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University of Kansas \diamond Lawrence, KS 66045

RESEARCH INTERESTS

Partial Differential Equations: Stability of Waves, Nonlinear Wave Equations

Dynamical Systems: Invariant Manifolds, Hamiltonian Systems, Control

Analysis: Semigroups of Linear Operators, Spectral Mapping Theorems

EDUCATION

2000, Ph.D., Department of Mathematics, University of Missouri, Columbia.

1993, M.S. in Mathematics, Sofia University, Sofia, Bulgaria.

PROFESSIONAL EXPERIENCE

2013-date, Professor, Department of Mathematics, KU.

2007-2013, Associate Professor, Department of Mathematics, KU.

2002-2007, Assistant Professor, Department of Mathematics, KU.

2000-2002, Visiting Assistant Professor, University of Massachusetts-Amherst.

1996-2000, Graduate Teaching Assistant, University of Missouri-Columbia.

1994-1996, Researcher, Bulgarian Academy of Sciences.

ADMINISTRATIVE EXPERIENCE

Interim Chair, Department of Economics, Fall 2017-date.

Director of Graduate Studies, 2012-2017.

Director of Graduate Admissions, 2010-2012.

TEACHING AWARDS AND GRANTS

2012, Don and Pat Morrison Award for Excellence in Teaching Mathematics.

2009, Faculty seminar grant from Center for Teaching Excellence

2005, Teaching Grant from Center for Teaching Excellence

2003, Center for Teaching Excellence Grant for the Best Practices Institute

RESEARCH AND CONFERENCE GRANTS

2017, IMA funding (\$3,500) for KUMUNU PDE Conference April, 2018

2015, NSF DMS - 1500607 **KUMU PDE Conference Proposal** \$15,500 , additional \$4,500 from IMA, co-PI M. Johnson

2015-2018, NSF DMS-1516245 **Stability and Long-Time Behavior for Infinite-Dimensional Dynamical Systems** (\$ 195,000)

2012-2016, NSF DMS - 1211315 **Linear and Nonlinear Stability for Infinite-Dimensional Dynamical Systems** (\$ 215,157)

2008-2012, NSF DMS-0807894 **Long-Time Behavior and Stability of Infinite-Dimensional Dynamical Systems** (\$141,199)

2005-2008, NSF DMS-0508184 **Stability and Long-Time Behavior of Hamiltonian Partial Differential Equations** (\$116,181)

2004-2005, NSF First Award EPS-0236913 **Analytical Studies of Regularity and Stability of Hamiltonian PDE's** (\$72,750)

2003, KUCR Grant NFGRF-2301720 **Infinite-Dimensional Hamiltonian Systems and Stability of Special Solutions with Applications in Nonlinear Optics** (\$7,995)

PUBLICATIONS

W. Feng, M. Stanislavova, A. Stefanov *On the spectral stability of ground states of the semilinear Schrödinger and Klein-Gordon equations with fractional dispersion*, to appear in *Communications in Pure and Appl. Analysis*.

A. Demirkaya, M. Stanislavova, *Numerical results on existence and stability of standing and traveling waves for the fourth order beam equation*, to appear in *Disc. Cont. Dyn. Syst.- B*.

M. Stanislavova, A. Stefanov, *On stability of \mathcal{PT} symmetric ground states for Schrödinger and Klein-Gordon equations in higher space dimensions*, to appear in *Proceedings of the AMS*.

S. Hakkaev, M. Stanislavova, A. Stefanov, *Spectral stability for classical periodic waves of the Ostrovsky and short pulse models*, *Studies in Applied Math* (2017)

S. Hakkaev, M. Stanislavova, A. Stefanov, *Periodic traveling waves of the regularized short pulse and Ostrovsky equations: existence and stability*, *SIAM Journal of Math Analysis*, (2017)

M. Stanislavova, A. Stefanov, *On the spectral problem $\mathcal{L}u = \lambda u'$ and applications*, *Communications in Math Physics*, v. 343, 2, (2016), p. 361-391.

- A. Demirkaya, P.G. Kevrekidis, M. Stanislavova, A. Stefanov, *Spectral Stability Analysis for Standing Waves of a Perturbed KG Equation*, *Disc. Cont. Dyn. Systems - A*, special issue (2015) p.359-368.
- A. Demirkaya, S. Hakkaev, M. Stanislavova, A. Stefanov, *On the Spectral Stability of Periodic Waves of the Klein-Gordon Equation*, *Diff. Int. Equations*, V. 28, no. 5-6 (2015), 431-454.
- M. Stanislavova, *Linear Stability of Solitary Waves for the one-dimensional Benney-Luke and Klein-Gordon Equations*, *Studies in Applied Mathematics*, v. 134, no.1, (2015), 123.
- A. Demirkaya, T. Kapitula, P.G. Kevrekidis, M. Stanislavova and A. Stefanov *On The Spectral Stability Of Kinks in some PT -symmetric Variants of the Classical Klein-Gordon Field Theories*, *Studies in Applied Mathematics*, v.133, **3** (2014), p.298–317.
- S. Hakkaev, M. Stanislavova, A. Stefanov, *Linear stability analysis for periodic traveling waves of the Boussinesq equation and the KGZ system*, *Proc. Roy. Soc. Edinburgh A.*, v. 114, no. 3 (2014), p. 455-489.
- M. Stanislavova, A. Stefanov, *Spectral stability analysis for special solutions of second order in time PDE's: the higher dimensional case*, *Physica D : Nonlinear Phenomena*, 262 (2013), p.1-13.
- S. Hakkaev, M. Stanislavova, A. Stefanov, *Spectral stability for traveling pulses of the Boussinesq 'abc' system*, *SIAM J. on Applied Dynamical Systems*, v.12, **2** (2013), p.878–898.
- S. Hakkaev, M. Stanislavova, A. Stefanov, *Orbital stability for periodic standing waves of the Klein-Gordon-Zakharov system and the beam equation*, *ZAMP-Zeitschrift fuer Angewandte Mathematik und Physik*, v. 64, **2**, (2013) p. 265–282.
- M. Stanislavova, A. Stefanov, *Linear stability analysis for traveling waves of second order in time PDEs*, *Nonlinearity* v. 25, (2012) p. 2625–2654.
- S. Hakkaev, M. Stanislavova, A. Stefanov, *Transverse instability for periodic waves of KP-I and Schrödinger equations*, *Indiana Univ. Math. J.* v.61 (2012), 461-492.
- A. Demirkaya, M. Stanislavova, *Conditional stability theorem for the one dimensional Klein-Gordon equation*, *J. Math. Phys.*, **52**, (2011).
- M. Stanislavova, A. Stefanov, *Asymptotic estimates and stability analysis of Kuramoto-Sivashinsky type models*, *Journal of Evolution Equations (JEE)*, **11**(2011), no. 3, 605-635, Erratum: *J. Evol. Equ.* 11 (2011), no. 3, 637–639.
- A. Demirkaya, M. Stanislavova, *Long Time Behavior for Radially Symmetric Solutions of the Kuramoto-Sivashinsky Equation*, *Dynamics of PDEs*, v.7, **2** (2010), 161–175.
- M. Stanislavova, A. Stefanov, *Effective estimates of the higher Sobolev norms for the Kuramoto-Sivashinsky equation* *Discrete and continuous dynamical systems* (2009), 729–738.

- M. Stanislavova, A. Stefanov, *On precise center stable manifold theorems for certain reaction-diffusion and Klein-Gordon equations Physica D: Nonlinear Phenomena* **238**(2009) 2298-2307.
- M. Stanislavova, *Diffraction Managed Solitons with Zero-mean Diffraction, Journal of Dynamics and Differential Equations*, **19** (2007), no.2, 295-307.
- M. Stanislavova, A. Stefanov, *Attractors for the viscous Camassa-Holm equation, Disc. Cont. Dyn. Syst.- A* **18** (2007), 159–186.
- M. Stanislavova, *On the Global Attractor for the Damped BBM equation, Discrete and Continuous Dynamical Systems Suppl. Volume* (2005), 824–832.
- M. Stanislavova, A. Stefanov, B. Wang *Asymptotic Smoothing and Attractors for the Generalized Benjamin-Bona-Mahony Equation on R^3 , J.Diff. Eq.* **219** (2005), no. 2, 451–483.
- M. Stanislavova, *Regularity of ground state solutions of DMNLS, J.Diff. Eq.*, 210, 1 (2005) 87-105.
- M. Stanislavova, A. Stefanov, *On global finite energy solutions of the Camassa-Holm equation, Journal of Fourier Analysis and Applications* **11** (2005), no. 5, 511–531.
- Y. Latushkin, C.Li and M.Stanislavova, *The Spectrum of a Linearized 2D-Euler Operator, Studies in Applied Mathematics*, **112** (2004) 259-270.
- F. Gesztesy, C.K.R.T. Jones, Y. Latushkin and M. Stanislavova, *A Spectral Mapping Theorem and Invariant Manifolds for Nonlinear Schrödinger Equations, Indiana Univ. Math. J.*,**49** (2000) 221–243.
- M. Konstantinov, M. Stanislavova, P.Petkov *Perturbation Bounds and Characterization of the Solution of the Associated Algebraic Riccati Equation. Journal of Linear Algebra and Applications*, **285** (1998) 7-31.
- M. Stanislavova, A. Zhivkov *On the Dynamics of the Four Dimensional Rigid Body in a Quadratic Potential Field., J. Math. Phys.* **36** (1995), 5760–5788.

COLLEGE AND UNIVERSITY SERVICE

- Senior Administrative Fellows Program, AY2016-2017
- Self Fellowship Faculty Evaluation Committee, 2017
- Graduate Studies Departmental Scholarships Committee, 2016
- Executive Council of Graduate Studies member, 2015-2018
- University Committee on Sabbatical Leaves, 2014-2017
- College Committee on Graduate Studies, 2012-2015, chair in AY13-14
- First Year Seminar Proposal Review Committee, 2014
- Documenting and Advancing Learning Faculty Seminar, CTE, 2012-2014

First Year Seminar steering committee member, AY11-12

Member of Faculty Senate, 2009 - 2012

STATE SERVICE

International Math Kangaroo competition for K-12 kids, 2007-date

KU Mini-Math Club for Elementary School students, 2014-2015

DEPARTMENTAL SERVICE

Director of Graduate Studies, Spring 2012-date.

Member of the self-study committee, 2016.

Faculty Advisor of Graduate Student Organization

Admissions Director of Graduate Studies, 2010- 2012.

Coordinator responsible scholarship requirement, 2011- date.

Analysis qualifying examinations, 2002-date.

P&T Committee Member, Fall 2014.

Member of the Executive Committee, Spring 2014.

Sabbatical Committee, Fall 2013.

Wells-Morrison Committee, 2012-2014

Chair Search Committee, 2011-2012.

Long Range Planning committee, 2003-2004 and 2011-2012

Member of the Executive Committee, 2009-2010.

Member of the Outreach Committee, 2008-2010.

Colloquium Co-chair, 2002-2007.

Ambassador for the Center for Teaching Excellence, 2004-2007.

Chair of the Elementary Algebra Courses Committee, 2006-2010.

Member of the Lower Division of the Undergraduate Committee, 2002-2010.

SCHOLARLY SERVICE

NSF grant-review panels in Applied Mathematics, NSF Postdoctoral Research Fellowships and Graduate Research Fellowships, 2009, 2010, 2012, 2016.

Co-organizer and founder, KUMU PDE, Dynamical Systems and Applications Conference, 2015-date.

Member of selection committee for the Crawford Prize, SIAM Activity Group on Dynamical Systems, 2013.

Co-organizer, special session, AMS sectional meeting, University of Kansas, March 2012.

Guest editor, *Discrete and Continuous dynamical systems-Series S*, Vol.5, 5.

Organizer of a special session on Linear and Nonlinear Stability of coherent structures, Eight AIMS Conference, Dresden, Germany, May 2010.

Organizer of a special session on Long time behavior for Hamiltonian and dissipative systems, Seventh AIMS Conference, University of Texas, Arlington, May 2008.

Organizer of a Mini-symposium Stability and Regularity of Nonlinear Waves at the SIAM Meeting in Snowbird, UT May 2003 and May 2005.

Organizer of a Mini-symposium Discrete and Continuous NLS at the SIAM Meeting in Snowbird, UT, May 2005.

Referee for Nonlinearity, Applied Mathematics Letters, Dynamics of PDE, Communications Pure and Applied Analysis, ADMA, International Journal of Mathematics and Mathematical Sciences, JMAA, AMS contemporary mathematics volume, Journal of Applied Mathematics and Stochastic Analysis, Annali Matematica Pura ed Applicata

Reviewer for Mathematical Reviews

POSTDOCTORAL FELLOWS AND GRADUATE STUDENTS SUPERVISED

Anna Ghazaryan, postdoc 2008-2010. Associate professor at Miami University, Ohio.

Aslihan Demirkaya, PhD student, graduated 2011. Tenure-track, University of Hartford.

Ayse Esen, MA student, graduated 2012.

Weinan Wang, MA student, graduated 2014.

Satbir Malhi, current PhD student

Wen Feng, current PhD student

Harrison Gaebler, current PhD student

COURSES TAUGHT AT KU

Math 115, Applied Calculus I

Math 116, Applied Calculus II

Math 121, Calculus I

Math 126, Calculus 2

Math 143, Honors Multivariable Calculus

Math 177, First Year Seminar
Math 220, Applied ODEs
Math 221, Honors ODEs
Math 290, Linear Algebra
Math 320 Differential Equations
Math 647, Applied PDEs
Math 648, Calculus of Variations and Integral Equations
Math 765, Real Analysis I
Math 850, Advanced ODEs and Dynamical Systems
Math 851, Spectral Theory and Stability
Math 950, Advanced PDEs

INVITED TALKS

Invited Talk, Special session "Nonlinear Dispersive Partial Differential Equations", Fall Eastern Section Meeting of the AMS, SUNY Buffalo, September 16 -17, 2017.

Invited Talk, Special session on Recent Advances in Mathematical and Computational Aspects of Wave Propagation, The IV AMMCS International Conference, Waterloo, Ontario, Canada, August 20-25, 2017.

Invited Speaker. International Conference 'Mathematics Days in Sofia', Differential Equations and Mathematical Physics section, Sofia, Bulgaria, July 2017.

"Geometrical Methods, Nonself-adjoint Spectral Problems, and Stability of Periodic Structures" workshop at BIRS, Oaxaca, Mexico, June 2017.

Invited Talk, special session on "Recent Advances on Traveling Waves in Systems of Partial Differential Equations", SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 2017.

Invited Talk, special session on "Nonlinear waves:analysis and computation", AMS Sectional meeting, College of Charleston, Charleston, NC, March 10-12, 2017

Invited talk, special session on "Problems in Partial Differential Equations", Joint Mathematics Meeting, Atlanta, January 4-7, 2017.

Invited Talk, special session on "Existence and Stability of Nonlinear Waves and Patterns", SIAM Conference on Nonlinear Waves and Coherent Structures (NWCS16), Philadelphia, August 8-11, 2016.

Invited Talk, special session on "Evolution of Partial Differential Equations and their Control", Spring Eastern Sectional Meeting, SUNY, Stony Brook, NY, March 19-20, 2016.

Invited talk, special session on "Recent Developments in Dispersive Partial Differential Equations and Harmonic Analysis", Joint Mathematics Meeting Seattle, Washington, January 6-9, 2016.

Invited talk at the special section on "Spectral methods in Stability of Traveling Waves", Ninth IMACS international conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, The University of Georgia, Athens, April 2015.

Invited talk at the mini-symposium on "Spectral and geometric methods in stability of waves and patterns", SIAM Conference on Nonlinear Waves and Coherent Structures, University of Cambridge, UK, August 11-14, 2014.

Invited talk at 10th AIMS conference on Dynamical Systems, Differential Equations and Applications, Madrid, July 7-11, 2014.

Invited talk at the "Stability of solitary waves workshop", De Giorgi Center, Scuola Normale Superiore, Pisa, May 24-31, 2014.

Invited talk at SIAM conference on Analysis of PDEs, Lake Buena Vista, Florida, December 2013.

Invited talk at a special session 'Existence and stability of traveling wave solutions' at the "Nonlinear Waves", SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May 2013.

Invited talk, AMS meeting, University of Iowa, April 2013.

Invited Talk, Special session on "Nonlinear Evolution Equations", Joint Mathematics Meeting (JMM) San Diego, January 9 - 12, 2013.

Invited Talk, Special Session on "Travelling Waves", AMS Central Section Meeting, University of Akron, Akron, OH, October 20-21, 2012.

Invited talk at 38th International Conference "Applications of Mathematics in Engineering and Economics" (AMEE'12), June 8-13, 2012, Sozopol, Bulgaria.

"Linear Stability Analysis for Periodic Traveling Waves of the Boussinesq Equation and the KGZ System", AMS sectional meeting, University of Kansas-Lawrence, March 31, 2012.

Invited Talk, "Geometric Methods for Infinite-Dimensional Dynamical Systems" conference, Brown University, November 4-6, 2011.

Invited Talk, AMS sectional meeting, University of Nebraska, October 2011.

Invited talk at the special session on "Nonlinear Waves", SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May 2011.

Invited talk, Seventh IMACS international conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, The University of Georgia, Athens, April 2011.

Invited talk at SIAM Conference on Nonlinear Waves and Coherent Structures (NW10), Philadelphia, August 16-19th, 2010.

Invited talk at 36th International Conference "Applications of Mathematics in Engineering and Economics" (AMEE'10), June 5-10, 2010, Sozopol, Bulgaria.

Special session talk at Joint SIAM/RSME-SCM-SEMA Meeting Emerging Topics in Dynamical Systems and Partial Differential Equations DSPDEs'10 May 31st June 4th, 2010, Barcelona, Spain

Invited talk at the conference on "Harmonic Analysis and PDEs" , University of Nebraska-Lincoln, April 17-18, 2010.

Invited talk at the First Oklahoma PDE workshop, Oklahoma State University, November 21-22, 2009

Invited participant - Banff International Research Station for Mathematical Innovation and Discovery (BIRS) workshop: Analysis of nonlinear wave equations and applications in engineering, Banff, Alberta, Canada, August 2009.

On precise center stable manifold theorems for reaction diffusion equations Sixth IMACS international conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, The University of Georgia, Athens, March 2009.

On the Kuramoto-Sivashinsky equation in R^1 and R^2 : effective estimates of the high-frequency tails, special session on Long time behavior for Hamiltonian and dissipative systems, Seventh AIMS Conference, University of Texas, Arlington, May 2008.

Applications of Discrete and Continuous Nonlinear Schrödinger Equations, Pioneers of Bulgarian Mathematics, International Conference, Sofia, Bulgaria, Section on Dynamical Systems, July 2006.

Attractors for evolution equations-a Fourier-Analytic Approach, Dynamical Systems Weekend, Columbia, MO, May 2006.

Recent Developments in Applications of Discrete and Continuous Nonlinear Schrödinger Equations in Nonlinear Optics, Kansas Center for Advanced Scientific Computing, KU, April 2006.

Attractors for the viscous Camassa-Holm equation, AMS sectional meeting, Special Session on Analysis and Geometry of Non-linear Evolution Equation, University of Notre Dame, April 2006.

Diffraction Managed Nonlinear Schrödinger equation, localization and ground states. January 2005, PASI 2005, Workshop on differential equations and nonlinear analysis, Santiago, Chile, January 2005.

On the Global Attractor for the Damped Benjamin-Bona-Mahony Equation, special session on Dynamical Systems and Applications, Fifth AIMS Conference, California State Polytechnic University - Pomona, California, June 2004.

The Dispersion Managed Nonlinear Schrödinger Equation in one and two dimensions, AMS sectional meeting, Special Session on Current Topics in Optical Communication Systems, University of North Carolina, October 2003.

Regularity of Ground States for DMNLS, SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May 2003.

Time-smoothing Techniques and Applications to the Camassa-Holm Equation, Society for Industrial and Applied Mathematics (SIAM) 50th annual meeting, Philadelphia, July 2002.

Stability of Evolution Equations, February 2002, University of New Mexico, February 2002.

Global Well-Posedness for the Camassa-Holm Equation in the Energy Norm, Southeastern-Atlantic Regional Conference on Differential Equations, Wake Forest University, November 2001.

Spectral Mapping Theorem for the 2D Euler Equation, Georgia Institute of Technology, Dynamical Systems Seminar, April 2001.

Invariant Manifolds and Spectral Mapping Theorems, AMS meeting, Special Session on Semigroups and Evolution Equations, March 2001.

Spectral Mapping Theorem for the 2D Euler Equation, Southeastern-Atlantic Regional Conference on Differential Equations, Virginia Tech University, October 2000.

Spectral Theory for Perturbed Semigroups, International Conference on Spectral Theory and Asymptotic Behavior of Semigroups, Blaubeuren, Germany, June 1999.

Dynamics of the four-dimensional rigid body in a quadratic potential field, International Conference on Differential Equations and Mathematical Physics, University of Alabama - Birmingham, March 1999.

Invariant Manifolds for the Nonlinear Schrödinger Equation, Southeastern-Atlantic Regional Conference on Differential Equations, Auburn University, October 1998.

Spectral Mapping Theorem for the Nonlinear Schrödinger Equation, Brown University, November 1998.

Perturbation Bounds for the Associated Algebraic Riccati Equation, International Conference on Differential Equations, Varna-Bulgaria, August 1995.

MEMBERSHIP IN GRADUATE EXAMINATION COMMITTEES

Ayse Esen, member of dissertation committee, School of Education

Connor Smith, member of prelim committee

Kyle Claassen, member of prelim committee

Xi Li, member of dissertation committee

Minji Zhang, member of dissertation committee

Tim Dorn, member of dissertation committee.

Andrew Monaco, member of dissertation committee, Economics Department

Mohamed Badawy, member of prelim committee.

Joel Klipfel, member of master's thesis committee

Melinda Montgomery, member of master's committee.

Michael Bateman, member of master's committee.

ADDITIONAL RESEARCH FUNDING

2011, Support from the IMA, Minneapolis to participate in the "Invariant Objects in Dynamical Systems" short course (invitation only)

2003, Support from the IMA, Minneapolis to participate in the New Directions Short Course on Math Biology (invitation only)

2002, Association for Women in Mathematics Travel Grant

2000-2001, Faculty Research Travel Grant, University of Massachusetts.

1994-1996, Research grant of the Bulgarian Government, co-PI.

1996-2000 Doctoral Fellowship, University of Missouri - Columbia.

1988-1993, State scholarship for excellence in academic work, Sofia University.