

# Wandi Ding

Middle Tennessee State University  
Department of Mathematical Sciences  
Murfreesboro, TN 37132

E-mail: [wandi.ding@mtsu.edu](mailto:wandi.ding@mtsu.edu)  
Web page:  
<http://www.mtsu.edu/faculty/wding>  
Office: (615) 494-8936

- EDUCATION**
- **Ph.D.** Applied Mathematics University of Tennessee - Knoxville, TN 2006  
*Supervised by Suzanne Lenhart*
  - **M.S.** Applied Mathematics Ocean University of China, 2001
  - **B.S.** Mathematics Education Qingdao University, China, 1998
- RESEARCH INTEREST**
- Mathematical Biology || Optimal Control || Computational Biology || Mathematical Modeling || Ordinary and Partial Differential Equations || Difference Equations || Agent/Individual-Based Modeling || Hybrid System || Natural Resource Management || Population Dynamics || Disease Modeling and Control || Systems Biology || Deep Learning || Quantum Biology
- WORKING EXPERIENCE**
- **Professor**, Middle Tennessee State University 2018 - current
    - Faculty for the Interdisciplinary Ph.D. in Computational and Data Science Program.  
Honors Faculty.  
M.S. Graduate Program advisor in the Department of Mathematical Sciences.
  - **Associate Professor**, Middle Tennessee State University 2013 - 2018
    - Graduate Faculty and Honors Faculty
    - Faculty for the Interdisciplinary Ph.D. in Computational Science Program
  - **Assistant Professor**, Middle Tennessee State University 2007 - 2013
    - Faculty for the Interdisciplinary Ph.D. in Computational Science Program and Honors Faculty
  - **Post Doctoral Research Associate**, University of Tennessee - Knoxville 2006 - 2007
    - Worked with Drs. Suzanne Lenhart and Louis Gross on Developing mathematical methods for optimal spatial control of disease and ecological models (supported by NSF ITR award).
  - **Graduate Teaching Associate**, University of Tennessee - Knoxville 2001 - 2006
    - Undergraduate courses: Basic Calculus, Calculus I and Math for Life Science II.
    - Lab: Conducted Numerical Analysis Labs.
  - **Graduate Assistant**, University of Tennessee - Knoxville Summer 2005
    - Research Experiences for Undergraduates (REU) program.
- TEACHING**
- **Graduate courses:**
    - MATH 6190: Analysis I
    - MATH 6200: Analysis II
    - MATH 6250: Real Analysis (Intro to Functional Analysis)
    - MATH 6260: Advanced Differential Equations I
    - MATH 6601: Problems in Advanced Calculus
    - MATH 6612 - Problems in Mathematics (The Feynman Lectures on Physics)
    - COMS 7800: Teaching Internship

- COMS 7950: Research Seminar in Computational Science
- **Undergraduate Courses:**
  - **Major Courses:**
    - MATH 1910: Calculus I
    - MATH 1920: Calculus II
    - MATH 3110: Calculus III
    - MATH 3120: Differential Equations I
    - MATH 3260: Differential Equations II
    - MATH 4230: Vector Analysis
    - MATH 4250: Theory of Calculus
    - MATH 4601: Complex Analysis
    - MATH 4602: Problems in Mathematics
    - MATH 5600: Problems in Contemporary Mathematics
  - **General Education Courses:**
    - MATH 1010-H: Mathematics for General Studies for Honors
    - MATH 1530: Applied Statistics
    - MATH 1630: College Mathematics for Managerial, Social, and Life Sc
    - MATH 1720: Plane Trigonometry
    - MATH 1810: Applied Calculus I
    - MATH 2110: Data Analysis

PUBLICATIONS ◦ **EDITED VOLUMES [2]:**

- Guest Editors: Ding, Wandu; Kang, Yun; Mubayi, Anuj.  
*Special Issue: Mathematical modeling and analysis of social and ecological determinants for the dynamics of infectious diseases and public health policies. Math. Biosci. Eng.* 18 (2021), no. 6, 8535–8537.
- Guest Editors: Rachel Leander, Wandu Ding and Rene Salinas.  
*Special Issue Dedicated to Suzanne Lenhart, Journal of Natural Resource Modeling*, 31:4, 2018.
- **REFEREED [18]:**
  - F. Agosto, D. Bond, A. Cohen, W. Ding, R. Leander and A. Royer. Optimal Impulse Control of West-Nile Virus, **AIMS Mathematics**, 7(10): 19597–19628, 2022. <http://www.aimspress.com/article/doi/10.3934/math.20221075>
  - L. Cai, L. Bao, L. Rose, J. Summers and W. Ding. Malaria Modeling and Optimal Control Using Sterile Insect Technique and Insecticide-Treated Net, **Applicable Analysis**, 2022, VOL. 101, NO. 5, 1715–1734. <https://doi.org/10.1080/00036811.2021.1999419>  
Wandu Ding. Malaria Modelling, an optimal control problem. **Research Outreach**, May 17, 2022.  
<https://researchoutreach.org/articles/malaria-modelling-optimal-control-problem/>
  - Leander RN, Wu Y, Ding W, Nelson DE, Sinkala Z.  
*A model of the innate immune response to SARS-CoV-2 in the alveolar epithelium, R. Soc. Open Sci.*, 8: 210090, 2021. <https://doi.org/10.1098/rsos.210090>
  - Wandu Ding, Ryan Florida, Jeffery Summers, Puran Nepal and Ben Burton.  
*Experience and Lessons Learned from Using SIMIODE Modeling Scenarios, PRIMUS*, 29:6, 571-583, 2019. DOI: 10.1080/10511970.2018.1488318
  - Wandu Ding and Glenn F. Webb.  
*Optimal control applied to community-acquired methicillin-resistant Staphylococcus aureus in hospitals, Journal of Biological Dynamics*, 11:sup1, 65-78, 2017.

- James B. Hayes, Linda M. Sircy, Lauren E. Heusinkveld, Wandi Ding, Rachel N. Leander, Erin E. McClelland and David E. Nelson.  
*Modulation of macrophage inflammatory NF- $\kappa$ B signaling by intracellular *Cryptococcus neoformans**, **Journal of Biological Chemistry**, 291:30, 15614-15627, 2016.  
DOI: 10.1074/jbc.M116.738187
- Orou G. Gaoue, Jiang Jiang, Wandi Ding, Folashade B. Agosto and Suzanne Lenhart.  
*Optimal harvesting strategies for timber and non-timber forest products in tropical ecosystems*, **Theoretical Ecology**, 9:3, 287-297, 2016. DOI: 10.1007/s12080-015-0286-4
- Hui Feng, Huili Ma and Wandi Ding.  
*Global asymptotic behavior of positive solutions for exponential form difference equations with three parameters*, **Journal of Applied Analysis and Computation**, 6:3, 600-606, 2016. DOI: 10.11948/2016041
- Huili Ma, Hui Feng, Jiaofeng Wang and Wandi Ding.  
*Boundedness and asymptotic behavior of positive solutions for difference equations of exponential form*, **Journal of Nonlinear Science and Applications** 8:5, 893-899, 2015.
- Wandi Ding.  
*Fishery Harvesting: Atlantic Cod*, Wandi Ding (2015), “1-70-T-FisheryHarvest,” Teacher Version Modeling Scenario at <https://www.simiode.org/resources/1319>, and Student Version at <https://www.simiode.org/resources/1318>.
- Wandi Ding, Suzanne Lenhart and Horst Behncke.  
*Discrete Time Optimal Harvesting of Fish Populations with Age Structure*, **Letters in Biomathematics**, 1:2, 193-207, 2014. DOI: 10.1080/23737867.2014.11414480
- Wandi Ding, Raymond Hendon, Brandon Cathey, Evan Lancaster and Robert Germick.  
*Discrete Time Optimal Control Applied to Pest Control Problems*, **Involve, a Journal of Mathematics**, 7-4, 479-489, 2014.
- Wandi Ding, Volodymyr Hryniv and Xiaoyu Mu.  
*Optimal Control Applied to Native-Invasive Species Competition via a PDE Model*, **Electronic Journal of Differential Equations**, Vol. 2012, 237:1-18, 2012.
- Wandi Ding and Suzanne Lenhart.  
*Introduction to Optimal Control for Discrete Time Models with an Application to Disease Modeling*, Modeling Paradigms and Analysis of Disease Transmission Models, 109-119, **DIMACS Ser. Discrete Math. Theoret. Comput. Sci.**, **75**, Amer. Math. Soc., Providence, RI, 2010.
- Wandi Ding, Heather Finotti, Suzanne Lenhart, Yuan Lou and Yuquan Ye.  
*Optimal Control of the Growth Coefficient on a Steady State Population Model*. **Nonlinear Anal. Real World Appl.** 11, 688-704, 2010.
- Wandi Ding and Suzanne Lenhart.  
*Optimal Harvesting of a Spatially Explicit Fishery Model*. **Natural Resource Modeling**, 22:2, 173-211, May, 2009.
- Wandi Ding, Louis J. Gross, Keith Langston, Suzanne Lenhart and Leslie A. Real.  
*Rabies in Raccoons: Optimal Control for a Discrete Time Model on a Spatial Grid*. **Journal of Biological Dynamics**, 1:4, 379-393, October, 2007.
- Wandi Ding.  
*Optimal Control of Hybrid ODE Systems with Application to a Tick Disease Model*. **Mathematical Biosciences and Engineering**, 4:4, 633-659, October, 2007.

TECHNICAL  
REPORT [2]

- Brad Bartel, Wandi Ding, Jackie Eller, Judith Iriarte-Gross, Karen Petersen, Gretchen Webber, Michael Hein, Denielle Meyerink.  
*A Catalyst to Advance the Participation and Advancement of Women in Academic STEM Careers at Middle Tennessee State University NSF: HRD-1409638*, 2017.

- Mellisa Choi. Natalie Almond, Wandi Ding, Xiaochuan Li, Xingtao Liu, Steven Rusnica, Ismael Velzquez-Ramrez, Emily Lada, Fazafumi Ito, Michael Horton.  
*Mobile Sensing of Aerosolized Chemical and Biological Agents*. The Center for Research in Scientific Computation (**CRSC**) Technical Report, 2004.

WORK IN  
PROGRESS

- **W.** Ding and R. Leander. Book: *Calculus of One Variable: A Journey from Integration and Beyond*, Cognella, 2022-2025.
- **D.** Wang and W. Ding. *Machine Learning Cookbook: A Practical Guide*, 2022.
- **Guest Editors:** W. Ding, J. Phillips, Z. Qu and R. Zaretzki. Special Issue: *Machine Learning, Mathematical and Statistical Modeling for Systems Biology of Mathematical Biosciences and Engineering*. <http://www.aimspress.com/mbe/article/6087/special-articles>. 2021-22.
- **Deep Learning** applied to Infectious Disease Modeling, 2022.
- **Agent/Individual-based modeling** with biological applications, 2022.
- **S. Patel, W. Ding, R. Leander, Y. Wu.** Modeling the functional response of a cellular population to a stimulus, 2022.
- **F. Augusto, W. Ding and R. Leander.** Mathematical model of community-associated and hospital-associated methicillin-resistant staphylococcus aureus transmission in community settings, 2022.

GRANTS &  
TRAVEL  
AWARDS

- **NSF DMS #2234176:** Shanks Workshop on Advances in Mathematical and Theoretical Biology, (PI: X. Zhao, co-PIs: M. Horn, W. Ding, P. Hinow and X. Huo), \$27,000, 2023-24.
- **NSF DMS #1757493:** REU Site: Computational Modeling and Simulation in Applied Sciences (PI: W. Ding, co-PIs: R. Leander, W. Robertson and J. Phillips), \$241,470, 2018-2023.
- **NIA:** Non-Instructional Assignment Grant (Sabbatical leave), Fall 2020.
- **NSF ADVANCE IT-Catalyst (NSF HRD-1409638):** A Catalyst to ADVANCE the Participation and Advancement of Women in Academic STEM Careers at Middle Tennessee State University (PI: B. Bartel, co-PIs: J. Iriarte-Gross, W. Ding, J. Eller and K. Petersen), \$195,002, 2014-18.
- **MTSU LT&ITC Faculty Learning Community:** Mid-Career Faculty Development Program, (with D. Raffo, G. Webber, R. Henderson, R. Otter and T. Brinthaup), 2014, \$7,500.
- **MTSU Instructional Technologies Innovation Grant** (with Z. Sinkala and R. Leander), 2014, \$5,892.
- **MTSU Instructional Evaluation and Development Grant**, 2011, \$750.
- **Faculty Research and Creative Activity Award**, MTSU, August 2009 — May 2010, \$5,000.
- **NSF STEP<sup>MT</sup>** (Stepping Up Undergraduate Research) Summer Research, MTSU, June — July 2009, \$17,500.
- **Faculty Research and Creative Activity Award**, MTSU, August 2008 — May 2009, \$6,300.
- **MTSU Distinguished Lecture Fund**, 2009, 2010, 2011, 2012, \$3,250.
- **Travel Grants/Awards:**
  - **Moffitt Cancer Center** Integrated Mathematical Oncology (**IMO**) Travel Awards, IMO Workshop 9: Tumor Board Evolution, 2019.
  - Society for Mathematical Biology (**SMB**) grant to support our special session in the **AMS** Southeastern Spring Sectional Meeting (March 27-29, 2015), 2014, \$2,000.
  - Society for Mathematical Biology (**SMB**) Travel grant, SMB, 2011, \$750.
  - Society of Industrial and Applied Mathematics (**SIAM**) Postdoc/Early Career Travel Award, SIAM-NSF, 2010, \$885.

- Association for Women in Mathematics (**AWM**) Travel Grants for Women Researchers, AWM-NSF, 2009, \$1,488.

VISITING  
SCHOLARS

- Dr. Huili Ma, Northwest Normal University, China, 2014-2015
- Dr. Yan Hu, Shanghai University of Electric Power, China, 2015-2016

SERVICE TO  
THE  
STUDENTS

- Faculty Coach: National Student Competition Using Differential Equations Modeling - SCU-DEM, 2017-18.  
Team Members: Jeffery Summers, Ryan Florida, Ben Burton, Puran Nepal.
- Doctoral Dissertation Committees
  - Arthur Williams 2022
  - Thomas Torku 2022
  - Kayode D. Olumoyin 2022
  - Sujani Ambahera 2022
  - Ashlin Harris 2021
  - Harold A. Lay Jr. 2019
  - Richard Ewool 2016
  - Harish Bhatt 2016
  - Zach Spears 2014
- M.S. Thesis Committees
  - Lekha Iraloor Neelakantan 2022
  - Zachariah Thomas 2021
  - Lin Feng 2021
  - Ziren Chen 2021
  - Anthony Krueger 2021
  - Asma Alshehri 2019
  - Jacy Zanussi 2019
  - Sathyanarayanan Rengaswami 2017
  - Genesis Spears 2017
  - Milton Sager 2014
  - Akwasi Kusi-Appiah 2010
- Teaching Internship
  - Spring 2013: Harish Bhatt
- Undergraduate Research
  - Brady Nichols, Sally Vogel (co-advised with Dr. R. Leander)  
An Early-Season Model of West Nile Virus in Birds of Rutherford County, TN, 2022  
(Project funded by **NSF DMS #1757493**)
  - Sawyer Griffy, Matthew Senese (co-advised with Dr. R. Leander)  
A Model for Rocky Mountain Spotted Fever with Co-feeding and Vertical Transmission, 2022. (Project funded by **NSF DMS #1757493**)
  - Adira Cohen, Daniel Bond, Allis Royer.  
Optimal Impulse Control of West-Nile Virus, 2021. (Project funded by **NSF DMS #1757493**)  
Presentations:

- Adira Cohen presented at the Council on Undergraduate Research's **CUR** 2021 Research Experiences for Undergraduates **REU** symposium, October 25, 2021. Virtual.
- Daniel Bond presented at the 2022 Emerging Researchers National (**ERN**) Conference in STEM, February 3-5, 2022.
- Shivam Patel (co-advised with Dr. R. Leander).  
Quasi-Steady-State Models of Ligand Receptor Binding, 2021. (Project funded by **NSF DMS #1757493**)
- Anna Marie Czarnik.  
Plant Growth and Disease Detection (PGDD) model using Neural Network for Image Recognition, fall 2019.
- Sosina Tolossa.  
Agent/Individual Based Models for Wildfires, fall 2019. (Project funded by MTSU Undergraduate Research Experience and Creative Activity (**URECA**) grant 2019)
- Lanjing Bao (Georgia Gwinnett College) and Logan Rose (Marshall University).  
Mathematical Modeling and Optimal Control for Malaria Transmission Using Sterile Mosquitoes Technique and Bednets, 2019. (Project funded by **NSF DMS #1757493**)  
Presentations:
  - Logan Rose presented at Council on Undergraduate Research's (**CUR**) 2019 Research Experiences for Undergraduates (**REU**) Symposium, Alexandria, VA, October 27-28, 2019.
  - Lanjing Bao presented at the National Institute of Mathematical and Biological Synthesis (**NIMBioS**) Undergraduate Research Conference, Knoxville, TN, November 16-17, 2019.
  - Lanjing Bao will present at 2020 Emerging Researchers National (**ERN**) Conference in STEM, Washington, D.C., February 6-8, 2020.
- Jeffery Summers.  
Mathematical Modeling and Optimal Control of Sterile Mosquitoes for Malaria, 2017. (Project funded by MTSU Undergraduate Research Experience and Creative Activity (**URECA**) grant 2017)  
Presentation:
  - Jeffery Summers presented at the National Institute for Mathematical and Biological Synthesis (**NIMBioS**) Undergraduate Research Conference, Knoxville, TN, Nov. 11-12, 2017.
- Ryan Florida.  
Mathematical Modeling and Control of Community-associated and Hospital-associated Methicillin-Resistant Staphylococcus Aureus (MRSA) transmission in community settings, 2017.  
Presentation:
  - Ryan Florida presented at the National Institute for Mathematical and Biological Synthesis (**NIMBioS**) Undergraduate Research Conference, Knoxville, TN, Nov. 11-12, 2017.
- Cori Hendon, Brandon Cathey, Evan Lancaster (high school teacher) and Robert Germick (high school senior) for **NSF STEP<sup>MT</sup>** Summer Research, 2009.  
Presentation:
  - Raymond Hendon and Evan Lancaster gave poster presentations at the National Institute for Mathematical and Biological Synthesis (**NIMBioS**) Undergraduate Research Conference, Knoxville, TN, Oct. 23-24, 2009.
  - Brandon Cathey gave presentation at the 3rd Undergraduate Mathematics Conference at the University of Tennessee, Knoxville, TN, April 18, 2010.

Publication with Undergraduate Students:

- F. Agosto, D. Bond, A. Cohen, W. Ding, R. Leander and A. Royer. Optimal Impulse Control of West-Nile Virus, accepted by **AIMS Mathematics** 2022.
- L. Cai, L. Bao, L. Rose, J. Summers and W. Ding. Malaria Modeling and Optimal Control Using Sterile Insect Technique and Insecticide-Treated Net, **Applicable Analysis**, 2022, VOL. 101, NO. 5, 1715–1734. <https://doi.org/10.1080/00036811.2021.1999419>
- Wandi Ding, Ryan Florida, Jeffery Summers, Puran Nepal and Ben Burton. *Experience and Lessons Learned from Using SIMIODE Modeling Scenarios*, **PRIMUS**, 29:6, 571-583, 2019.
- James B. Hayes, Linda M. Sircy, Lauren E. Heusinkveld, Wandi Ding, Rachel N. Leander, Erin E. McClelland and David E. Nelson. *Modulation of macrophage inflammatory NF-kB signaling by intracellular Cryptococcus neoformans*, **Journal of Biological Chemistry**, 291:30, 15614-15627, 2016.
- Wandi Ding, Raymond Hendon, Brandon Cathey, Evan Lancaster and Robert Germick. *Discrete Time Optimal Control Applied to Pest Control Problems*, **Involve, a Journal of Mathematics** 7-4, 479-489, 2014.
- Independent Study (Undergraduate and Graduate Students)
  - Fall 2022: Problems in Mathematics - Math 4602: Differential Equations I, Zachary Staton.
  - Spring 2020: Problems in Mathematics - MATH 6612: The Feynman Lectures on Physics, Caleb Rowland.
  - Fall 2019: Analysis II - Math 6200, Stephen Elrod.
  - Spring 2019: Analysis I - Math 6190, Stephen Elrod.
  - Fall 2014: Analysis II - Math 6200, Anna Bachstein and Brian Phillip Frazier.
  - Spring 2013: Theory of Calculus - Math 4250, Alan Smith.
  - Fall 2011: Analysis II - Math 6200, Diego Cadavid, Jay Dalrymple, Matthew Perry, and Dalal Awadh Alrowaili.
- Offered MSE (Math Science and Education) Preliminary Examination for Ph.D. students
  - Ameneh Kassae (Fall 2014)
- Offered Comprehensive Exam for M.S. Graduate Students (Analysis I, Advanced Differential Equations I)
  - Vijayalakshmi Singavarapu (Spring 2021)
  - Matt Bartha (Fall 2020)
  - Jordan Kirby, Feng Lin, and Ziren Chen (Spring 2019)
  - Anna Bachstein (Fall 2015)
  - Ibrahim Gurgil (Summer 2015)
  - Brian Phillip Frazier, Sultan Alyodi (Spring 2015)
  - Sara Nasab (Fall 2014)
  - Jennifer Williams (Spring 2014)
  - Brittany Smith, Natasha Gerstenchlager, Houston Higss (Fall 2013)
  - Amanda Hull, Philip Akoto, Mohammad Safder Rizwan Khan (Spring 2013)
  - Jay Dalrymple, Nana Boateng, Dalal Alrowaili, Yingwei Li (Spring 2012)
  - Jeffrey Pair, Diego Calle Cadavid (Fall 2012)

- American Mathematical Society (**AMS**) Southeastern Spring Sectional Meeting, Special Session on Recent Trends in Mathematical Biology, Huntsville, AL, March 27-29, 2015. (Co-organized with Z. Sinkala)
- Society for Industrial and Applied Mathematics (**SIAM**) Conference on the Life Sciences Mini-Symposium, Mathematical Modeling and Control of Ecological and Epidemiological Problems, Charlotte, NC, August 4-7, 2014. (Co-organized with R. Leander)
- American Mathematical Society (**AMS**) Sectional Meeting, Special Session on Diversity in Modeling and Optimal Control: A Celebration of Suzanne Lenhart's 60th Birthday, Knoxville, TN, March 21-23, 2014. (Co-organized with R. Fister)
- American Mathematical Society (**AMS**) Special Session at the Joint Mathematics Meetings: Control of Biological and Physical Systems, Boston January 2012. (Chair and Co-organized with S. Lenhart and V. Hryniv)

Selected Invited Presentations

2023

- Special Session on "Advances in Modeling Mosquito-borne Disease Dynamics and Control Methods" at the 2023 Joint Mathematics Meetings in Boston, MA, January 4-7, 2023.

2022

- Virginia Tech Math Biology Seminar, October 19, 2022. Virtual.
- Special Session on "Recent Advances in Mathematical Biology" at the AMS Sectional Meeting at the University of Tennessee at Chattanooga in Chattanooga, TN. October 15-16, 2022.
- UCR-ICQMB Center (University of California - Riverside: Interdisciplinary Center for Quantitative Modeling in Biology) Seminar, March 8, 2022. Virtual.

2021

- Analysis and Applied Mathematics seminar talk at Kennesaw State University, November 4, 2021. Virtual.
- Xinyang Normal University, China. October 30, 2021. Virtual.
- Biomathematics seminar talk at Texas Tech University. Oct. 26, 2021. Virtual.
- Society for Mathematical Biology (**SMB**) Annual Conference, Minisymposium: From Primate to Vectors to Humans: Understanding the underlying mechanisms of disease transmission and control. June 13-17, 2021. Virtual.
- Joint Mathematics Meetings (**JMM**) meeting, **AMS** Special Session on Advances in Mathematical Biology, Jan 6-9, 2021, Virtual.

2020

**AMS** Fall Southeastern Virtual Sectional Meeting, Special Session on Modern Applied Analysis. Oct. 10-11, 2020.

2019

- University of Alabama – Huntsville Mathematical Sciences Colloquium, November 1, 2019.
- Seventh International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems (**ICMA VII**), Arizona State University, October 12-14, 2019.

2018

- The **Fields Institute** for Research in Mathematical Sciences Workshop on Human-Environment Systems: Feedback and Management, Toronto, Canada, March 5-9, 2018.
- **AMS** Special Session on Modeling in Differential Equations - High School, Two-Year College, Four-Year Institution as part of the Joint Mathematics Meetings (**JMM**), San Diego CA, January 10-13, 2018.

2017

- Sixth International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems (**ICMA VI**), University of Arizona, October 20-22, 2017.



- Simon A. Levin Mathematical, Computational and Modeling Sciences Center, Arizona State University, October 19, 2017.
- 37th Southeastern-Atlantic Regional Conference on Differential Equations (**SEARCDE**), Kennesaw, GA, October 7-8, 2017. **Chair** of the Parallel Session Sunday 1:30-2:50pm
- Vanderbilt University, Department of Mathematics, PDE seminar, September 8, 2017.
- Banff International Research Station for Mathematical Innovation and Discovery (**BIRS**) workshop on Women in Control: New Trends in Infinite Dimensions, Banff, Canada, July 16-21, 2017.

2016

- International Conference on Reaction-Diffusion Equations and Their Applications to the Life, Social and Physical Sciences, Beijing, China, May 26-29, 2016.

2015

- Ocean University of China, School of Mathematics Colloquium, Qingdao, China, June 9, 2015.
- Qingdao University, China, School of Mathematics Colloquium, Qingdao, China, June 4, 2015.

2014

- *Society for Industrial and Applied Mathematics (SIAM) Conference on the Life Sciences Mini-Symposium*, Mathematical Modeling and Control of Ecological and Epidemiological Problems, Charlotte, NC, August 4-7, 2014.
- *American Mathematical Society (AMS) Sectional Meeting, Special Session on Diversity in Modeling and Optimal Control: A Celebration of Suzanne Lenhart's 60th Birthday*, Knoxville, TN, March 21-23, 2014.

2013

- *Mathematical Biosciences Institute (MBI) workshop 2 on Rapid Evolution and Sustainability*, Optimal control of models to sustain populations, Columbus, OH, October 7-11, 2013.
- *Special session "Mathematical Issues in Ecological and Epidemiological Modeling" at the South East Section of the American Mathematical Society (AMS) meeting*, Louisville, KY, October 5-6, 2013.

2012

- *American Mathematical Society (AMS) Special Session at the Joint Mathematics Meetings (JMM): Optimal Control Applied to Native-Invasive Species Competition via a PDE model*, Boston, MA, Jan. 2012.

2011

- *The Third International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems (ICMA III)*, San Antonio, TX, Oct. 2011. "Optimal Control Applied to Native-Invasive Species Competition via a PDE model."

2010

- *2010 Society of Industrial and Applied Mathematics (SIAM) Conference on the Life Sciences*, Mini-symposium on Optimal Control Applied to Biological Systems, Pittsburgh, PA, July, 2010. "Optimal Control Applied to Native-Invasive Population Dynamics via a PDE Model."

2009

- *The Second International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems (ICMA II)*, Huntsville, AL, October, 2009. "Optimal Control for a Tick Disease Model Using Hybrid ODE Systems."
- *2009 Society of Industrial and Applied Mathematics (SIAM) Conference on Control and Its Applications*, Denver, CO, July, 2009. "Optimal Control for a Discrete Time Rabies Model on a Spatial Grid."

2008

- *American Mathematical Society (AMS) regional conference*, Huntsville, AL, October, 2008. “Optimal Control of Growth Coefficient on a Steady State Population Model.”

2007

- *Special Session on Applied Partial Differential Equations at American Mathematical Society (AMS) Southeastern meeting*, Murfreesboro, TN, November, 3-4, 2007. “Optimal Harvesting of a Spatially Explicit Fishery Model.”
- *Computational Science Workshop for Natural Resource Managers*, Knoxville, TN, April, 2007. “Rabies in Raccoons: Optimal Control for a Discrete Time Model on a Spatial Grid.”
- *Association of Women in Mathematics (AWM) Workshop for Women Graduate Students and Recent PhDs*, New Orleans, LA, January, 2007. “Optimal Harvesting of a Semilinear Elliptic Fishery Model.”

2006

- *Society of Industrial and Applied Mathematics (SIAM) Annual Meeting*, Mini-symposium on Applications of Control in Biology, Boston, MA, July, 2006. “Optimal Harvesting of a Semilinear Fishery Model.”
- *Computational Science Workshop for Natural Resource Managers*, Knoxville, TN, April, 2006. “Optimal Harvesting of a Semilinear Elliptic Logistic Fishery Model.”

2005

- *Society of Industrial and Applied Mathematics (SIAM) Annual Meeting*, Mini-symposium on Control of Systems with Hybrid Features, New Orleans, LA, July, 2005. “Optimal Control of Hybrid Systems Involving ODEs with Application for a Tick-borne Disease Model.”

Contributed Talks

- *2008 Annual Mathematical Association of America (MAA) meeting* at Kentucky, Bowling Green, KY, March, 2008. “Optimal Control on Hybrid Tick Disease Model.”
- *The Joint Annual Meetings of the Society for Mathematical Biology and the Japanese Society for Mathematical Biology (SMB & JSMB)*, San Jose, CA, July 31-August 4, 2007. “Rabies in Raccoons: Optimal Control for a Discrete Time Model on a Spatial Grid.” **Served as the chair for the contributed session of Epidemiology II.**
- *Joint Mathematics Meetings (JMM)*, Contributed Session on Optimization and Control, San Antonio, TX, January, 2006. “Optimal Harvesting of a Semilinear Elliptic Fishery Model (preliminary report).”
- *The 25<sup>th</sup> Annual Southeastern-Atlantic Regional Conference on Differential Equations (SEARCDE25)*, Dayton, OH, October, 2005. “Optimal Harvesting of a Semilinear Elliptic Fishery Model (preliminary report).”
- *Joint Mathematics Meetings (JMM)*, Contributed Session on Calculus of Variations, Atlanta, GA, January, 2005. “Optimal Control of Hybrid Systems Involving ODEs.”
- *The 24<sup>th</sup> Annual Southeastern-Atlantic Regional Conference on Differential Equations (SEARCDE24)*, Chattanooga, TN, October, 2004. “Optimal Control of Hybrid Systems Involving ODEs (preliminary report).”

Posters

- *Integrated Mathematical Oncology (IMO) Workshop 9: Tumor Board Evolution*, **Moffitt Cancer Center**, Tampa, FL, November 3-8, 2019.
- *Conference Board of the Mathematical Sciences (NSF-CBMS) Lecture Series on Mathematical Epidemiology with Applications*, July 25-29, Johnson City, TN, 2011. “Optimal Control Applied to Native-Invasive Species Competition via a PDE Model.”
- *2007 World Conference on Natural Resource Modeling*, Cape Cod, MA, June, 2007. “Optimal Harvesting of a Spatially Explicit Fishery Model.”

- *Mathematical Biosciences Institute (MBI) Workshop for Young Researchers in Mathematical Biology*, Columbus, Ohio, March, 2007. “Optimal Harvesting of a Semilinear Elliptic Fishery Model.”
- *Conference in Honor of Thomas I. Seidman - Advances in Control of Partial Differential Equations*, Baltimore, MA, October, 2006. “Optimal Harvesting of a Spatially Explicit Fishery Model.”
- *Mathfest*, Knoxville, TN, August, 2006. “Optimal Harvesting of a Spatially Explicit Fishery Model.”
- *Association of Women in Mathematics (AWM) Workshop for Women Graduate Students and Recent PhDs* New Orleans, LA, July, 2005. “Optimal Control of Hybrid Systems Involving ODEs.”
- *Association of Women in Mathematics (AWM) Workshop for Women Graduate Students and Recent PhDs* Portland, OR, July, 2004. “Optimal Control of Hybrid Systems Involving ODEs (preliminary report).”

NSF ADVANCE IT-Catalyst Grant Presentations

- Poster. Middle Tennessee State University ADVANCE: Spotlight on Changing the Institutional Culture to Improve the Recruitment, Retention, and Advance of Women STEM Faculty, MTSU Scholars Week, March 30, 2017.
- Campus Climate Survey and Focus Group Results Presentation, November, Murfreesboro, TN, 2015.
- ADVANCEing STEM Careers for Women at MTSU, 35th Annual Conference, Women in Higher Education in Tennessee, October 23, Murfreesboro, TN, 2015.

HONORS,  
AWARDS &  
LEADERSHIPS

- Co-Director for SIMIODE EXPO 2023, February 10-12, 2023.
- Co-President (2021 - present) for Association for Women in Science (**AWIS**) TN Chapter.
- Distinguished Research Award, College of Basic and Applied Science, MTSU, 2019.
- Recognized as “a person who makes a real difference in lives of students,” MTSU 2012.
- President (2011-12), vice president (2009-10), and secretary (2008-09, 2022-24) for the Honor Society of Phi Kappa Phi (PKP) at MTSU chapter. We got ”Chapter of Excellence” 2009-10, and “Chapter of Merit Award” 2008-09.
- Travel Awards for Association for Women in Mathematics (**AWM**) Workshops for Women Graduate Students and Recent PhDs, 2004, 2005 and 2007.
- President, Society of Industrial and Applied Mathematics (**SIAM**) Student Chapter, University of Tennessee, Knoxville, 2004 — 2006.
- Scholarly Activities Research Incentive Fund (SARIF), Summer 2004, University of Tennessee.
- Graduate Student Achievement Award, Department of Mathematics, University of Tennessee, Knoxville, Spring 2003.
- Science Alliance Fellowship, University of Tennessee & Oak Ridge National Laboratory (ORNL), 2001 — 2006.
- The Honorary Title of Excellent Graduate, Normal College of Qingdao University, China, July 1998.
- Scholarships for four consecutive years, Normal College of Qingdao University, 1994 — 1998.

PROFESSIONAL  
DEVELOP-  
MENT

- LinkedIn Learning: Python for Data Science Essential Training part I, in process.
- MTSU LT&ITC Weekly Writing Groups, Fall 2022.
- Dale Carnegie Immersion Course, MTSU, August 10-12, 2022.
- NSF Convergence Accelerator EXPO 2022. July 27-28, 2022.

- **JuliaCon**: JuliaCon is the conference dedicated to the Julia programming language. July 27-29, 2022.
- **Association for Women in Mathematics (AWIS) Chapter Leader Summit**, June 4, 2022.
- **MATLAB EXPO 2022**, May 17-18, 2022. Virtual.
- **Online auditing CSCI 4850: Neural Nets at MTSU**, Spring 2022.
- **UCI CCBS Center for Complex Biological Systems: Short Course in Systems Biology - Foundations - Prep Week**, May-June, 2022. Virtual.
- **SMB Math-Epidemiology/Math-Immunology Subgroups Mid-Year Mini Virtual Conference**, theme: Epidemiology meets Immunology and Vice Versa - Linking Math Epidemiology to Math Immunology, Feb. 27-28, 2022. Virtual.
- **2022 Shanks Workshop on Mathematical Aspects of Fluid Dynamics**, Vanderbilt University, February 19-20, 2022.
- **SIMIODE EXPO Conference**, February 10-13, 2022. Virtual.
- **Online auditing CSCI 7850: Deep Learning**, at MTSU, Fall 2021.
- **Dynamics Day 2022**, Georgia Tech University. January 7-8, 2022. Virtual.
- **Winter Workshop on Competition Dynamics in Biology**, Ohio State University, December 15-17, 2021. Virtual.
- **17th annual Shenandoah Undergraduate Mathematics and Statistics (SUMS) Conference** at James Madison University. December 4, 2021. Virtual.
- **Mathematical Sciences Research Institute (MSRI) Blackwell Tapia Conference 2021**, Nov. 19-20, 2021. Virtual.
- **E-BEER: International Symposium on Biomathematics and Ecology Education and Research**, November 12-14, 2021. Virtual.
- **Banff International Workshop: Mathematics of the Cell: Integrating Signaling, Transport and Mechanics (21w5154)**, Oct. 17-22, 2021. Virtual.
- **5th Workshop on Virus Dynamics**, Fred Hutchinson Cancer Research Center, Washington State University. October 4-6, 2021, Virtual.
- **LinkedIn Learning: Mathematica 11 Essential Training**, finished September 28, 2021.
- **2021 Mathematics-Tianyuan China-Canada Symposium on Modelling, Prevention and Control of Infectious Diseases**, September 15-19, 2021. Virtual.
- **QUBES (Quantitative Undergraduate Biology Education and Synthesis): Agent/Individual-Based Modeling Faculty Mentoring Network**, Fall 2019.
- **Eleventh Undergraduate Research Conferences at the Interface of Biology and Mathematics (NIMBioS)**, Knoxville, TN, November 16-17, 2019.
- **Integrated Mathematical Oncology (IMO) Workshop 9: Tumor Board Evolution**, **Moffitt Cancer Center**, Tampa, FL, November 3-8, 2019.
- **The Fields Institute for Research in Mathematical Sciences Workshop on Human-Environment Systems: Feedback and Management**, Toronto, Canada, March 5-9, 2018.
- **Banff International Research Station for Mathematical Innovation and Discovery (BIRS) workshop on Women in Control: New Trends in Infinite Dimensions**, Banff, Canada, July 16-21, 2017.
- **Teaching 3D Spatial Skills Workshop with Sheryl Sorby**, Nashville, TN, December 2-3, 2015.
- **Institute for Mathematics and its Applications (IMA) Annual Program Year Workshop: Biological Systems and Networks**, November 16-20, Minneapolis MN, 2015.

- **Mathematical Association of America (MAA-PREP) Workshop: Systemic Initiative for Modeling Investigation and Opportunities with Differential Equations (SIMIODE)**, July 19-25, Helena, MT, 2015.
- **Investigative Workshop on Interface Disease Models, National Institute for Mathematical and Biological Synthesis (NIMBioS)**, Knoxville, TN, March 11-13, 2014.
- “Mid-Career Faculty Development” Faculty Learning Community, MTSU 2013-14.
- **The Importance of Mentoring and Work-Life Satisfaction Workshop**, Association of Women in Science (**AWIS**), MTSU, March 18-20, 2013.
- **Learning, Teaching and Innovative Technologies Center (LT&ITC) Writing Group**, MTSU, 2012-13.
- **Grant Writers’ Workshop**, Murfreesboro, TN, December 17, 2012.
- **Global South Summit**, Nashville, TN, November 13-14, 2012.
- **XSEDE (Extreme Science and Engineering Discovery Environment) Nashville Regional Workshop**, Vanderbilt University, Nashville, TN, May 7-8, 2012.
- **5th Hands-on Workshop on Interrogating Cancer Resistance to Targeted Therapeutics with Systems Biology**, The Center for Cancer Systems Biology at Vanderbilt University (**CCSB@V**), Nashville, TN, August 22-24, 2011.
- **Conference Board of the Mathematical Sciences (NSF-CBMS) Lecture Series on Mathematical Epidemiology with Applications**, July 25-29, Johnson City, TN, 2011.
- **Univ. of Tennessee, Oak Ridge National Laboratory and Kentucky Biomedical Research Infrastructure (UT-NRNL-KBRIN) Bioinformatics summit 2010**, Cadiz, KY, March 19-21, 2010.
- **NUMB3R5 COUNT Workshop, NIMBioS ( National Institute for Mathematical and Biological Synthesis, HHMI ( Howard Hughes Medical Institute and BioQUEST Curriculum Consortium, May 2009.**
- **Leading Without Authority Workshop**, American Chemical Society (**ACM**), MTSU, February, 2009.
- **Mathematical Biosciences Institute (MBI) Workshop for Young Researchers in Mathematical Biology**, Columbus, OH, March 2007.
- **Best Practices in Teaching Program**, The Graduate School, University of Tennessee, 2006 - 2007.
- **Industrial Mathematical & Statistical Modeling (IMSM) workshop**, North Carolina State University, July - August 2004.
- **Joint Institute for Computational Science (JICS) workshop on Parallel Programming with MPI**, University of Tennessee, May 2004.
- **Mathematical Biological Complexity Short Course**, University of Tennessee, July 2003.

MEMBERSHIPS ◦ Society for Industrial and Applied Mathematics (**SIAM**)

- American Mathematical Society (**AMS**)
- Society for Mathematical Biology (**SMB**)
  - SMB Subgroup on Population Dynamics, Ecology and Evolution
- Association for Women in Mathematics (**AWM**)
- Lifetime Member of The Honor Society of Phi Kappa Phi ( $\Phi\kappa\Phi$ )
- The American Association for the Advancement of Science (**AAAS**)

- Association for Women in Science (**AWIS**) 2016-17, 2021-present
- Resource Modeling Association (**RMA**)

EDITORIAL  
BOARDS

- **Associate Editor:** International Journal of Computer Mathematics, 2022 – current.
- **Guest Editor:** Special Issue: Machine Learning, Mathematical and Statistical Modeling for Systems Biology, **Mathematical Biosciences and Engineering**, 2021-22.
- **Guest Editor:** Special Issue: Mathematical modeling and analysis of social and ecological determinants for the dynamics of infectious diseases and public health policies. **Mathematical Biosciences and Engineering**, 2020-21.
- **Guest Editor:** Special Issue Dedicated to the 65th Birthday of Suzanne Lenhart, **Journal of Natural Resource Modeling**, 2017 - 18.
- **Editor:** Society for Mathematical Biology (**SMB**) Digest, 2013 - 2019.
- **Editor:** American Research Journal of Mathematics, 2017 - current.
- **Editor:** International Journal of Mathematics and Statistics, 2014 - 2018.

REFEREE

- Books
  - *Pearson Education*
  - *McGraw-Hill Education*
- Journals
  - *SIAM Journal on Applied Mathematics*
  - *SIAM Journal on Control and Optimization*
  - *Journal of Mathematical Analysis and Applications*
  - *Journal of Theoretical Biology*
  - *Journal of Mathematical Biology*
  - *Optimal Control Applications and Methods*
  - *Mathematical Biosciences*
  - *Stochastic Environmental Research and Risk Assessment*
  - *Ecological Applications*
  - *Applicable Analysis*
  - *Natural Resource Modeling*
  - *Mathematical Biosciences and Engineering*
  - *Journal of Optimization Theory and Applications*
  - *International Journal of Computer Mathematics*
  - *Journal of Biological Dynamics*
  - *Journal of Biological Systems*
  - *Discrete and Continuous Dynamical Systems Series B.*
  - *International Journal of Dynamics and Control*
  - *Applied Mathematical Modeling*
  - *Environment and Natural Resources Research*
  - *Mathematical Methods in the Applied Sciences*
  - *International Journal of Dynamics and Control*
  - *International Journal of Biomathematics*
  - *Journal of Applied Animal Welfare Science*
  - *Communications in Mathematics and Applications*

- *Journal of Nonlinear Science and Applications*
- *BioSystems*
- *PRIMUS*
- *Spora: A Journal of Biomathematics*
- *Chaos, Solitons & Fractals*
- *Mathematical Control and Related Fields*
- *Journal of Applied Mathematics*
- *Mathematics and Statistics*

SERVICES

◦ **Professional Services**

**Leaderships**

- Co-President of Association for Women in Science (**AWIS**) Tennessee Chapter, 2021 - current.
- Co-Director of **SIMIODE EXPO** 2023.
- President (2011-12), Vice President (2009-10) and Secretary (2008-09, 2022-24) for The Honor Society of **Phi Kappa Phi** MTSU Chapter.  
We got “Chapter of Excellence” 2009-10, and “chapter of Merit Award” 2008-09.
- President, Society of Industrial and Applied Mathematics (SIAM) Student Chapter, University of Tennessee, Knoxville, 2004-06.

**Services**

- **NSF** Panel Reviewer 2020, 2022.
- Member of the Canadian Center for Disease Modeling (**CCDM**) global network, 2022-current.
- Board of Contributing Advisors for Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations (**SIMIODE**), <https://www.simiode.org>, 2017 - current.
- Judge for **SIMIODE** Challenge Using Differential Equations Modeling (**SCUDEM**) VI competition, November 14—December 5, 2021. <https://www.simiode.org/scudem>
- External Reviewer for Tenure and Promotion Applications:
  - University of Washington Bothell 2019
  - Duquesne University 2016
  - University of South Carolina Beaufort 2015
- Reviewer for Tennessee Board of Regions (**TBR**) Diversity Research Grant, 2010.
- Member of Association for Women in Mathematics (**AWM**) Student Chapters Committee 2009-12.
- Mentor for Association for Women in Mathematics (**AWM**) mentor network.

◦ **Public Services**

- Invited Panel speaker for Volunteer State Community College Expanding Your Horizon (**EYH**), October 7, Gallatin, TN, 2017.
- Mentor for Million Women Mentors (**MWM**) (Advancing Women and Girls in STEM Careers through Mentoring), 2015 - current.
- Board Member of MTSU Women in Science, Technology, Engineering and Mathematics (**WISTEM**) Center , 2014 - 2017.
- Member of MTSU Women in Science, Technology, Engineering and Mathematics (**WISTEM**) Center campus planning committee, 2010-11.
- Algebra I training for high school teachers: taught
  - Conditional Probability, summer 2011
  - Solving Equations and Inequalities, summer 2013

- Member of MTSU Expand Your Horizon (**EYH**) executive committee 2008. Engage in helping middle and high school girls get interested in Science and Mathematics.
- **University Services**
  - **Department:**
    - Building Planning Committee 2022-current
    - Actuarial Science Search Committee 2019-20
    - Department Chair Search Committee 2017-18
    - MS Program Review Committee 2015-16
    - *Graduate Program Policy Committee* 2015-18
    - **Chair:** Calculus/Precalculus Committee 2014-16
    - Tenure-Promotion Guideline Committee 2013-14
    - Applied Mathematics Search Committee 2011-12.
    - Faculty Advisor for **Pi Mu Epsilon** - Mathematics Honor Fraternity 2011-12.
    - Undergraduate Program Review Committee 2009-10.
    - Biomathematics/Statistics seminar organizer 2009-15.
    - Calculus committee 2010-11.
    - McNair Program Liaison 2008-11.
    - Research & Scholarship Committee, 2007-11 2012-14, 2019-20.
    - Industrial Curriculum Group Committee 2007-17.
    - SCIENTIA Board of Faculty Facilitator 2007-09.
  - **College:**
    - Computational Science Program (COMS) Student Evaluation Committee 2013 - 2016.
    - Computational Science Program (COMS) Curriculum Committee 2011 - 2016.
    - Computational Science Program (COMS) seminar organizer 2010 - 2015.
    - College of Basic and Applied Sciences (CBAS) Scholars' Day Committee and Representative for the Department of Mathematical Sciences, April 2011.
    - Academic Appeals Subcommittee for the College of Basic and Applied Sciences 2008-10.
  - **University:**
    - Athletic Compliance Committee 2021-23.
    - Faculty Appeals Committee 2019-21.
    - Career Achievement Award Committee 2014-2016.
    - National Women's History Month Planning Committee 2012-13.
    - Committee on Admissions and Standards 2012-13.
    - Faculty Development Committee 2012-13.
    - Library Committee 2010-11.

COMPUTER SKILLS ◦ MATLAB, Python, Mathematica, MAPLE, Minitab, HTML, LaTeX, Microsoft Office.