension limit of three-dimensional water waves.**  
D.M. Ambrose and N. Masmoudi. *Indiana University Mathematics Journal*, **58**:479-522, 2009.
- (5) **Well-posedness of 3D vortex sheets with surface tension.**  
D.M. Ambrose and N. Masmoudi. *Communications in Mathematical Sciences*, **5**:391-430, 2007.
- (4) **Well-posedness of two-phase Darcy flow in 3D.**  
D.M. Ambrose. *Quarterly of Applied Mathematics*, **65**:189-203, 2007.
- (3) **The zero surface tension limit of two-dimensional water waves.**  
D.M. Ambrose and N. Masmoudi. *Communications on Pure and Applied Mathematics*, **58**:1287-1315, 2005.
- (2) **Well-posedness of two-phase Hele-Shaw flow without surface tension.**  
D.M. Ambrose. *European Journal of Applied Mathematics*, **15**:597-607, 2004.
- (1) **Well-posedness of vortex sheets with surface tension.**  
D.M. Ambrose. *SIAM Journal on Mathematical Analysis*, **35**:211-244, 2003.

## Book Chapters

- (1) **Vortex sheet formulations and initial value problems: Analysis and computing.**  
D.M. Ambrose. *Lectures on the theory of water waves*, 140-170, London Math. Soc. Lecture Note Ser., **426**, Cambridge Univ. Press, Cambridge, 2016.

## Refereed Conference Proceedings

(5) **Dependence of time-periodic vortex sheets with surface tension on mean vortex sheet strength.**

D.M. Ambrose and J. Wilkening. *Procedia IUTAM*, **11**:15-22, 2014.

(4) **Computing time-periodic solutions of nonlinear systems of partial differential equations.**

D.M. Ambrose and J. Wilkening. *Proceedings of Hyperbolic Problems: Theory, Numerics, and Applications*. Beijing, China (2010). 2012, 273-280, Higher Education Press.

(3) **Short-time well-posedness of irrotational free-surface problems in 3D fluids.**

D.M. Ambrose. *Proceedings of Hyperbolic Problems: Theory, Numerics, and Applications*. Lyon, France (2006). 2008, 307-314, Springer-Verlag.

(2) **Regularization of the Kelvin-Helmholtz instability by surface tension.**

D.M. Ambrose. *Philosophical Transactions of the Royal Society A*, **365**:2253-2266, 2007. *Proceedings of the Semester on Wave Motion*, Institute Mittag-Leffler (2005).

(1) **Short-time well-posedness of free-surface problems in 2D fluids.**

D.M. Ambrose. *Proceedings of Hyperbolic Problems: Theory, Numerics, and Applications*. Osaka, Japan (2004). 2006, 247-254, Yokohama Publishers.