

# Petronela Radu

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## Education

- Ph.D. Mathematical Sciences, Carnegie Mellon University May 2004  
Thesis Title: On Semilinear Wave Equations; Thesis Advisor: Luc Tartar
  - M.S. Mathematical Sciences, Carnegie Mellon University May 2000
  - B.S. (Honors) Mathematics, Al. I. Cuza University, Iasi, Romania June 1998  
Thesis: Riccati Equations On Infinite Dimensional Spaces; Advisor: Viorel Barbu
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## Research Interests

- **Partial and Integral Differential Equations**, in particular, regularity, asymptotic behavior of solutions, stability for nonlinear second and fourth order wave equations; diffusion equations.
  - **Calculus of Variations**: existence and regularity of minimizers.
  - **Continuum Mechanics; Peridynamics. Nonlocal models.**
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## Professional Experience

- Associate Professor with Tenure - Department of Mathematics  
University of Nebraska-Lincoln 2012 – Present
  - Fulbright Fellow and Visiting Professor at the School of Mathematics  
Trinity College Dublin, Ireland Spring 2013
  - Assistant Professor - Department of Mathematics  
University of Nebraska-Lincoln 2005 – 2012
  - Research Assistant Professor - Department of Mathematics  
University of Nebraska-Lincoln 2004 – 2005
  - Research and Teaching Assistant – Department of Mathematical Sciences  
Carnegie Mellon University 1998 – 2004
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## Grants and Awards

- Leland J. and Dorothy H. Olson Professor at University of Nebraska-Lincoln (effective January 1, 2018)
- NSF - DMS 1716790 - Applied Mathematics Program: *Higher Order Nonlocal Models* (Lead PI; co-PI Mikil Foss ) - (2017–2020) -\$290,621

- Department of Energy – Sandia National Laboratories: *Mathematical and Numerical Analysis of Higher-Order Nonlocal Operators* (2017) - \$34,442
- Simons Foundation Award: “Nonlocal Models in Continuum Mechanics” (2016–2021) - \$35,000
- NSF - DMS 1500939 - Conference Award (Lead PI; co-PI Mikil Foss) to support the conference “Recent developments in Continuum Mechanics and PDEs” (April 18-19, 2015) - \$18,250
- The Roger Wiegand Faculty Award - UNL Department of Mathematics, recognizes a faculty member’s contributions to graduate students - April 2015.
- UNL College of Arts and Sciences McClymont Award - 2014
- UNL College Distinguished Teaching Award - 2014
- NSF - DMS 0908435 - Applied Mathematics Program: *Wave Propagation in Nonlinear Acoustics, Viscoelasticity, and Heat Transfer* - (2009 – 2014) – \$137,054
- NSF - DUE 0941132 - Transforming Undergraduate Education in STEM (TUES - former CCLI): *Math in the City* (Lead PI) - (2010 – 2014) – \$199,802
- Fulbright Award: *Instability and wellposedness of nonlinear wave equations* (Spring 2013; Fulbright Scholar at Trinity College of Dublin, Ireland)
- Initiative for Teaching and Learning Excellence (ITLE - 2) Award, University of Nebraska-Lincoln - (2006 – 2007) \$10,895
- NSF Epscor Small Grant program for Members of Underrepresented Groups in Science in Nebraska - (2005) \$3,000

**Other Grants:**

- Michigan Center for Applied and Interdisciplinary Mathematics (MCAIM) award for organizing the one-week workshop : *Women in Mathematics of Materials* in May 2018. \$25,000. Co-organizer with Malena Espanol and Hala Shehadeh, also I am one of 5 senior research leaders. This grant will be complemented by an additional award from AWM of about \$2,000 to cover participant expenses.
- UNL College of Arts & Sciences International Travel Award (2014-2015)
- AWM - NSF Travel Grant (2014) \$3,500
- SAMSI Travel grant to participate in the Nonlocal Continuum Models for Diffusion, Mechanics, and Other Applications at the SAMSI Summer Program, Research Triangle Park, NC (2012)
- U.S. Junior Oberwolfach Fellow, Travel Grant - (2011)
- AWM Travel Grant - Conference on Nonlinear Phenomena, Fields Institute, Toronto - (2008)
- Research Council - Travel Grant for guest Professor Lia Bronsard - (2008)
- AWM - NSF Travel Grant - (2005) \$2,000

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## Publications

**Research publications** – All published or submitted to refereed journals; available at

<http://www.math.unl.edu/~pradu3/Publications.html>

1. P. RADU, Weak solutions to the Cauchy problem of a semilinear wave equation with damping and source terms, *Adv. Differential Equations*, **10**, no.11 (2005), 1261–1300.
2. P. RADU, Weak solutions to the initial boundary value problem of a semilinear wave equation with damping and source terms, *Applicationae Mathematica (Warsaw)*, **35**, no. 3, (2008), 355–378.
3. P. RADU, G. TODOROVA, & B. YORDANOV, Decay estimates for wave equations with variable coefficients, *Transactions of AMS*, **362**, no. 5 (2010), 2279 –2299.
4. P. RADU, G. TODOROVA, & B. YORDANOV, Higher order energy decay rates for damped wave equations with variable coefficients, *Discrete and Continuous Dynamical Systems*, **2**, no. 3 (2009), 609–629.
5. L. BOCIU & P. RADU, Existence and uniqueness of weak solutions to the Cauchy problem of a semilinear wave equation with supercritical interior source and damping, *Discrete Contin. Dyn. Syst. 2009, Dynamical Systems, Differential Equations and Applications. 7th AIMS Conference, suppl.*, (2009), 60–71.
6. P. RADU, G. TODOROVA, & B. YORDANOV, Diffusion phenomenon in Hilbert spaces and applications, *Journal of Differential Equations*, **250**, (2011), 4200–4218.
7. P. RADU, Strong solutions for semilinear wave equations with damping and source terms, *Applicable Analysis*, **92**, no. 4, (2013), 718–739.
8. B. HINDS & P. RADU, Dirichlet’s principle and wellposedness for a nonlocal  $p$ –Laplacian system with applications in peridynamics, *Applied Mathematics and Computation*, **219**, no. 4, (2012), 1411–1419.
9. S. PANKAVICH & P. RADU, Instability of steady states for damped nonlinear hyperbolic equations, *Evolution Equations and Control Theory*, **2**, no. 2, (2013), 403 –422.
10. L. BOCIU, P. RADU, D. TOUNDYKOV, Regular solutions for wave equations with super-critical sources and exponential-to-logarithmic damping, *Evolution Equations and Control Theory*, **2**, no. 2, (2013), 255 –279.
11. L. BOCIU, P. RADU, D. TOUNDYKOV, Errata: Regular solutions of wave equations with super-critical sources and exponential-to-logarithmic damping, *Evolution Equations and Control Theory*, **3**, no. 2, (2014), 349–354.

12. R. BRUNNHUBER, B. KALTENBACHER, P. RADU, Relaxation of regularity for the Westervelt equation by nonlinear damping with applications in acoustic-acoustic and elastic-acoustic coupling, *Evolution Equations and Control Theory*, **3**, no.4, (2014), 595–626.
13. P. RADU, D. TOUNDYKOV, J. TRAGESER, Finite time blow-up in nonlinear suspension bridge models, *Journal of Differential Equations*, **257**, (2014), 4030 – 4063.
14. P. RADU, G. TODOROVA, B. YORDANOV, On the generalized diffusion phenomenon of dissipative wave equations, *SIAM Journal of Mathematical Analysis*, **48**, no. 1, (2016), 74–203.
15. M. FOSS, P. RADU, Differentiability and integrability properties for solutions to nonlocal equations. *New Trends in Differential Equations, Control Theory and Optimization: Proceedings of the 8th Congress of Romanian Mathematicians*, World Scientific, (2016), 105–119.
16. P. RADU, D. TOUNDYKOV, J. TRAGESER, A nonlocal biharmonic operator and its connection with the classical bilaplacian. *Archive for Rational Mechanics and Analysis*, **223**, (2017), no. 2, 845–880.
17. M. FOSS, P. RADU [Book Chapter] *Bridging local and nonlocal models: convergence and regularity*. Accepted to appear in the **Handbook of Nonlocal Continuum Mechanics for Materials and Structures**, edited by George Z. Voyiadjis, Springer 2017.

**Manuscripts in review and preprints:** (posted, as they become available, at <http://www.math.unl.edu/~pradu3/Publications.html> )

18. M. FOSS, P. RADU, C. WRIGHT, *Existence and regularity of minimizers for nonlocal energy functionals* (submitted).
19. P. RADU, K. WELLS, *A state-based Laplacian: properties and convergence to its local and nonlocal counterparts* (preprint).

**Education related publications:**

20. P. RADU, *Math in the City - An example of hands-on learning*, The BIG Notebook – BIG SIGMAA newsletter, April 2011 (pg. 5 –8). (Invited, not refereed.)
21. P. RADU, *Taking math outside of the classroom - Math in the City*. Special issue on Service - Learning of *PRIMUS*, **23**, no. 6, (2013), 538 –549. (Invited, refereed)
22. P. RADU, *A Fulbright Experience*, April 2013, International Fulbright Alumni Association (IFAA) newsletter.

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## Teaching Experience:

- Designed, prepared materials, and taught the interdisciplinary modeling course *Math in the City*, University of Nebraska-Lincoln (*2005 – Present*)  
Projects offered, collaborating institutions and businesses, course syllabi, and student materials are available at <http://www.math.unl.edu/~pradu3>  
Course materials are available at <http://www.math.unl.edu/~math-mitc/>
- Instructor for Advanced Calculus and Ordinary Differential Equations - Trinity College Dublin, (*Spring 2013*)
- Instructor - University of Nebraska-Lincoln for 106 - Calculus I; 107 - Calculus II; 208 - Calculus in three dimensions; 221 - Differential Equations; 310 - Introduction to Modern Algebra; 314 - Matrix Algebra; 324 - Introduction to Partial Differential Equations; 423 - Introduction to Complex Variables; 435 - Math in the City; 825-826 Mathematical Analysis; 921 - 922 Real Analysis; 937 - Nonlinear Partial Differential Equations; 941- Partial Differential Equations. (*2004 – Present*)
- Instructor for Summer Courses - Carnegie Mellon University: Concepts of Mathematics, Calculus in Three Dimensions, Calculus for Humanities, Integral and Differential Calculus (*1999 – 2002*)
- Teaching Assistant - Carnegie Mellon University. Assisted for courses including Analysis, Concepts of Mathematics, Calculus in Three Dimensions (*1998 – 2004*)

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## Research Presentations – All presentations are invited:

- **Double nonlocality for second and fourth order models**, Center for Nonlinear Analysis, Carnegie Mellon University, (*09/17*)
- **Minimizers for nonlocal energy functionals**, PDE Seminar, University of Pittsburgh, (*09/17*)
- **Doubly nonlocal models in elasticity**, Recent Trends in Pure and Applied Mathematics, Alba Iulia, Romania, (*08/17*). Main speaker at this conference with about 100 participants.
- **Challenges and opportunities in nonlocal models**, Sandia Laboratories Albuquerque, (*05/17*)
- **Properties and convergence analysis for state-based Laplacians**, SIAM-SEAS Conference 2017, Florida State University, (*03/17*)
- **Regularity of solutions for nonlocal systems**, USACM Thematic Conference on Isogeometric Analysis (IGA) and Meshfree Methods, San Diego, (*10/16*)

- **Calculus of Variations Methods in Nonlocal Theories**, SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia, *(08/16)*
- **Longtime behavior of solutions for nonlocal wave equations with damping**, 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, *(07/16)*
- **Regularity and convergence of solutions in nonlocal models**, 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, *(07/16)*
- **Nonlocal higher order operators and convergence to their classical counterparts**, SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, *(05/16)*
- **Diffusion phenomenon for local and nonlocal models**, Nonlocal Models in Computation, Mathematics, Science and Engineering Conference at Oak Ridge National Laboratory, *(10/15)*
- **Diffusion phenomenon and decay rates for nonlocal wave equations with damping**, AMS - Central Fall Sectional Meeting, Loyola University, Chicago, *(10/15)*
- **On the generalized diffusion phenomenon**, 27th IFIP TC7 Conference 2015 on System Modeling and Optimization, Sophia Antipolis, France, *(06-07/15)*
- **Oscillational blow-up of traveling solutions in models for suspension bridges**, The Eighth Congress of Romanian Mathematicians, Iasi, Romania, *(06/15)*
- **A nonlocal biharmonic operator and its connection with the classical bilaplacian**, 1st PANACM (Pan American Congress on Computational Mechanics), Buenos Aires, Argentina *(04/15)*
- **A blow up result for fourth order differential equations**, 10th AIMS Conference, Madrid, Spain, *(07/14)*
- **Existence issues in nonlinear acoustics models**, 10th AIMS Conference, Madrid, *(07/14)*
- **Decay of higher order energies for nonlocal wave equations with damping**, AMS Meeting, Knoxville, *(03/14)*
- **Nonlocal Models in Peridynamics – Connections to Classical Theory and Challenges**, Colloquium, Department of Mathematics at Colorado School of Mines, *(02/14)*
- **Asymptotic Behavior for Solutions in Diffusion Models with Peridynamic-Type Nonlocality**, SIAM Conference on Analysis of Partial Differential Equations, Orlando, *(12/13)*
- **Differentiability for Solutions of Linear Integral Equations with Weakly Singular Kernels**, SIAM Conference on Analysis of Partial Differential Equations, Orlando, *(12/13)*

- **Wellposedness for semilinear wave equations**, Analysis Seminar, West Virginia University, (09/13)
- **Relaxation of regularity for wellposedness of the Westervelt equation with nonlinear damping**, AMS-Romanian Mathematical Society Meeting, Alba Iulia, (06/13)
- **Existence and Blow-up for Nonlinear Wave Equations**, Seminar in Partial Differential Equations, The Camille Jordan Institute, Lyon, France, (06/13).
- **Existence and blow-up of solutions for nonlinear wave equations**, in the Special Session: New Developments in Qualitative Behavior of Evolutionary PDEs, The 9th AIMS Conference, Orlando, FL, (07/12)
- **Instability for nonlinear evolution equations**, in the Special Session: Nonlinear PDEs and Control Theory with Applications, The 9th AIMS Conference, Orlando, FL, (07/12)
- **Mathematical Aspects Behind the Theory of Peridynamics** at the Nonlocal Continuum Models for Diffusion, Mechanics, and Other Applications, SAMSI, The Research Triangle, NC, (06/ 12)
- **On the Hyperbolic Diffusion Phenomenon**, Special Session: Fluid-Structure and Flow-Structure Interactions: Modeling, Analysis and Control, SIAM Conference on Analysis of Partial Differential Equations, San Diego, (11/11)
- **Wellposedness for some nonlinear wave equations**, Special Session: Nonlinear Hyperbolic Equations: Theoretical Advances and Applications, SIAM Conference on Analysis of Partial Differential Equations, San Diego, (11/11)
- **Existence and blow up for nonlinear wave equations**, Asymptotic Behavior and Regularity for Nonlinear Evolution Equations, AMS Sectional Meeting, Lincoln, NE, (10/11)
- **Existence of Steady State Solutions for Nonlinear Peridynamic Models**, ICIAM 2011, Vancouver, Canada, (07/11)
- **On the Hyperbolic Diffusion Phenomenon**, Rutgers University, Mathematical Physics Seminar, Department of Mathematics, (04/11)
- **Dirichlet's principle and wellposedness of steady state solutions in peridynamics**, Oberwolfach Mini-Workshop "Mathematical Analysis for Peridynamics", Germany, (01/11)
- **Local existence of strong solutions for semilinear wave equation with source and damping type interactions**, Special Session: New Trends in Theory and Applications of Evolution Equations, Joint Mathematics Meeting, New Orleans, (01/10)

- **Strong solutions for semilinear wave equations with damping and source terms**, The 8th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Dresden, Germany, *(05/10)*
- **Bridging the asymptotic behavior of solutions to damped hyperbolic equations with parabolic equations**, Special Session: Nonlinear Hyperbolic Equations and Control Systems in Physics and Engineering, Joint Mathematics Meetings, San Francisco, *(01/10)*
- **Long time behavior for the heat equation and the damped wave equation**, Prairie Analysis Seminar, Kansas State University, *(12/09)*
- **Decay rates for hyperbolic diffusion equations**. The Sixth IMACS International Conference on Nonlinear Wave Equations and Wave Phenomena, University of Georgia, Athens, GA, *(03/09)*
- **Wave equations with variable coefficients and space dependent damping**. Conference on Nonlinear Phenomena dedicated to Cathleen Morawetz, The Fields Institute, Toronto (poster) *(09/08)*
- **7th AIMS International Conference on Dynamical Systems**. Differential Equations and Applications, Arlington, TX, *(05/08)*
- **Energy estimates for hyperbolic diffusion models**. Colloquium, University of Tennessee - Knoxville, 50 minutes, *(12/07)*
- **Decay Rates for Wave Equations with Linear Damping and Variable Coefficients**. Seventh Prairie Analysis Seminar, Kansas State University, *(11/07)*
- **Decay Rates for Wave Equations with Variable Coefficients 23rd IFIP TC 7 Conference on System Modeling and Optimization**. Cracow, Poland, *(07/07)*
- **Blow-up and existence for semilinear wave equations**. Colloquium Department of Mathematics, University of Virginia, *(10/06)*
- **Existence issues for semilinear wave equations**. AMS 2005 Fall Southeast Section Meeting Johnson City, TN, 30 minutes, *(10/05)*
- **Weak solutions for semilinear wave equations with damping and source terms**. 5th International ISAAC Congress, University of Catania, Italy, *(07/05)*
- **On semilinear wave equations**. Colloquium - Kansas State University, *(02/05)*
- **Existence, blow-up and estimates for semilinear wave equations**. Colloquium - University of Nebraska-Lincoln, *(01/05)*



- **Semilinear wave equations.** PDE Seminar, University of Virginia, (10/05)
- **Existence and blow up of solutions of semilinear wave equations.** IFIP TC 7 Conference on System Modeling and Optimization, Torino, Italy, (07/05)
- **From linear to semilinear wave equations.** Colloquium - University of Nebraska-Lincoln, (11/04)
- **Weak solutions for semilinear wave equations with damping and source terms.** AMS 2004 Fall Western Section Meeting Albuquerque, (10/04)
- **On semilinear wave equations.** Colloquium - Johns Hopkins University, (12/03)
- **Semilinear wave equations.** Third Prairie Analysis Seminar, Kansas State University, (10/03)

**Education related presentations** – All are invited:

- **Cool Math in the (Possibly) Warm City**, Keynote speaker, the ASPIRE Conference, Florida Golf Coast University (02/15)
- **Math in the City Math in the City as a service learning experience**, STEMinar presentation, Florida Golf Coast University (02/15)
- **Assessing ACE 10 courses - Math in the City**, poster presentation; University of Nebraska-Lincoln Research Fair (04/14)
- **Introduction to Math in the City; Nuts and Bolts of Math in the City**; The Future of Math in the City talks at **Math in the City Workshop**, (with S. Hartke), UNL, (12/10), (12/11), (12/12), (12/13)
- **Math in the City - A model for a project-based learning experience**, Undergraduate Seminar at West Virginia University (09/13)
- **Applying and Managing Educational Grants**, Professional Development Seminar, University of Nebraska-Lincoln, Department of Mathematics (03/11)
- **Math in the City** Poster at the symposium *Enhancing Learning and Teaching at UNL: Looking Back and Forward*, (with S. Hartke), University of Nebraska-Lincoln, (02/11)
- **Math in the City: A hands-on learning experience in mathematical modeling**, BIG SIGMA session Mathematics Experiences in Business, Industry, and Government, Joint mathematics meeting, New Orleans, 20 minutes, (01/08/2011)
- **Math in the City**, MAA-NSF Poster Presentation for NSF-DUE awards, Joint Mathematics Meeting, New Orleans (with S. Hartke and M. Uhrig) (01/07/2011)

- **Math in the City: The What, Why, and How of a Hands-on Learning Experience** (copresented with S. Hartke), Issues in Mathematics and Science Education seminar, University of Nebraska, *11/4/10*.
- **Math in the City**, Poster Presentation at the Nebraska Research and Innovation Conference, Lincoln (*10/05/2010*) (with S. Hartke)
- **Math in the City – An Interdisciplinary Program for Undergraduates**. Joint AMS-MAA Meeting, San Diego, 30 minutes, (*01/08*)
- **Math in the City**. Poster Presentation at the Initiative for Teaching and Learning Exposition, UNL (*03/07*)
- **Math in the City**. Mathematics Education Seminar, Department of Mathematics, UNL, 50 minutes, (*11/06*)

**UNL presentations:**

- **Math in the City. Course development, course dissemination, funding**. Professional Development Seminar (*04/12*)
- **Local and nonlocal models for diffusion and wave propagation** Landscape Seminar, University of Nebraska-Lincoln, Department of Mathematics (*01/12*)
- **Partial Differential Equations and Applications in Heat Transfer and Elasticity** Landscape Seminar, University of Nebraska-Lincoln, Department of Mathematics (*03/11*)
- **Wave Equations in Elasticity and Heat Transfer** Landscape Seminar, University of Nebraska-Lincoln, Department of Mathematics (*03/10*)
- **Writing Educational Grant Proposals** Professional Development Seminar, University of Nebraska-Lincoln, Department of Mathematics (*03/10*)
- **Research in Analysis**, Graduate recruitment weekend, UNL, 20 minutes, (*03/06*), (*03/08*)
- **How do we study waves?** Landscape Seminar, UNL, 50 minutes, (*11/06*)
- **Diffusion and wave propagation in materials with discontinuities** Landscape Seminar, UNL, 50 minutes, (*11/06*)

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**Talks in the Continuum Mechanics Seminar – UNL**

- Introduction to nonlocal models and peridynamics (2 talks), Fall 2016
- Modeling fracture in peridynamics (2 talks), Spring 2016
- Nonlocal first order models (3 talks), Fall 2015

- Nonlocal beam models (3 talks), Spring 2015
- Nonlocal operators in peridynamics (4 talks), Fall 2014
- Fractional Laplacian and the peridynamic nonlocal operator (5 talks), Fall 2013
- Nonlocal models in fracture and diffusion (5 talks), Fall 2012

#### **Talks in the PDE Seminar – UNL**

- Introduction to Peridynamics (4 talks), Spring 2012
- Decay Rates for Damped Wave Equations and Hyperbolic Diffusion (2 talks), Spring 2009
- Compensated Compactness and the Div-Curl Lemma (3 talks), Spring 2008
- Decay Rates for Wave Equations with Variable Coefficients (5 talks), Fall 2007
- The Sattinger Potential-Well Method (4 talks), Fall 2006
- Concentrated Compactness (3 talks), Fall 2005
- Local Existence for Semilinear Wave Equations (5 talks), Fall 2004

#### **Organizer of Professional Meetings**

- *Women in Mathematics of Materials (WIMM)* (with Hala Shahadeh and Malena Espanol) - a week-long workshop to be hosted at University of Michigan (05/18)
- *Nonlocal Evolution in Mechanics, Electromagnetics, and Transport Phenomena*, Special Session at the SIAM Conference on Nonlinear Waves and Coherent Structures, Philadelphia (with Kaushik Dayal, Robert Lipton), (08/16)
- *Problems in Geometry and Design of Materials* - Special Session at JMM 2016, Seattle (with Marta Lewicka), (01/16)
- *Recent Advances in Continuum Mechanics and PDEs* - Conference organized around the Rowlee Lecture at UNL delivered by Irene Fonseca, (with M. Foss), (04/15)
- *Nonlinear Evolution Equations*, 10th AIMS conference, Madrid, Spain (with J. Stalker), (07/14)
- *Nonlocal Models in PDEs and Applications*, SIAM Conference on Analysis of Partial Differential Equations, (with M. Parks), (12/13)
- *Local and Nonlocal Models in Wave Propagation and Diffusion*, Special Session at the AMS Meeting in Alba Iulia, Romania, (with L. Bociu and A. Ion), (06/13)
- *Nonlinear PDEs and Control Theory with Applications*, Special Session at the 9th AIMS conference on Dynamical Systems, Differential Equations and Applications, Orlando (with B. Kaltenbacher and I. Lasiecka), (07/12)
- *Math in the City* workshops – to disseminate Math in the City to other institutions, University of Nebraska-Lincoln, with S. Hartke (12/12, 12/11, 12/10), with A. Seceleanu (12/13)

- *Nonlinear Hyperbolic Equations: Theoretical Advances and Applications*; Minisymposium at the SIAM Conference on Analysis in PDEs, San Diego, (with S. Pankavich), (11/11)
  - *Asymptotic Behavior and Regularity for Nonlinear Evolution Equations*, AMS Fall Central Section Meeting, University of Nebraska-Lincoln, (with L. Bociu), (10/11)
  - *Nonlinear Hyperbolic Equations and Control Systems in Physics and Engineering*, Joint Mathematics Meetings, San Francisco (with D. Toundykov), (01/10)
  - *Asymptotic Behavior and Regularity for Nonlinear Evolution Equations*, The Sixth IMACS International Conference on Nonlinear Wave Equations and Wave Phenomena: Computation and Theory (with G. Todorova) University of Georgia, Athens, GA, (03/09)
  - *Nonlinear Partial Differential Equations*, AMS Sectional Meeting, (with G. Avalos and M. Rammaha), University of Nebraska-Lincoln, (10/05)
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**Service:**

**Department of Mathematics at UNL:**

- Chief Faculty Undergraduate Advisor and Chair of Undergraduate Program Committee (*Fall 2016 –Present*)
- Elected Member of the Executive Committee (*Fall 2013–Spring 2015*)
- Appointed Member of the Executive Committee (*Fall 2015–Spring 2016*)
- Member of the Milton Mohr Search Committee (*Fall 2015-Spring 2016*)
- Member of the Alumni Relations Committee (*Fall 2015-Present*)
- Member of UNL Mathematics Department ad-hoc hiring committee (*Spring 2015*)
- Member of the First Year Task-Force – departmental committee setup to help with the implementation of active classroom teaching in Precalculus and Calculus courses (*Fall 2012–Present*)
- Member the UNL Mathematics Department postdoctoral search committees (*2008-2009*), (*2013-2014*)
- Co-chair of the Undergraduate Activities Committee, Dept. of Mathematics, UNL (*2005 - 2009*)
- Member of the Undergraduate Activities Committee, Dept. of Mathematics, UNL (*2005 - 2009*)
- Founder and organizer (with M. Foss) of the Continuum Mechanics Seminar, Dept. of Mathematics, UNL (*2012– Present*)
- Faculty advisor for the Math Club and WUMN (Women in Undergraduate Mathematics Network), UNL (*2005 - Present*)

- Instructor of the minicourse “Aerodynamics and Bernoulli’s Principle”, All Girls All Math Camp (featured in Omaha World Herald), (07/06)

**Advising and mentoring:**

- Ph.D. co-advisor (with M. Foss) for Cory Wright (*Summer 2015 –Present*)
- Ph.D. advisor for Kelsey Wells (*Spring 2015 – Present*)
- Ph.D. advisor for Laura White (*Summer 2014 – Present*)
- Ph.D. co-advisor for Jeremy Trageser (with D. Toundykov), (*Spring 2012-Summer 2015*). Postdoc at George Washington University (2015-2017), Staff member at Oak Ridge National Laboratories (2017 –).
- Ph.D. advisor for Ethan Twisdale, (*2012–Summer 2015*). Ethan left the program ABD in 2015.
- Postdoctoral advisor for Lorena Bociu, (*2009–2011*) (with G. Avalos, M. Rammaha)

**Other mentoring activities:**

- Research advisor for Brittney Hinds, graduate student, (*2010–2011*)
- Faculty advisor of the REU program: Peridynamic models in elasticity and diffusion, UNL (*2015*)
- Faculty advisor (with M. Foss) of REU program: Peridynamic models in heat conduction and elasticity, UNL (*2012*)
- Faculty advisor for the UNL undergraduate teams for MCM (Mathematical Contest in Modeling) - with S. Hartke (*02/09*), (*02/10*)
- Advisor for undergraduate research projects at the UNL Research Fair and Nebraska Research Expo (*2006, 2009*)
- Mentor for Nebraska Scholar Caitlin Wilkins, undergraduate student, (*2014-2015*)
- Teaching mentor for faculty members: Alex Zupan (*2016–Present*), Nathan Wakefield (*2016–Present*)
- Teaching mentor for graduate students: Abby Brackins (*2014–2015*); Jessalyn Bolkema (*Fall 2014–Present*); Travis Russell (*Fall 2014–Present*).
- UCARE mentor and research advisor for Chaoyu Li, undergraduate student (*2012–2013*)
- Research advisor for Kyle Citta, undergraduate student, (*2012-2013*)

• **Service on the Supervisory Committees:**

Meggan Hass (2016–), Kevin Ahrendt (2015 –2017), Wei Hu (2014 –), Julia St. Goar (2012–2016), Joseph Geisbauer (2009 –2013), Michael Uhrig (2009 – 2011), Khulud Alyousef (2010 – 2012), Scott McGregor (UNL - Physics Department) (2010 –2013), Pushp Awasthi (2011 – 2013),

Lauren Keough (2010 –2014), Yenan Wang (UNL - Department of Mechanical and Materials Engineering) (2013 –2015).

### **College and University Service:**

- Member of the Steering Committee for the UNL Chapter of AWIS (Association for Women in Science at UNL (since 06/2017)
- Member of the Academic Peer Review Team for the Institute of Ethnic Studies, UNL (Spring 2017)
- Elected Member of the College of Arts and Sciences Executive Committee (2014–2016)
- Member of the University’s Fulbright Review Committee (Fall 2015)
- Served on the Faculty Instructional Development Ad Hoc Committee to review nominations for the Sorensen, College Distinguished Teaching, and McClymont Awards (2015)
- Member of the University’s *ACE 10 Impact Project*. Committee met monthly to discuss best practices in evaluating student learning in ACE 10 courses (2013-2014)
- Faculty advisor for the UNL Learning Community *Women in Math and Science* (2013 –2015)
- Member of the UNL Teaching Council. Service includes the review of OTICA and UDTA and Sorensen Award Nomination files (2009 – 2012)
- Panel member for Fulbright Workshop (UNL, (05/16)); BOSR - UNL Research Fair (11/11)
- Reviewer of nominations for the Outstanding Graduate Teaching Award, (12/09, 12/10)
- Moderator for the Women in Science Conference, Lincoln, NE (02/06)

### **Service to the Profession:**

- Editor for the Journal of Peridynamics and Nonlocal Modeling (hosted by Springer - forthcoming)
- Editor for the Rocky Mountain Journal of Mathematics <https://rmmc.eas.asu.edu/rmj/rmj.html>
- Guest Editor (with L. Bociu, B. Kaltenbacher) for the Special Volume: “Nonlinear PDEs and Control Theory with Applications” for the Evolution Equations and Control Theory (EECT) journal (2013)
- NSF Panel Reviewer - DMS (03/11) and DUE (06/16)
- Panel Reviewer for AAAS Research Competitiveness Program (10/14); (10/15)

- Panelist on the Project NexT Panel: Interdisciplinary Collaborations for Research and Teaching, Joint Mathematics Meeting, New Orleans, (01/07/11)
- Panelist for All Girls All Math, UNL, (2015, 2016)
- **Referee for the journals:** Applicable Analysis, Applied Mathematics and Computation, Discrete and Continuous Dynamical Systems (Series B), Evolution Equations and Control Theory, Journal of Differential Equations, Journal of Elasticity, Journal of Fourier Analysis and Applications, Journal of Mathematical Physics, Nonlinear Analysis, PRIMUS, Rocky Mountain Journal of Mathematics, SIMA (SIAM Journal on Mathematical Analysis), SINUM (SIAM Journal for Numerical Analysis).
- Reviewer for Mathematical Reviews (2006–2012)

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**Affiliations:** American Mathematical Society, Society for Industrial and Applied Mathematics, Mathematical Association of America, Association for Women in Mathematics, Association for Women in Science.

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**Computer/Software Skills:** Maple, Matlab, C++, Linux, L<sup>A</sup>T<sub>E</sub>X Document Preparation

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**Language Skills:** English (fluent), Romanian (fluent), French (proficient)