

Feride Tiglay

Ohio State University, Newark
Founders Hall
1179 University Dr.
Newark, OH 43055

<https://people.math.osu.edu/tiglay.1/>
E-mail: tiglay.1@osu.edu

Research Interests

Partial differential equations, mathematical physics, dynamical systems.

Appointments

- 2014-present **Assistant Professor**, Department of Mathematics, Ohio State University Newark, Newark, Ohio.
- 2013-2014 **Visiting Assistant Professor**, Department of Mathematics, Ohio State University Newark, Newark, Ohio.
- 2012-2013 **Visiting Assistant Professor**, Department of Mathematics, Purdue University, West Lafayette, Indiana.
- 2011-2012 **Visiting Researcher**, Fields Institute, Toronto, Canada.
Instructor, Department of Mathematics, University of Western Ontario, London, Canada.
- 2010-2011 **Research Immersion Fellow**, Fields Institute, Toronto, Canada.
- 2008-2010 **Visiting Professor**, École Polytechnique Fédérale de Lausanne (EPFL), Geometric analysis research group (CAG), Lausanne, Switzerland.
- Fall 2005 **Visiting Researcher**, Department of Mathematics, University of Notre Dame, Notre Dame, Indiana.
- 2004-2009 **Assistant Professor**, Department of Mathematics, University of New Orleans, New Orleans, Louisiana.

Publications

1. *Conservative weak solutions of the periodic Cauchy problem for μ HS equation*, **J. Math. Phys.**, Vol. 56, (2015), 16 pages.
2. *Euler-Poincaré equations on Lie groups and homogeneous spaces, their orbit invariants and applications*, **Lett. Math. Phys.**, Vol. 97, Issue 1 (2011), 45–60 (with C. Vizman).
3. *The periodic Cauchy problem for Novikov’s equation*, **Int. Math. Res. Not. IMRN**, no. 20 (2011) 4633–4648..
4. *Integrable evolution equations on spaces of tensor densities and their peakon solutions*, **Comm. Math. Phys.**, Vol. 299, no.1 (2010), 129–161 (with J. Lenells and G. Misiołek).

5. *Global Existence of some infinite energy solutions for a perfect incompressible fluid*, **SIAM J. Math. Anal.**, Vol. 40, no.4 (2008), 1499–1515 (with R. Saxton).
6. *The Cauchy problem and integrability of a modified Euler-Poisson equation*, **Trans. Amer. Math. Soc.**, Vol. 360 (2008), 1861–1877.
7. *On unique continuation for the modified Euler-Poisson equations*, **Discrete Contin. Dyn. Syst.**, Special Issue on Geometric Mechanics, Vol 19, no.3 (2007), 515–529 (with A. A. Himonas and G. Misiolek).
8. *The periodic Cauchy problem of the modified Hunter-Saxton equation*, **J. Evol. Equ.**, Vol. 5, no.4 (2005), 509–527.

Preprints

9. *Fredholm determinants and breakdown for μCH equation*, in preparation.
10. *Nonuniform dependence on initial data for compressible gas dynamics: The periodic Cauchy problem* (joint with Barbara Keyfitz), in preparation.
10. *Nonuniform dependence on initial data for compressible gas dynamics: The Cauchy problem on the plane* (joint with John Holmes and Barbara Keyfitz), in preparation.
11. *Nonuniform dependence on initial data for integrable Euler-Poisson equation*, in preparation.

Education

- Ph.D. Mathematics, August 2004, University of Notre Dame, Notre Dame, Indiana.
Thesis advisor: Gerard Misiolek.
- M.S., B.S. Electrical & Electronics Engineering, May 1999, Boğaziçi University, Istanbul, Turkey.

Teaching Experience

- Spring 2017 Calculus I, Ohio State University.
- Autumn 2016 College Algebra, Ohio State University.
- Autumn 2015 College Algebra;
Precalculus, Ohio State University.
- Spring 2015 Precollege Mathematics II;
Calculus I, Ohio State University.
- Autumn 2014 Number and Operations for Teachers, Ohio State University.
- Spring 2014 Precollege Mathematics II, Ohio State University.
- Autumn 2013 Mathematical Topics for Engineers, Ohio State University;
Partial Differential Equations for Science and Engineering, Ohio State University.
- Spring 2013 Ordinary Differential Equations, Purdue University.

Fall 2012	Multivariate Calculus, Purdue University; Foundations of Analysis, Purdue University.
Spring 2012	Methods of Calculus, University of Western Ontario.
Fall 2011	Introductory Calculus, University of Western Ontario.
Summer 2008	Calculus and Analytic Geometry II, University of New Orleans.
Spring 2008	Calculus and Analytic Geometry II, University of New Orleans. Elementary Differential Equations, University of New Orleans.
Fall 2007	Topics in Analysis-Introduction to Hilbert Spaces, University of New Orleans; Calculus and Analytic Geometry I, University of New Orleans.
Summer 2007	Elementary Differential Equations, University of New Orleans.
Spring 2007	Methods in Differential Equations, University of New Orleans; Calculus and Analytic Geometry II, University of New Orleans.
Fall 2006	Intermediate Ordinary Differential Equations, University of New Orleans; Calculus and Analytic Geometry II, University of New Orleans.
Summer 2006	Calculus and Analytic Geometry I, University of New Orleans; Calculus and Analytic Geometry II, University of New Orleans.
Spring 2006	Calculus and Analytic Geometry I, University of New Orleans; Precalculus Algebra, University of New Orleans.
Fall 2005	Elementary Differential Equations, University of New Orleans; Calculus and Analytic Geometry I (online), University of New Orleans.
Spring 2005	Advanced Differential Equations, University of New Orleans; Calculus and Analytic Geometry I, University of New Orleans.
Fall 2004	Elementary Differential Equations, University of New Orleans; Calculus and Analytic Geometry I, University of New Orleans.
Spring 2003	Calculus III for Science and Engineering, University of Notre Dame.
Fall 2003	Calculus II for Science and Engineering, University of Notre Dame.
Spring 2002	Elementary Calculus in Basic Science, University of Notre Dame.

Selected Conference and Seminar Talks

July 1-5, 2016	The 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications , Orlando, Florida, <i>Nonuniform dependence on initial data for compressible gas dynamics.</i>
Mar.12-13, 2016	University of Kentucky , The Sixth Ohio River Analysis Meeting, Lexington, Kentucky, <i>The periodic Cauchy problem for the Hunter-Saxton equation in Besov spaces.</i>
Apr.1-4, 2015	University of Georgia , The Ninth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Athens, Georgia, <i>The Cauchy problem for an integrable Euler-Poisson equation.</i>

- Feb.10, 2015 **Ohio State University**, Analysis & Operator Theory Seminar, Columbus, Ohio, *The Cauchy problem for μ HS equation: Weak solutions and integrability.*
- Aug. 2014 **University of Cambridge**, SIAM Conference on Nonlinear Waves and Coherent Structures, United Kingdom, *The Cauchy problem for μ HS equation: Weak solutions and integrability.*
- July 2014 **Instituto de Ciencias Matematicas (ICMAT - Institute of Mathematical Sciences)**, The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Madrid, Spain, *The Cauchy problem for μ HS equation: Weak solutions and integrability.*
- Dec. 2013 **University of California Berkeley**, Workshop on Infinite-Dimensional Geometry organized by D. Jakobson, S. Preston, R. McCann, and C. Evans, Berkeley, California, *The Cauchy problem for μ HS equation: Weak solutions and integrability.*
- Oct. 2013 **University of Colorado**, Analysis and Geometry Seminar, Department of Mathematics, Boulder, Colorado, *Weak solutions and integrability of an evolution equation for liquid crystals.*
- Sep. 2013 **Ohio State University**, Analysis and Operator Algebras Seminar, Columbus, Ohio, *Classical and analytic solutions of Novikov's equation.*
- Mar. 2013 **Ohio State University**, Applied Mathematics Seminar, *Existence results and complete integrability of an evolution equation modeling liquid crystals.*
- Jan. 2013 **2013 Joint Mathematics Meetings**, AMS Special Session on Nonlinear Evolution Equations and Integrable Systems organized by J. Gorsky and A. Himonas, San Diego, California, *Well-posedness and breakdown of solutions of an asymptotic equation for liquid crystals.*
- Sep. 2012 **Purdue University**, PDE Seminar, West Lafayette, Indiana, *Integrable evolution equations on spaces of tensor densities.*
- Jul. 2012 **The 9th AIMS Conference on Dynamical Systems, Differential Equations and Applications**, Special Session on Multi-component Integrable Systems, Solitons, and Nonlinear Waves organized by S. Anco, Y. Liu, C. Qu, Orlando, Florida, *Generalized Euler-Poincaré equations on Lie groups and homogeneous spaces, orbit invariants and applications.*
- May 2012 **Centre de Recherches Mathematiques**, Workshop on Geometry and Dynamics of Fluid, organized by S. Kuksin, S. C. Preston, and A. Shnirelman, Montreal, Canada, *Integrable evolution equations on spaces of tensor densities.*
- Nov. 2011 **University of Notre Dame**, 68th Midwest PDE Seminar, organized by Q. Han, A. Himonas, B. Hu and G. Misiolek, *Integrable evolution equations on spaces of tensor densities: Hamiltonian and Lagrangian approaches.*
- Oct. 2011 **University of Toronto**, Working Group in Hamiltonian Systems, Toronto, Canada, *Periodic trajectories in pseudo-Euclidean billiards.*
- Oct. 2011 **University of Toronto**, Working Group in Hamiltonian Systems, Toronto, Canada, *Relativistic quadrics: How to construct Jacobi coordinates in pseudo-Euclidean spaces.*

- May 2011 **Fields Institute**, Workshop on Wave Breaking and Global Solutions in the Short-Pulse Dispersive Equations organized by D. Pelinovsky, Toronto, Canada, *Integrable evolution equations on spaces of tensor densities: Hamiltonian and Lagrangian approaches*.
- May 2011 **Yeditepe University**, Seminar, Department of Mathematics, Istanbul, Turkey, *Integrable evolution equations on spaces of tensor densities: Hamiltonian and Lagrangian approaches*.
- Apr. 2011 **University of Georgia**, The Seventh IMACS International Conference on Nonlinear Evolution Equations and Wave phenomena: Computation and Theory, Session on Analysis and Geometry of Nonlinear Evolution Equations organized by D. Geba and A. Himonas, Athens, Georgia, *Integrable evolution equations on spaces of tensor densities and their peakon solutions*.
- Mar. 2011 **Department of Mathematics & Statistics, University of Saskatchewan**, Seminar, Saskatoon, Saskatchewan, Canada, *The periodic Cauchy problem for Novikov's equation*.
- Mar. 2011 **Department of Mathematics & Statistics, University of Saskatchewan** Seminar, Saskatoon, Saskatchewan, Canada, *Integrable evolution equations on spaces of tensor densities and their peakon solutions*.
- Feb. 2011 **Northeastern University**, Analysis-Geometry Seminar, Boston, Massachusetts, *Integrable evolution equations on spaces of tensor densities*.
- Nov. 2010 **University of Notre Dame**, AMS Central Section Meeting, Special Session on Nonlinear Evolution Equations organized by A. Himonas and G. Misiołek, Notre Dame, Indiana, *The periodic Cauchy problem for Novikov's equation*.
- Oct. 2010 **University of Toronto**, Symplectic Seminar, Toronto, Canada, *Generalized Euler-Poincaré equations on Lie groups and homogeneous spaces, orbit invariants and applications*.
- Apr. 2010 **Brock University**, Colloquium, St. Catharines, Ontario, Canada, *Integrable evolution equations on spaces of tensor densities and their peakon solutions*.
- Apr. 2010 **Macalester College**, AMS Central Section Meeting, Special Session on Geometric Flows, Moving Frames and Integrable Systems organized by G. Mari-Beffa and P. Olver, St. Paul, Minnesota, *Integrable evolution equations on spaces of tensor densities*.
- Mar. 2010 **École Polytechnique Fédérale de Lausanne**, Seminar of Geometric Analysis, Switzerland, *Integrable evolution equations on spaces of tensor densities and their peakon solutions*.
- Jan. 2010 **Technische Universität Darmstadt**, Mini-Workshop on Geometric Fluid Mechanics, International Research Training Group 1529, Darmstadt, Germany, *Euler-Poincaré equations on Lie groups and homogeneous spaces, their orbit invariants and applications to PDE*.
- Jan. 2010 **University of Notre Dame**, Colloquium, Indiana, *Euler-Poincaré equations on Lie groups and homogeneous spaces, their orbit invariants and applications to PDE*.

- Nov. 2008 **École Polytechnique Fédérale de Lausanne**, Seminar of Geometric Analysis, Switzerland, *Infinite energy solutions for a perfect incompressible fluid*.
- Aug. 2008 **Stefan Banach International Mathematical Center**, Formal and Analytic Solutions of Differential Equations, organized by W. Balser, G. Lysik and S. Michalik, Bedlewo, Poland, *Infinite energy solutions for a perfect incompressible fluid*.
- Aug. 2008 **Stefan Banach International Mathematical Center**, 30 Years of Bi-Hamiltonian Systems, organized by M. Błaszak and A. Panasyuk, Bedlewo, Poland, *Degasperis-Procesi family and density modules*.
- Apr. 2007 **University of Georgia**, The Fifth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, Well-Posedness for Nonlinear Dispersive Wave Equations, session chaired by J. Gorsky and D. P. Nicholls, Georgia, *Infinite energy solutions for a perfect incompressible fluid*.
- Jun. 2006 **University of Notre Dame**, International Conference in PDE, Complex Analysis, and Differential Geometry (In Honor of M. Salah Baouendi), organized by J. Cao, A. Himonas, G. Misiolek, M. Shaw and N. Stanton, *The Cauchy problem for the Proudman-Johnson equation*.
- Aug. 2003 **University of Notre Dame**, Conference on Partial Differential Equations and Applications, organized by M. Alber, Q. Han, A. Himonas, B. Hu, G. Misiolek and D. Nicholls, Indiana, *Analytic regularity of a family of evolution equations*.
- Aug. 2001 **Stefan Banach International Mathematical Center**, Nonlinear Partial Differential Equations Workshop, organized by A. Himonas, G. Lysik, G. Misiolek, Bedlewo, Poland, *On the Cauchy problem of Hunter-Saxton equation*.

Other Conference, Workshop, Program Participation

- May-Jun. 2011 **Geometric and Algebraic Structures in Mathematics: a conference to celebrate Dennis Sullivan's 70th birthday**, organized by A. Bonifant, J. Bowman, M. Lyubich, and S. Sutherland, Stony Brook University, New York.
- Jan.-Jun. 2011 **Thematic Program on Dynamics and Transport in Disordered Systems**, organized by D. Dolgopyat, K. Khanin, R. de la Llave, A. Neishtadt, J. Quastel and B. Toth, Fields Institute, Toronto, Canada.
- Jul.-Dec. 2010 **Thematic Program on Asymptotic Geometric Analysis**, organized by V. Milman, V. Pestov, N. Tomczak-Jaegermann, Fields Institute, Toronto, Canada.
- May 2007 **The 3rd Symposium on Analysis & PDEs**, organized by D. Danielli, N. Garofalo, A. Petrosyan and A. Yip at Purdue University, West Lafayette, Indiana.
- Apr. 2007 **The Fifth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena**, Session on Well-Posedness for Nonlinear Dispersive Wave Equations chaired by J. Gorsky and D. P. Nicholls, University of Georgia, Georgia.
- May 2004 **Thematic Program on Partial Differential Equations**, organized by W. Craig, N. Ercolani and C. Sulem, Fields Institute, Toronto, Canada.
- Mar. 2004 **53rd Midwest PDE Seminar**, organized by S. Hofmann, D. Mitrea and M. Mitrea at University of Missouri-Columbia, Columbia, Missouri.

Oct.-Nov. 2001 **Thematic Program on Groups and Geometry, Mini Program on Infinite Dimensional Lie Groups**, organized by N. Kamran and B. Khesin at CRM, Université de Montréal, Montréal, Canada.

Miscellaneous Professional Activities

- Referee** Journal of Mathematical Physics (JMP),
Symmetry, Integrability and Geometry: Methods and Applications (SIGMA),
Journal of Differential Equations,
International Mathematics Research Notices (IMRN),
Electronic Journal of Differential Equations (EJDE),
Zeitschrift fuer Angewandte Mathematik und Physik (ZAMP),
Journal of Physics A: Mathematical and Theoretical.
- Co-organizer** AMS Special Session on Nonlinear Evolution Equations, Analysis, and Geometry,
Joint Mathematics Meetings, New Orleans, 2011.
Mathematics Department Colloquium, University of New Orleans, 2007-2008.
- Reviewer** Mathematical Reviews (MR) Database.
- Languages** English, French.