VITA

Erik Scott Van Vleck

Office:
Department of Mathematics
University of Kansas
Lawrence, Kansas 66045

Education

PhD in Mathematics
Georgia Institute of Technology, August 1991
Thesis Title: "Random and Numerical Aspects of the Shadowing Lemma"
Thesis Advisor: Shui-Nee Chow

MS in Applied Mathematics
University of Colorado, Boulder, May 1987

BS in Mathematics
University of Kansas, May 1985

Academic Positions

July 2017 - June 2020
Associate Chair and Director of Undergraduate Studies
Department of Mathematics, University of Kansas, Lawrence, Kansas

August 2004 - present
Professor
Department of Mathematics, University of Kansas, Lawrence, Kansas

August 2002 - August 2004
Associate Professor
Department of Mathematics, University of Kansas, Lawrence, Kansas

August 1998 - August 2002
Associate Professor
Department of Mathematical and Computer Sciences, Colorado School of Mines,
Golden, Colorado

August 1993 - August 1998
Assistant Professor
Department of Mathematical and Computer Sciences, Colorado School of Mines,
Golden, Colorado

August 1991 - August 1993
Assistant Professor (Limited Term)
Department of Mathematics and Statistics, Simon Fraser University,
Burnaby, B.C. Canada

Visiting Positions

January - May 2018
Visiting Scholar
Statistical and Applied Mathematical Sciences Institute (SAMSI), Research Triangle Park, NC

March - April 2009
Visiting Scholar
Department of Mathematics, University of Auckland, Auckland, NZ

September - December 2000
Visiting Scholar
Department of Mathematics, University of Kansas, Lawrence, KS

March - April 2000
Visiting Researcher
Mathematisches Forschungsinstitut Oberwolfach, Research in Pairs Program,
Oberwolfach-Walke, Germany

January - July 2000
Visiting Fellow
School of Mathematics, University of Sussex, Brighton, UK

March - June 1999
Visiting Scholar
Department of Civil and Environmental Engineering, University of California,
Berkeley, CA

October - November 1997
Visiting Scholar
Institute for Mathematics and Its Applications, University of Minnesota,
Minneapolis, MN

September 1990 - December 1990
Guest Researcher, Metallurgy Division
National Institute for Standards and Technology, Gaithersburg, MD

Honors and Awards

- G. Bailey Price Graduate Teaching Award (2004); selected by the KU Mathematics graduate students.
- Keeler Family Intra-University Professorship (2014-2015); spent in University of Kansas Department of Geography/Atmospheric Science Program, Spring 2015.
- Don and Pat Morrison Foundation Award (2015) for Excellence in Teaching.
- The paper: N. Goel, E. S. Van Vleck, J. C. Aleman, and A. C. Staver, Dispersal Limitation and Fire Feedbacks Maintain Mesic Savannas in Madagascar," (2020) *Ecology* **101** E03177 was awarded the 2021 Robert P. McIntosh Award for best recent paper in vegetation ecology by the Vegetation section of the Ecological Society of America.

RESEARCH

Research Interests

- Computational Dynamical Systems
- Numerical Analysis
- Dynamical Systems
- Partial Differential Equations
- Applications to Climate Dynamics

Refereed Journal Publications

1. S.N. Chow and E.S. Van Vleck, "A Shadowing Lemma for Random Diffeomorphisms," (1992) *Random & Computational Dynamics* **1(2)** pp. 197-218.
2. R. Shonkwiler and E.S. Van Vleck, "Parallel Speed-Up of Monte Carlo Methods for Global Optimization," (1994) *J. of Complexity* **10** pp. 64-95.

3. S.N. Chow and E.S. Van Vleck, "A Shadowing Lemma Approach to Global Error Analysis for Initial Value ODEs," (1994) *SIAM J. Sci. Comp.* **15** pp. 959-976.
4. L. Dieci, R.D. Russell and E.S. Van Vleck, "Unitary Integrators and Applications to Continuous Orthonormalization Techniques," (1994) *SIAM J. Numer. Anal.* **31** pp. 261-281.
5. W. Shen and E.S. Van Vleck, "Bifurcation Phenomena in a Condensed Two-Phase Combustion Model," (1994) *Random & Computational Dynamics* **2(2)** pp. 227-245.
6. S.N. Chow and E.S. Van Vleck, "Shadowing of Lattice Maps," (1994) *Contemporary Mathematics* **172** pp. 97-116.
7. J.W. Cahn, S.N. Chow and E.S. Van Vleck, "Spatially Discrete Nonlinear Diffusion Equations," (1995) *Rocky Mount. J. Math.* **25** pp. 87-118.
8. E.S. Van Vleck, "Numerical Shadowing Near Hyperbolic Trajectories," (1995) *SIAM J. Sci. Comp.* **16** pp. 1177-1189.
9. C.P. Grant and E.S. Van Vleck, "Slowly-Migrating Transition Layers for the Discrete Allen-Cahn and Cahn-Hilliard Equations," (1995) *Nonlinearity* **8** pp. 861-876.
10. L. Dieci and E.S. Van Vleck, "Computation of a Few Lyapunov Exponents for Continuous and Discrete Dynamical Systems," (1995) *Appld. Numer. Math.* **17** pp. 275-291.
11. J.W. Cahn and E.S. Van Vleck, "Quadrijunctions Do Not Stop Two-Dimensional Grain Growth," (1996) *Scripta Mater.* **34** pp. 909-912.
12. C.E. Elmer and E.S. Van Vleck, "Computation of Traveling Waves for Spatially Discrete Bistable Reaction-Diffusion Equations," (1996) *Appld. Numer. Math.* **20** pp. 157-169.
13. S.N. Chow, J. Mallet-Paret and E.S. Van Vleck, "Pattern Formation and Spatial Chaos in Spatially Discrete Evolution Equations," (1996) *Random & Computational Dynamics* **4(2&3)** pp. 109-178.
14. S.N. Chow, J. Mallet-Paret and E.S. Van Vleck, "Dynamics of Lattice Differential Equations," (1996) *Int. J. Bif. and Chaos* **6** pp. 1605-1622.
15. L. Dieci, R.D. Russell and E.S. Van Vleck, "On the Computation of Lyapunov Exponents for Continuous Dynamical Systems," (1997) *SIAM J. Numer. Anal.* **34** pp. 402-423.
16. B. Leimkuhler and E.S. Van Vleck, "Orthosymplectic Integration of Linear Hamiltonian Systems," (1997) *Numer. Math.* **77** pp. 269-282.
17. J.A. Scales and E.S. Van Vleck, "Lyapunov Exponents and Localization in Randomly Layered Media," (1997) *J. Comp. Phys.* **133** pp. 27-42.
18. A. Rodriguez-Bernal and E.S. Van Vleck, "Diffusion Induced Chaos in a Closed Loop Thermosyphon," (1998) *SIAM J. Appld. Math.* **58** pp. 1072-1093.
19. A. Rodriguez-Bernal and E.S. Van Vleck, "Complex Oscillations in a Closed Thermosyphon," (1998) *Int. J. Bif. and Chaos* **8** pp. 41-56.
20. C. Morey, J.A. Scales and E.S. Van Vleck, "A Feedback Algorithm for Determining Search Parameters for Monte Carlo Optimization," (1998) *J. Comp. Phys.* **146** pp. 263–281.
21. J.W. Cahn, J. Mallet-Paret and E.S. Van Vleck, "Traveling Wave Solutions for Systems of ODEs on a Two-Dimensional Spatial Lattice," (1999) *SIAM J. Appld. Math.* **59** pp. 455–493.
22. L. Dieci and E.S. Van Vleck, "Computation of Orthonormal Factors for Fundamental Solution Matrices," (1999) *Numer. Math.* **83** pp. 599–620.
23. C.E. Elmer and E.S. Van Vleck, "Analysis and Computation of Traveling Wave Solutions of Bistable Differential-Difference Equations," (1999) *Nonlinearity* **12** pp. 771–798.
24. L. Dieci and E.S. Van Vleck, "Continuous Orthonormalization for Linear Two-Point Boundary Value Problems Revisited," (1999) *IMA Volumes in Mathematics and Its Applications* **118** pp. 69–90.
25. J.W. Cahn and E.S. Van Vleck, "On the Co-existence and Stability of Trijunctions and Quadrijunctions in a Simple Model," (1999) *Acta Materialia* **47** pp. 4627–4639.
26. B. Jennings and E.S. Van Vleck, "Mosaic Solutions and Spatial Entropy for a Class of Neural Networks Models," (2000) *Int. J. Bif. Chaos* **10** pp. 1661–1676.

27. K.A. Abell, A.R. Humphries, and E.S. Van Vleck, "Mosaic Solutions and Spatial Entropy for Spatially Discrete Cahn-Hilliard Equations," (2000) *IMA J. Appld. Math.* **65** pp. 219–255.

28. E.S. Van Vleck, "Numerical Shadowing Using Componentwise Bounds and a Sharper Fixed Point Result," (2001) *SIAM J. Sci. Comp.* **22** pp. 787–801.

29. C.E. Elmer and E.S. Van Vleck, "Traveling Waves Solutions for Bistable Differential-Difference Equations with Periodic Diffusion," (2001) *SIAM J. Appld. Math.* **61** pp. 1648–1679.

30. K.A. Abell, A.R. Humphries, and E.S. Van Vleck, "Mosaic Solutions and Entropy for Spatially Discrete Coupled Phase-Transition Equations," (2001) *Physica D* **155** pp. 223–259.

31. L. Dieci and E.S. Van Vleck, "Lyapunov and Other Specta: A Survey," (2002) *Collected Lectures on the Preservation of Stability under Discretization, A Volume Published by SIAM* pp. 197–218.

32. C.E. Elmer and E.S. Van Vleck, "A Variant of Newton's Method for the Computation of Traveling Waves of Bistable Differential-Difference Equations," (2002) *J. Dynam. Diff. Eqn.* **14** pp. 493–517.

33. L. Dieci and E.S. Van Vleck, "Lyapunov Spectral Intervals: Theory and Computation," (2002) *SIAM J. Numer. Anal.* **40** pp. 516–542.

34. C.E. Elmer and E.S. Van Vleck, "Existence of Monotone Traveling Fronts for BDF Discretizations of Bistable Reaction-Diffusion Equations," (2003) *Journal of Dynamics of Continuous, Discrete and Impulsive Systems,* **10A** pp. 389–402.

35. C.E. Elmer and E.S. Van Vleck, "Anisotropy, Propagation Failure, and Wave Speedup in Traveling Waves of Discretizations of a Nagumo PDE," (2003) *J. Comp. Phys.* **185** pp. 562–582.

36. L. Dieci and E.S. Van Vleck, "Orthonormal Integrators Based on Householder and Givens Transformations," (2003) *Future Generation Computer Systems* **19** pp. 363–373.

37. J. Collis and E. S. Van Vleck, "Efficient Numerical Shadowing Global Error Estimation for High Dimensional Dissipative Systems," (2004) *Advanced Nonlinear Studies* **4** pp. 165–188.

38. S. Maier-Paape, B. E. Moore, and E.S. Van Vleck, "Spinodal Decomposition for Spatially Discrete Cahn-Hilliard Equations," (2005) *Journal of Dynamics of Continuous, Discrete and Impulsive Systems, Series A* **12** pp. 529–554.

39. C.E. Elmer and E.S. Van Vleck, "Spatially Discrete FitzHugh-Nagumo Equations," (2005) *SIAM J. Appld. Math.* **65** pp. 1153–1174.

40. K.A. Abell, C.E. Elmer, A.R. Humphries, and E.S. Van Vleck, "Computation of Mixed Type Functional Differential Boundary Value Problems," (2005) *SIAM J. Appld. Dyn. Sys.* **4** pp. 745–771.

41. C.E. Elmer and E.S. Van Vleck, "Dynamics of Monotone Traveling Fronts for Discretizations of Nagumo PDEs," (2005) *Nonlinearity* **18** pp. 1605–1628.

42. L. Dieci and E.S. Van Vleck, "On the Error in Computing Lyapunov Exponents by QR Methods," (2005) *Numer. Math.* **101** pp. 619–642.

43. B. Wang and E.S. Van Vleck, "Attractors for Lattice FitzHugh-Nagumo Systems," (2005) *Physica D* **212** pp. 317–336.

44. M.D. Bateman and E.S. Van Vleck, "Traveling Wave Solutions to a Coupled System of Spatially Discrete Nagumo Equations," (2006) *SIAM J. Appld. Math.* **66** pp. 945–976.

45. C.M. Elliott, B. Gawron, S. Maier-Paape, and E.S. Van Vleck, "Discrete Dynamics for Convex and Non-Convex Smoothing Functionals in PDE Based Image Restoration," (2006) *Comm. Pure Appld. Anal.* **5** pp. 181–200.

46. W. Liu and E.S. Van Vleck, "Turning Points and Traveling Waves in FitzHugh-Nagumo Type Equations," (2006) *J. Diff. Eqn.* **225** pp. 381–410.

47. L. Dieci and E.S. Van Vleck, "Perturbation Theory for the Approximation of Lyapunov Exponents by QR Methods," (2006) *J. Dynam. Diff. Eqn.* **18** pp. 815–840.

48. L. Dieci and E.S. Van Vleck, "Lyapunov and Sacker-Sell Spectral Intervals," (2007) *J. Dynam. Diff. Eqn.* **19** pp. 263–295.

49. D. W. Graham, C. W. Knapp, E. S. Van Vleck, K. Bloor, T. B. Lane, and C. E. Graham, "Experimental Demonstration of Chaotic Instability in Biological Nitrification," (2007) *ISME Journal: Multidisciplinary Journal of Microbial Ecology* **1** pp. 385–393.
50. L. Dieci, M. S. Jolly, R. Rosa, and E.S. Van Vleck, "Error in Approximation of Lyapunov Exponents on Inertial Manifolds: the Kuramoto-Sivashinsky Equation," (2008) *Discrete and Continuous Dynamical Systems B* **9** pp. 555–580.
51. L. Dieci and E.S. Van Vleck, "On the Error in QR Integration," (2008) *SIAM J. Numer. Anal.* **46** pp. 1166–1189.
52. A. Cheskidov, M.S. Jolly, and E.S. Van Vleck, "On a relation between Lyapunov exponents and the radius of analyticity," (2008) *Indiana Univ. Math. J.* **57** pp. 2663–2680.
53. A. Scheel and E.S. Van Vleck, "Lattice Differential Equations Embedded into Reaction-Diffusion Systems," (2009) *Proc. Royal Soc. Edinburgh* **139** pp. 193–207.
54. A. Vainchtein and E.S. Van Vleck, "Nucleation and Propagation of Phase Mixtures in a Bistable Chain," (2009) *Phys. Rev. B.* **79** pp. 144123-1–11.
55. L. Dieci, C. Elia, and E.S. Van Vleck, "Exponential Dichotomy on the Real Line: SVD and QR methods," (2010) *J. Diff. Eqn.* **248** pp. 287–308.
56. E.S. Van Vleck, "On the Error in the Product QR Decomposition," (2010) *SIAM J. Matr. Anal. Appl.* **31** pp. 1775–1791.
57. W. Liu and E.S. Van Vleck, "Exponential Dichotomy for Asymptotically Hyperbolic Two-Dimensional Linear Systems," (2010) *J. Dynam. Diff. Eqn.* **22** pp. 697–722.
58. L. Dieci, M. S. Jolly, and E.S. Van Vleck, "Numerical Techniques for Approximating Lyapunov Exponents and Their Implementation," (2011) *ASME Journal of Computational and Nonlinear Dynamics* **6** pp. 011003–1–7.
59. M. Menning and E.S. Van Vleck, "On the Error in Approximating Stability Spectra for Discrete Time Dynamical Systems," (2011) *Mathematics and Computers in Simulation* **81** pp. 1006–1016.
60. V.H. Linh, V. Mehrmann, and E.S. Van Vleck, "QR Methods and Error Analysis for Computing Lyapunov and Sacker-Sell Spectral Intervals for Linear Differential-Algebraic Equations," (2011) *Advances in Computational Mathematics* **35** pp. 281–322.
61. L. Dieci, C. Elia, and E.S. Van Vleck, "Detecting Exponential Dichotomy on the Real Line: SVD and QR Algorithms," (2011) *BIT: Numerical Mathematics* **51** pp. 555–579.
62. A.R. Humphries, B.E. Moore, and E.S. Van Vleck, "Waves for Bistable Differential-Difference Equations with Inhomogeneous Diffusion," (2011) *SIAM J. Appld. Math.* **71** pp. 1374–1400.
63. M. Brucal - Hallare and E.S. Van Vleck, "Traveling Fronts in an Antidiffusion Lattice Nagumo Model," (2011) *SIAM J. Appld. Dyn. Sys.* **10** pp. 921–959.
64. M. Badawy and E.S. Van Vleck, "Perturbation Theory for the Approximation of Stability Spectra by QR Methods for Sequences of Linear Operators on a Hilbert Space," (2012) *Lin. Alg. and Applic.* **437** pp. 37–59.
65. C. Lu, W. Huang, and E.S. Van Vleck, The Cutoff Method for the Numerical Computation of Nonnegative Solutions of Parabolic PDEs with Application to Anisotropic Diffusion and Lubrication-Type Equations," (2013) *J. Comp. Phys.* **242** pp. 24–36.
66. H.J. Hupkes and E.S. Van Vleck, "Negative Diffusion and Traveling Waves in High Dimensional Lattice Systems," (2013) *SIAM J. Math. Anal.* **45** pp. 1068-1135.
67. D. Breda and E.S. Van Vleck, "Approximation of Lyapunov and Sacker-Sell Spectra for Delay Differential Equations," (2014) *Numer. Math.* **126** pp. 225–257.
68. A. Hoffman, H.J. Hupkes, and E.S. Van Vleck, "Multi-Dimensional Stability of Waves Traveling through Rectangular Lattices in Rational Directions," (2015) *Transactions AMS* **367** pp. 8757–8808.
69. A. Vainchtein, E.S. Van Vleck, and A. Zhang, "Propagation of Periodic Patterns in a Discrete Lattice with Competing Interactions," (2015) *SIAM J. Appld. Dyn. Sys.* **14** pp. 523–555.

70. C. Lamb and E.S. Van Vleck, "Neutral Mixed Type Functional Differential Equations," (2016) *J. Dyn. Diff. Eqn.* **28** pp. 763–804.

71. H.J. Hupkes and E.S. Van Vleck, "Traveling Waves for Complete Discretizations of Reaction Diffusion Systems," (2016) *J. Dyn. Diff. Eqn.* **28** pp. 955–1006.

72. A. J. Steyer and E.S. Van Vleck, "A Step-Size Selection Strategy for Explicit Runge-Kutta Methods based on Lyapunov Exponent Theory," (2016) *J. Comp. Appld. Math.* **292** pp. 703–719.

73. E.S. Van Vleck and A. Zhang, "Competing Interactions and Traveling Waves in Lattice Differential Equations," (2016) *Comm. Pure Appld. Anal.* **15** pp. 457-475.

74. Y.-M. Chung, A. J. Steyer, M. Tubbs, E.S. Van Vleck, and M. Vedantam, "Global Error Analysis and Inertial Manifold Reduction," (2016) *J. Comp. Appld. Math.* **307** pp. 204–215.

75. A. Hoffman, H.J. Hupkes, and E.S. Van Vleck, "Traveling Waves Through Obstacles in Bistable Lattice Differential Equations," (2017) *Memoirs AMS* **250** no. 1188 v+119 pp.

76. N. A. Brunsell, E.S. Van Vleck, M. Nosshi, Z. Ratajczak, J. Nippert, "Assessing the roles of fire frequency and precipitation in determining woody encroachment in central U.S. grasslands," (2017) *Journal of Geophysical Research: Biogeosciences* **122** pp. 2683–2698.

77. A. J. Steyer and E.S. Van Vleck, "Underlying one-step methods and nonautonomous stability of general linear methods," (2018) *DCDS-B* **23** pp. 2859–2877.

78. A. J. Steyer and E.S. Van Vleck, "A Lyapunov and Sacker-Sell spectral stability theory for one-step methods," (2018) *BIT: Numerical Mathematics* **58** pp. 749–781.

79. B. de Leeuw, S. Dubinkina, J. Franks, A. Steyer, X. Tu, E.S. Van Vleck, "Projected Shadowing Based Data Assimilation," (2018) *SIAM J. Appld. Dyn. Sys.* **17** pp. 2446–2477.

80. H.J. Hupkes, L. Morelli, W.M. Schouten-Straatman, and E.S. Van Vleck "Traveling Waves and Pattern Formation for Spatially Discrete Bistable Reaction-Diffusion Equations," (2020) *in Springer Proceedings in Mathematics & Statistics - Difference Equations and Discrete Dynamical Systems with Applications* **312** pp. 55–112.

81. N. Goel, E. S. Van Vleck, J. C. Aleman, and A. C. Staver, Dispersal Limitation and Fire Feedbacks Maintain Mesic Savannas in Madagascar," (2020) *Ecology* **101** E03177 (https://doi.org/10.1002/ecy.3177).

82. J. Maclean and E.S. Van Vleck "Particle Filters for Data Assimilation Based on Reduced Order Data Models," (2021) *Q. J. Roy. Met. Soc.* **147** pp. 1892–1907.

83. E.S. Van Vleck and A. Zhang, "Transition Fronts of Fisher-KPP Equations in Locally Spatially Inhomogeneous Patchy Environments," (2022) *Nonlinear Analysis* **217** 112748 (39 pages).

84. H. J. Hupkes and E. S. Van Vleck, "Travelling Waves for Adaptive Grid Discretizations of Reaction Diffusion Systems I: Well-posedness," (2022) *J. Dyn. Diff. Eqn.* **34** pp. 1505-1599. (https://doi.org/10.1007/s10884-021-10013-5)

85. A. Albarakati, M. Budišić, R. Crocker, J. Glass-Klaiber, S. Iams, J. Maclean, N. Marshall, C. Roberts, and E. S. Van Vleck, "Model and Data Reduction for Data Assimilation: Particle Filters Employing Projected Forecasts and Data with Application to a Shallow Water Model," (2022) *Computers and Mathematics with Applications.* **116** pp. 194–211.

86. C. Krause, W. Huang, D. Mechem, E. S. Van Vleck, and M. Zhang, "A Metric Tensor Approach to Data Assimilation with Adaptive Moving Meshes," (2022) *J. Comp. Phys.* **466** 111407 (https://doi.org/10.1016/j.jcp.2022.111407) (24 pages).

87. H. J. Hupkes and E. S. Van Vleck, "Travelling Waves for Adaptive Grid Discretizations of Reaction Diffusion Systems II: Linear Theory," (2022) *J. Dyn. Diff. Eqn.* **34** pp. 1679–1728. (https://doi.org/10.1007/s10884-021-09942-y)

88. H. J. Hupkes and E. S. Van Vleck, "Travelling Waves for Adaptive Grid Discretizations of Reaction Diffusion Systems III: Nonlinear Theory," (2023) *in press J. Dyn. Diff. Eqn.* (https://doi.org/10.1007/s10884-022-10143-4) (69 pages).

Submitted

89. A. Albarakati, M. Budišić, and E. S. Van Vleck, "Projected Data Assimilation using Sliding Window Proper Orthogonal Decomposition," (2023) *submitted.*

Non Refereed Publications

1. Dieci, L. and Van Vleck, E. S., Lyapunov Exponents: Computation, in Encyclopedia of Applied and Computational Mathematics, Ed.: Engquist, B., Springer-Verlag, (2015), pp. 834–838.
2. Festschrift chapter in honor of Volker Mehrmann: Van Vleck, E. S., Continuous Matrix Factorizations, Numerical algebra, matrix theory, differential-algebraic equations and control theory, Springer-Verlag, (2015), pp. 299-318.
3. Brunsell, N. A. and Van Vleck, E. S., Combining Data and Models to Study Woody Plant Encroachment, SIAM News, March 2018.

Selected Invited Talks

1. (p) "Traveling Waves in Dissipative Lattice Differential Equations," ICDEA17, Trois-Rivieres, Canada, July 2011.
2. "Multi-Dimensional Stability of Traveling Waves for Spatially Discrete Bistable Reaction-Diffusion Equations," AMS sectional meeting, Lincoln, NE, October 2011.
3. "Shape Memory Alloys, Anti-Diffusion Lattice Equations, and Traveling Checkerboards," SIAM Southeastern Atlantic Section Conference, Huntsville, AL, March 2012.
4. (p) "Traveling Waves in Anti-Diffusion Lattice Equations," Workshop on Dynamics of Differential Equations in Celebration of John Mallet-Paret's 60th Birthday, Brown University, Providence, RI, May 2012.
5. (p, 2 talks): "Traveling Waves in Anti-Diffusion Lattice Equations," and "Waves in Heterogeneous Discrete Media," SDS2012, Capitolo, Italy, June 2012.
6. (i) "The Error in the Product QR Decomposition and Applications," Structured Matrix Computations in Non Euclidean Geometries: Algorithms and Applications CIRM, Luminy, France, October, 2012.
7. (i) "Competing Interactions and Traveling Waves in Bistable Lattice Equations," IMA Workshop: Lattice and Nonlocal Dynamical Systems and Applications, IMA, Minneapolis, MN, December, 2012.
8. (i) "Transition Fronts in Lattice Differential Equations," Conference on Dynamics of Differential Equations in memory of Jack K. Hale, Atlanta, GA, March, 2013.
9. "Transition Fronts in Lattice Differential Equations," SIAM Dynamical Systems Conference, Snowbird, Utah, May 2013.
10. "Computation of Lyapunov Exponents," IMA Hot Topics Workshop Predictability in Earth System Processes, IMA, Minneapolis, MN, November, 2013.
11. (p): "Decoupling and Dimension Reduction with Application to Climate Models," SDS2014, Capitolo, Italy, June 2014.
12. (i): "Dimension Reduction and Data Assimilation: A Lyapunov Vector Perspective," Lorentz Center Workshop Climate Variability: from Data and Models to Decisions, Leiden, Netherlands, December 2014.
13. "Applications of Orthogonal Integration," SIAM Central States sectional meeting, Rolla, MO, April 2015.
14. (p): "Hybrid Data Assimilation Techniques and Applications," MCRN Colloquium, April 2016.
15. (p): "Hybrid Data Assimilation Techniques and Applications," SDS2016, Capitolo, Italy, June 2016.
16. "Bistable Traveling Waves Under Discretization: BDF and Moving Mesh Methods," SIAM Nonlinear Waves Conference, Philadelphia, PA, August 2016.
17. "Bifurcation Phenomena in a Predator-Prey Based Cloud Dynamics Model," SIAM Mathematics of Planet Earth Conference, Philadelphia, PA, September 2016.
18. "Parameter Estimation in Land Surface Models," SIAM Dynamical Systems Conference, Snowbird, Utah, May 2017.

19. "Projected Data Assimilation," SIAM Annual Meeting, Pittsburgh, Pennsylvania, July 2017.
20. "Projected Data Assimilation," Workshop on Dynamical Systems, Atlanta, Georgia, August 2017.
21. "Competing Interactions, Patterns, and Traveling Waves in Discrete Systems," SIAM Central States sectional meeting, Fort Collins, CO, September 2017.
22. "Projected Data Assimilation and Applications," SIAM Central States sectional meeting, Fort Collins, CO, September 2017.
23. "Time Dependent Stability of Numerical Methods," $10 \rightarrow 60$: A meeting to celebrate the 60th birthday of Luca Dieci, Atlanta, Georgia, December 2017.
24. "Woody Encroachment," SIAM SouthEast Atlantic Section Meeting, Chapel Hill, NC, March 2018.
25. "Predictability and Chaos," SAMSI Undergraduate Workshop, Research Triangle Park, NC, March 2018.
26. "Projected Data Assimilation," SAMSI CLIM Transition Workshop, Rsearch Triangle Park, NC, May 2018.
27. (p): "Bistable Traveling Waves Under Discretization: BDF Methods, Moving Meshes, and Applications," International Congress on Difference Equations and Applications (ICDEA), Dresden, Germany, May 2018.
28. (i): "Bistable Traveling Waves Under Discretization: BDF Methods, Moving Meshes, and Applications," BIRS Workshop: Adaptive Numerical Methods for Partial Differential Equations with Applications, Banff, Canada, June 2018
29. (p): "Bistable Traveling Waves Under Discretization: BDF Methods, Moving Meshes, and Applications," SDS2018, Capitolo, Italy, June 2018.
30. (p): "Time Dependent Stability: Computation and Applications," NUMDIFF-15, Martin Luther University Halle-Wittenberg, Germany, September 2018.
31. (i): "Projected Data Assimilation," IUTAM: Stochastic Approaches to Understanding Transitions in Fluid Flows, Cornell University, Ithaca, NY, September 2018.
32. "Projected Data Assimilation," SIAM Dynamical Systems Conference, Snowbird, Utah, May 2019.
33. "Data Assimilation for PDEs using Adaptive Moving Meshes," SIAM PDEs Conference, La Quinta, California, December 2019.
34. (i) "Dynamically Adapting Meshes and Data Assimilation," Atmospheric Data Assimilation/ONR Code 31 Workshop, November 2020.
35. "Dimension Reduction in Data Assimilation: Particle Filters with Reduced Order Models and Data," SIAM Central States sectional meeting, Stillwater, OK, October 2022.
36. "Dimension Reduction in Data Assimilation: Particle Filters with Reduced Order Models and Data," SIAM Dynamical Systems Conference, Portland, OR, May 2023.