

Seth Fredric Oppenheimer

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U.S. Citizen

EDUCATION

1. Doctor of Philosophy in Mathematics (December 1987), The University of Texas at Austin. Thesis: A Partial Differential Equation Arising from the Dynamics of Gas Adsorption, Advisor: Ralph E. Showalter
2. Bachelor of Arts in Mathematics (June 1982), The University of Chicago.
3. Smicha student, ALEPH rabbinical program, 2006-present. Rabbinic Ordination expected 1/2019

PROFESSIONAL EXPERIENCE

1. Director of Undergraduate Research, Shackouls Honors College, Mississippi State University, January 2012 to date.
2. Interim Head of The Department of Philosophy and Religion, Mississippi State University—July 1, 2008 to August 15, 2009.
3. Professor of Mathematics, Mississippi State University — August 2003 to date.
4. Professor of Computational Engineering, Mississippi State University — August, 2003 to date.
5. Director of the program in General Liberal Arts, College of Arts and Sciences, Mississippi State University—September, 1995 to August, 2002.
6. Tenured Associate Professor of Mathematics, Mississippi State University — August, 1994 to August, 2003.
7. Associate Professor of Computational Engineering, Mississippi State University — July, 2002 to August, 2003.
8. Undergraduate Coordinator, Department of Mathematics and Statistics, Mississippi State University — May 1994 to August, 2002.

⁰revised 2/26/2017

9. Assistant Professor of Mathematics, Mississippi State University — August, 1988 to August, 1994.
10. Lecturer, The University of Texas at Austin — September 1987 to August 1988.
11. Assistant Instructor, The University of Texas at Austin — September 1986 to August 1987.
12. Departmental Ombudsman, The University of Texas at Austin — June 1984 to August 1986.
13. Teaching Assistant, The University of Texas at Austin — September 1982 to May 1984.
14. Part-Time Instructor, Austin Community College — June 1985 to August 1988.
15. Junior Tutor, The University of Chicago — September 1980 to June 1981.
16. Spiritual Leader congregation B'nai Israel, Columbus, MS since 2007

Current Research

My main interest is interdisciplinary mathematical modeling with a whole problem approach. That is, I work with experimentalists in engineering and science to develop models of the particular phenomena they are interested in, use the tools of mathematical analysis to determine answers to questions such as is the model well-posed, does the model have the qualitative properties seen in experiment. I proceed to use experimental data to solve the necessary inverse problems to calibrate the model. Finally, using the model predictions I suggest directions for future experimentation. Often such problems raise novel mathematical questions which I then investigate.

REFEREED PUBLICATIONS

1. **An Abstract Spectral Approximation Theorem From the Theory of Semigroups**, Applied Mathematics and Computation 47:185–199 (1992).
2. **A Model of Forced Drying**, J. of Math. Analysis and Applications, Vol. 178, No. 2(1993), pp. 553-566.
3. **Mixtures, Convection, Diffusion, and Adsorption Under the Assumption of Equilibrium Partitioning**, Differential and Integral Equations, Vol. 6, No. 6(1993), pp. 1367-1381.
4. **Adsorption in R^n** , Differential and Integral Equations, Volume 7, Number 2, March 1994, pp. 483–500.

5. With Gordon W. Clark, **Quasireversibility Methods for Non-Well-Posed Problems**, *Electronic Journal of Differential Equations*, Vol. 1994, No. 8, pp. 1-9 (1994).
6. **The sorption of mixtures under linear equilibrium partitioning and chemical transformation**, *Mathematical Methods in the Applied Sciences*, Vol. 18, pp. 803–823 (1995).
7. **A model for batch tests**, *Canadian Applied Mathematics Quarterly*, Vol. 3, pp. 89–98 (1995).
8. With Hai Dang, **On the existence and uniqueness of solutions for a boundary value problem**. *Journal of Mathematical Analysis and Applications*, Vol. 198(1996), no. 1, 35–48..
9. With D. D. Hai, **Singular boundary value problems for P-Laplacian like equations**. *The Proceedings of The Royal Society of Edinburgh*, 127A, 975–981, 1997.
10. With K. Ames, G. Clark, and J. Epperson, **A comparison of regularizations for an ill-posed problem**, *Mathematics of Computation* 67(1998) No. 224, 1451–1471.
11. **A convective flow problem with a repeated network micro-structure**. *The Dynamics of Continuous, Discrete, and Impulsive Systems* 6(1999), 553–567.
12. With D. D. Adrian and A. N. Alshawabkeh, **A River Water Quality Model for Periodic BOD Discharge Concentration**. *Mathematical Problems in Engineering*, Volume 5 (1999), pp 193–221.
13. **A convection and diffusion problem in a network**. *Applied Mathematics and Computation* 112 (2000) 223–240.
14. With W. L. Kingery, K. Willeford, and F. X. Han, **A quadrature technique for reaction rate identification**. *Nonlinear Analysis, Series B: Real World Applications* 2(2001) pp 135–144.
15. With William L. Kingery and FengXiang Han, **Phase Plane Analysis and Dynamical Systems Approaches to the Study of Metal Sorption in Soils**. “Sorption/desorption of heavy metals in soils”, H. M. Salim and D. L. Sparks Editors. CRC Press (2001), pp 109–130.
16. With Mohsen Razzaghi and Falih Ahmad, **A collocation-type method approximation for radiative transfer problems in a slab medium**. *Microwave and Optical Technology letters*, Vol. 28 (2001), pp 307–311.
17. With Mohsen Razzaghi and Falih Ahmad, **Numerical solution of radiative transfer problems by Galerkin-type approximation methods in a slab medium**, *Physica Scripta*, Vol. 64 (2001), pp 97–101.

18. With Mohsen Razzaghi and Falih Ahmad, **On the application of wavelets to remote sensing**. Appeared in the (refereed) proceedings of 3ECPA, the 3rd European Conference on Precision Agriculture, Montpellier, France, pp 289–293, 2001.
19. With Mohsen Razzaghi and Falih Ahmad, **Tau method approximation for radiative transfer problems in a slab medium**. Journal of Quantitative Spectroscopy & Radiative Transfer 72 (2002) 439–447.
20. With Mohsen Razzaghi, **Quadrature approaches to the solution of two point boundary value problems**, The proceedings of the Louisiana-Mississippi Section of The Mathematical Association of America, Spring 2002. (Expository). <http://www.mc.edu/campus/users/travis/maa/proceedings/spring2002/index.html>
21. With Mohsen Razzaghi, Michael Cox, and Falih Ahmad, **On the solution of an Integro-differential equation in pattern recognition and remote sensing**, in “microwave nondestructive evaluation and imaging 2002”, Matteo Pastorino, Editor. Transworld Research, pp 48–62, 2002.
22. With R. L. Carr, H. Chambers, J. R. Richardson, and J. E. Chambers, **Modeling the interactions of mixtures of organophosphorus Insecticides with cholinesterase**, Proceedings of the Fifth Mississippi State Conference on Differential Equations and Computational Simulations May 18 - 19, 2001, Electronic Journal of Differential Equations, pp 89–99, 2002.
23. With Mohsen Razzaghi and Falih Ahmad, **A Legendre Wavelets Method for the Radiative Transfer Equation in Remote Sensing**, Journal of Electromagnetic Waves and Applications, Vol. 16, 1681–1693, 2002
24. With Mohsen Razzaghi and Falih Ahmad, **A discrete bidirectional reflectance model in remote sensing**, , Journal of Quantitative Spectroscopy & Radiative Transfer, Vol. 77, 335-343, 2003
25. With Mohsen Razzaghi, **On the Application of Hybrid Functions for Radiative Transfer Problems**, (refereed), Proceedings of the American Society of Photogrammetry and Remote Sensing (ASPRS) 2003 Annual Meeting, Alaska, 10 pages, 2003 (to appear)
26. With Kelleher, Brian P.; Han, Feng X.; Willeford, Kenneth O.; Simpson, Myrna J.; Simpson, Andre J.; Kingery, William L. **Dynamical Systems and Phase Plane Analysis of Protease-Clay Interactions**. Langmuir (2003), 19(22), 9411-9417.
27. Janice E. Chambers and Seth F. Oppenheimer, **Organophosphates, Serine Esterase Inhibition, and Modeling of Organophosphate Toxicity**, Toxicol. Sci., Feb 2004; 77: 185 - 187.

28. With K. Renee Fister and C. Maeve McCarthy, **The recovery of a time dependent parameter**. Siam Journal on Applied Mathematics(2006), Vol. 66 (4), pp 1407-1423.
29. Stephen Pruett, Ruping Fan, and Seth Oppenheimer, **Greater Than Additive Suppression of TLR3-Induced IL-6 Responses by Administration of Dieldrin and Atrazine**, . J. Immunotoxicology Volume 3, Issue 4 December 2006, pages 253 - 262.
30. S.F. Oppenheimer R. Fan, and, S. Pruett, **A model for gene activation**, Electronic Journal of Differential equations, conference 17 (2009) pp 197-206.
31. Kris M. Hart, Anna N. Kulakova, Christopher C. R. Allen, Andre J. Simpson, Seth F. Oppenheimer, Hussain Masoom, Denis Courtier-Murias, Ronald Soong, Leonid A. Kulakov, Paul V. Flanagan, Brian T. Murphy, and Brian P. Kelleher. 2013. **Tracking the Fate of Microbially Sequestered Carbon Dioxide in Soil Organic Matter**. Environmental Science And Technology, 47, pp5128-5137.
32. Kris M. Hart , Seth F. Oppenheimer, Brian W. Moran, Christopher C.R. Allen, Vassilis Kouloumbos, Andre J. Simpson, Leonid A. Kulakov, Leon Barron , Brian P. Kelleher. 2013. **CO2 uptake by a soil microcosm**. Soil Biology & Biochemistry. 57, pp615-624.
33. Renee Fister K, McCarthy ML, Oppenheimer SF, Collins C., **Optimal control of wild mosquitoes through sterile insect release and habitat alteration**. Math Biosci. 2013 Aug;244(2):201-12. doi: 10.1016/j.mbs.2013.05.008. Epub 2013 Jun 3
34. Kris M. Hart , Seth F. Oppenheimer, Brian W. Moran, Christopher C.R. Allen, Vassilis Kouloumbos, Andre J. Simpson, Leonid A. Kulakov, Leon Barron , Brian P. Kelleher.**Perturbations in CO2 flux and subsequent chemosynthesis by chemoautotrophs in agricultural soil are induced by the addition of elemental sulfur**. Under review.
35. Stephanie M. bennet, Jessica Ivy, Dana Franz, Seth F. Oppenheimer. **Metacognition and Middle Grade Mathematics Teachers: Supporting Productive Struggle** Under review.
36. Seth F. Oppenheimer, Bonnie Roberson, **A model for a fish population**. In preparation

OTHER PUBLICATIONS

Several poems and essays have been published over the years in primarily Jewish periodicals. Recently, I have been publishing some poetry and essays online at <http://www.faithlab.com/blog/?author=53a8a037e4b0457dcd689d87>

Two Candles For Maria, New Mitzvah Stories for the Whole Family, Reclaiming Judaism Press (July 18, 2014)

INVITED TALKS

1. **Finite Difference Equations: A Quick Route to Applications for High School Students** (1 hour), NCTM Southern Regional Conference, Little Rock, Arkansas, November 1992.
2. **A model for batch tests**, a talk for the Undergraduate Mathematics Club of Mississippi College, Clinton, MS, April, 1995.
3. **Convection and Diffusion in a Finite Network** (45 minutes), International Conference on Dynamical Systems & Differential Equations, Southwest Missouri State University, Springfield, Missouri, May 29–June 1, 1996
4. **A model for batch tests**, Georgia Southern University, Statesboro, Georgia, March, 1998.
5. **A model for pollution in rivers** and (for the student club) **Phase plane analysis in soil science**. Lamar University, Lamar, Texas, March, 2000.
6. **A model for pollution in rivers**. Emory University, Atlanta, Georgia, April, 2000.
7. **A new model for the population of a highly vagile insect**. Georgia Southern University, Statesboro, Georgia, April, 2000.
8. **Improved subpixel resolution via repeated measurements and point spread function deconvolution**. Murray State University, Murray, Kentucky, September, 2000.
9. with Mark Riggs, **Recovery of a Flux through a Mold Wall**, the minisymposium Constructive Algorithms in Inverse Problems at 2002 SIAM 50th Anniversary and Annual Meeting, Philadelphia, Pennsylvania, July 8-12, 2002.
10. Principal lecturer at **Biomathematics in the Commonwealth workshop** in Murray Kentucky from June 24-25, 2005: **Models of spatially varying biological and bio-medical phenomena using partial differential equations**
11. **Biological modeling using ordinary differential equations**, Louisiana State University Health Science Center, January 9, 2006.
12. **Tour of Mathematical Models in Biology**, Computational Biology Seminar Series, Mississippi State University, November 29, 2006
13. **A diffusion model for the release of sterile mosquitoes**. 2008 Fall Southeastern Meeting of the AMS, Huntsville, AL, October 24-26, 2008

14. **A Model for Gene Activation.** Invited BioMaPS seminar at Murray State University, Murray, KY, November, 2008
15. In the realm of nonmathematical talks, I am frequent speaker in religion and social science classes at Mississippi State University and other nearby schools, as well as at local churches and civic groups on religion in general and Judaism in particular.

CONTRIBUTED PAPERS

1. **Adsorption in R^n** , 95th Annual Joint meeting of the AMS and the MAA, Phoenix, Arizona, January 1989.
2. **The Geometry of the Determinant**, Annual Meeting of the LA-MS Section of the MAA, Biloxi, Mississippi, February 1989.
3. **Some Approximation Theorems for Non-linear First Order Problems Governed by Linear Semigroups**, Southeastern Atlantic Regional Conference on Differential Equations, University of North Carolina, Charlotte, October 1989.
4. **Some Approximation Theorems for Non-linear First Order Problems Governed by Linear Semigroups, An Application**, 96th Annual Joint meeting of the AMS and the MAA, Louisville, Kentucky, January 1990.
5. **Spaces of Weakly Directionally Differentiable Functions**, Southeastern Atlantic Regional Conference on Differential Equations, Virginia Tech, Blacksburg, Virginia, November 1990.
6. **Adsorption in R^n Part II: The Sponge Dries Out**, 97th Annual Joint meeting of the AMS and the MAA, San Francisco, California, January 1991.
7. With T.E. Myers, **Adsorption in the Presence of Salt (the set up of the model)**, Southeastern Atlantic Regional Conference on Differential Equations, Mississippi State University, Mississippi, October 1991.
8. With T.E. Myers, **Adsorption in the Presence of Salt (An existence theorem)**, 98th Annual Joint meeting of the AMS and the MAA, Baltimore, Maryland, January 1992.
9. **A Model for Adsorption with Time Dependent Partitioning Coefficients**, Evolution Equations Conference, Baton Rouge, Louisiana, January 1993.
10. **Some Results for a System of Nonlinear Evolution Equations**, 99th Annual Joint meeting of the AMS and the MAA, San Antonio, Texas, January 1993.

11. **Some Remarks on Spectral Approximation**, The Mississippi State Annual Conference on Differential Equations and Computational Simulations, Starkville, Mississippi, March, 1993.
12. **Mixtures Under Spatially and Temporally Linear Equilibrium Partitioning and Nonlinear Chemical Transformations**, Differential Equations Conference sponsored by Ohio University, Athens, Ohio, August, 1993.
13. **A Model for Batch Tests with Competitive Sorption and Chemical Transformations**, Southeastern Atlantic Regional Conference on Differential Equations, Wilmington, North Carolina, October, 1993.
14. **A multisite sorption model**, Texas Partial Differential Equations Meeting, Austin, Texas, April, 1994.
15. **Sorption of mixtures without equilibrium partitioning**, Southeastern Atlantic Regional Conference on Differential Equations, Knoxville, Tennessee, October, 1994.
16. With Stacy E. Howington and John F. Peters, **A convective flow problem with a repeated network micro-structure**, Second Mississippi State Conference on Differential Equations and Computational Simulations, Starkville, Mississippi, March, 1995.
17. **A Model of Pervaporation**, Southeastern Atlantic Regional Conference on Differential Equations, Emory University, Atlanta Georgia, October, 1996.
18. With D. D. Hai, **Singular boundary value problems for P-Laplacian like equations**, Southeastern Atlantic Regional Conference on Differential Equations, Vanderbilt University, Nashville, Tennessee, October, 1997.
19. With D. D. Adrian and A. N. Alshawabkeh, **Analytical Water Quality Model for Periodic BOD Discharge Concentration**, Southeastern Atlantic Regional Conference on Differential Equations, Auburn University, Auburn, Alabama, October, 1998.
20. With W. L. Kingery, K. Willeford, and F. X. Han, **A quadrature technique for reaction rate identification**, First Southern Symposium On Computing, University of Southern Mississippi, Hattiesburg, Mississippi, December 4-5, 1998.
21. **A new model for the population of a highly vagile insect**, Fourth Mississippi State Conference on Differential Equations and Computational Simulations, Starkville, Mississippi, May, 1999.

22. With Paul Waltman, **A model for the bioremediation of a river.** Southeastern Atlantic Regional Conference on Differential Equations, University of Richmond, Richmond, Virginia, October, 1999.
23. **A new model for the population of a highly vagile insect.** Southeastern Atlantic Regional Conference on Differential Equations, Virginia Tech., Blacksburg, Virginia, October, 2000.
24. With Mark S Riggs, **Recovery of a boundary flux using far boundary data,** 107th Annual Joint meeting of the AMS and the MAA, New Orleans, Louisiana, January 2001.
25. With R. L. Carr, H. Chambers, J. R. Richardson, and J. E. Chambers, **Modeling the Interactions of Organophosphorus Insecticides with Cholinesterase,** Fifth Mississippi State Conference on Differential equations and computational simulations, Mississippi State, Mississippi, May 18-19, 2001.
26. With W. L. Kingery, C. Smith, and D. Shaw, **Toward a model for local kinetics in mixed soils.** Southeastern Atlantic Regional Conference on Differential Equations, Wake Forest University., Winston-Salem, North Carolina, November, 2001.
27. With William L. Kingery, **The effect of the assumption of equilibrium partitioning in the modeling of chemical sorption and transport.** 108th Annual Joint meeting of the AMS and the MAA, San Diego, California, January 2002.
28. With Mohsen Razzaghi, **Quadrature approaches to the solution of two point boundary value problems,** Annual meeting of the Louisiana-Mississippi Section of The Mathematical Association of America, Northwestern State University, Natchitoches, LA., March, 2002.
29. With R. Shivaji, **An Ordering Principle for a Harvesting Model,** Southeastern Atlantic Regional Conference on Differential Equations, University of Tennessee, Knoxville, Tennessee, October, 2002
30. With R. L. Carr, H. Chambers, and J. E. Chambers, **An attempt to model biological reactions and deduce an unknown mechanism,** Kennesaw State University, Kennesaw Georgia, October 2003.
31. Seth F. Oppenheimer, Shane Burgess, Janice Chambers, **A model for parathion desulfuration in a liver sinusoid,** The 24th Annual Southeastern-Atlantic Regional Conference on Differential Equations, October 22&23, 2004, Chattanooga, TN.
32. Seth F. Oppenheimer, Shane Burgess, Janice Chambers, **A model for parathion desulfuration in a liver sinusoid,** Sixth Mississippi State UAB Conference on Differential equations and computational simulations, Mississippi State, Mississippi, May, 2005.

33. Seth F. Oppenheimer and Gary Ervin, **A model for an invasive species**, The 27th Annual Southeastern-Atlantic Regional Conference on Differential Equations, October 19 & 20, 2007, Murray, KY.
34. Seth F. Oppenheimer, Steve Pruett, and Ruping Fan, **A model for gene activation**, Seventh Mississippi State UAB Conference on Differential equations and computational simulations, Birmingham, AL, November, 2007.
35. **A model for the release of sterile mosquitoes**; The 29th Southeastern Atlantic Regional Conference on Differential Equations, Mercer University in Macon, GA on October 16 & 17, 2009.
36. **A model for the release of sterile mosquitoes**; DIFFERENTIAL EQUATIONS WEEKEND, November 7, 2009, Memphis, Tennessee
37. **A model for a fish population**. 10th Mississippi State Conference on Differential Equations and Computational Simulations, October 23-25, 2014, Mississippi State University, Starkville, MS, USA

GRANTS AND CONTRACTS

1. A travel grant from the Southeastern Atlantic Regional Conference on Differential Equations, Virginia Tech, Blacksburg, Virginia, November 1990. (\$267.81)
2. Research contract DACW 39-91-M-5359 to model the behavior of salt water sediments in adsorption columns, September, 1991 – July, 1992. (\$21,197.00)
3. Research contract DACW 39-92-M-6776 to study the stability of a model for the behavior of salt water sediments in adsorption columns with respect to certain parameters and to approximate those parameters, September, 1992 – May, 1993. (\$15,822.00)
4. Research contract DACA 39-93-M-4716 to model the behavior of explosive contaminated soils in adsorption columns where chemical transformations might occur, May, 1993 – August, 1993. (\$19,588.00)
5. A travel grant from the NSF to attend a meeting on Mathematical Approaches to the Study of Nonlinear Materials in Fayetteville, Arkansas, March, 1994. (\$300.00)
6. Research contract DACA39-94-K-0018 to develop and study new models for groundwater flow which are either independent of or take into account remediation site size. March, 1994 –December, 1994. (\$33,961)
7. Consultant on the NSF grant of Sandra H. Harpole and Jere W. Hess, Jr: **Learn to Work**, ESI-95556464, from 1996-1999. Developed and presented projects demonstrating industrial applications of high school level mathematics. Six weeks of full support each summer covered.

8. With Mohsen Razzaghi (Co-PI). NASA grant NCC1399001 99070609, **Inverse Scattering Techniques for the Recovery of Spatially Varying Properties in Agriculture and Forestry**, July, 1999–November, 1999. (\$12,622)
9. With Mohsen Razzaghi (Co-PI). NASA grant NCC1399001 99070609 continuation, **Inverse Scattering Techniques for the Recovery of Spatially Varying Properties in Agriculture and Forestry**, December, 1999–November, 2000. (\$90,223)
10. With Janice E. Chambers (PI), Howard Chambers (Co-PI), and Russell L. Carr (Co-PI). American Chemistry Council Grant, **Cumulative risk assessment for mixtures with a common mode of action**. July 1, 2000–June 30, 2002. (\$250,764)
11. With Joseph Massey (Co-PI), Michael Cox (Co-PI), William L. Kingery (Co-PI), and Mohsen Razzaghi (Co-PI). NASA grant NCC1399001 99070609, **Remote sensing of soil physico-chemical properties and their use in agricultural and environmental applications**, January, 2001–December, 2003. (\$507,737).
12. Consulting contract with Center For Educational Partnerships (PREPS Inc.), Give three inservice programs high school algebra I teachers (written by Bonnie L. Oppenheimer), 2001–2002 academic year. (\$600)
13. With Jerald Ainsworth (PI), Janice Chambers (Co-PI), Russel Carr (Co-PI), Peter Ryan (Co-PI), Scott Willard (Co-PI), Alan Wood (Co-PI), Wai K. Ma (Co-PI), and Dawn Luthe (Co-PI), **Mississippi EPSCOR Research Infrastructure Improvement**, January, 2002–December, 2004. ((\$693,006–granted. I later withdrew from this grant.)
14. National Institutes of Health grant 5 P20 RR017661-02, **A Model for Parathion Desulfuration in a Liver Sinusoid**, 9/1/03-6/30/04 (\$16,876). (This is a COBRE grant under a larger NIH program grant with Janice Chambers as PI.)
15. National Institutes of Health grant P20 RR017661-03, **A Model for Parathion Desulfuration in a Liver Sinusoid** (a continuation of the previous grant), 9/1/04-6/30/05 (\$27,146). (This is a COBRE grant under a larger NIH program grant with Janice Chambers as PI.)
16. National Institutes of Health grant P20 RR017661-04, **A Model for Parathion Desulfuration in a Liver Sinusoid** (a continuation of the previous grant), 07/01/05 - 06/30/06 (\$20,208). (This is a COBRE grant under a larger NIH program grant with Janice Chambers as PI.)
17. National Science Foundation grant EPS-0556308 06040292 01/01/07–12/31/07 (\$24,949) **Dynamic spatio-temporal modeling of plant invasion**, (I am co-PI with Gary Ervin of the Biological Sciences Department)

18. IHL-Teacher Quality Grant: Matrix: Math Achievement Through Reading in eXcess At the Secondary Level. CO-PI, Hopper (PI), (Franz (Co-PI) 5/08-8/08
19. National Science Foundation grant DUE1043398, 9/15/2010-8/31/2012, Climate Literacy Partnership in the Southeast United States, senior personnel, McNeal (PI)
20. National Science Foundation grant DUE1043398, (\$50,000) 9/15/2011-8/31/2012, Climate Literacy Partnership in the Southeast United States-network expansion, Co-PI, Smith (PI)
21. Ivy, J. (PI), Bennett, S., Franz, D., & Oppenheimer, S.(co-PIs) Institutions of Higher Learning, NCLB/Title II Proposal, **NUMB3RS: New Understandings in Mathematics Beyond the Three Rs**, \$89,754, 5/2015 – 5/2016.
22. **Preventing a Three and Out: “Does failing 3rd grade mean I will never go to college?”**, MSU Cross College Grant, PI: Dr. Kristin Javorsky, Co Pis Dr. Devon Brenner, Dr. Seth Oppenheimer, Dr. Tommy Stevenson (\$2000)
23. **Breaking the Silo - Mathematics as a Common Language in Science**. Award Number:1458449; Principal Investigator:Seth Oppenheimer; Co-Principal Investigator:Debra Mlsna, Donna Pierce, Stephen Middleton; Organization:Mississippi State University;NSF Organization:DUE Start Date:07/01/2015; Award Amount:\$623,903.00;
24. Ivy, J. (PI), Bennett, S., Franz, D., & Oppenheimer, S.(co-PIs) Institutions of Higher Learning, NCLB/Title II Proposal, **NUMB3RS: New Understandings in Mathematics Beyond the Three Rs**, \$89,999, 3/15/2016 – 4/30/2017.

OTHER MEETINGS ATTENDED

1. The Annual Texas PDE Seminar, The University of Texas at Austin, April 1987.
2. The Annual Joint meeting of the AMS and the MAA, Atlanta, Georgia, January 1988.
3. The Annual Texas PDE Seminar, Texas A&M University, April 1988.
4. Conference on Nonlinear Analysis and Partial Differential Equations, New Brunswick, NJ, May 1990.
5. Conference on Mathematical Approaches to the Study of Nonlinear Materials, Fayetteville, Arkansas, March, 1994.

6. New Directions Short Course on Cellular Physiology, June 16-27, 2003. Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, Minnesota.
7. The Annual Joint meeting of the AMS and the MAA, Phoenix, Arizona, January 2003. . (This was funded by the IMA including local and travel expenses.)
8. Mathematics Meets Biology: Epidemics, Data Fitting, and Chaos, May 26 through May 29, 2004, University of Louisiana at Lafayette. (This had a \$200 travel grant attached to it.)
9. Southern Regional Honors Conference, Tampa, FL April 2013
10. Southern Regional Honors Conference, Savannah, GA April 2014
11. American Association of Colleges and Universities 2013 Annual Meeting, January, 2013, Atlanta, GA
12. American Association of Colleges and Universities 2014 Annual Meeting Symposium: New Designs for Integrative Learning, January, 2014, Washington, DC

TEACHING EXPERIENCE

At the undergraduate level I have taught ordinary differential equations, the entire calculus sequence, linear algebra, business calculus I and II, finite mathematics, precalculus, college algebra, foundations of mathematics, modern algebra (group theory, mostly), advanced calculus I and II, quantitative reasoning, geometry, mathematics for elementary school teachers, and, a reading course on Judaism for the Department of Philosophy and Religion. At the graduate level I have taught applied complex variables, introduction to partial differential equations, partial differential equations, integral equations, foundations of applied mathematics, introduction to probability, numerical analysis I and II, operational mathematics, and linear algebra.

AWARDS AND HONORS

1. Selected as one of the best teachers at Mississippi State University by the graduating seniors in Industrial Engineering in 1992.
2. Certificate of Merit for Outstanding Service in Academic Advising. February, 2000
3. Certificate of Merit for Outstanding Service in Academic Advising. February, 2001

SERVICE CONTRIBUTIONS

1. Organized and lectured in the weekly Sobolev space seminar at Mississippi State University, 1989–1990 academic year.

2. Attending and presenting seminars in the Department of Mathematics and Statistics at Mississippi State University throughout my employment.
3. Served as judge for the Region 5 Science and Engineering Fair since 1989. Served as judge for the State (Mississippi) Science and Engineering Fair 1990–1993 and 1995.
4. Represented the Department of Mathematics and Statistics at the 1990 and 1994 MSU Discovery Days.
5. Represented the General Liberal Arts at the 1995 and 1996 MSU Discovery Days, as well as setting up the Mathematics and Statistics table.
6. Chaired the session “Partial Differential Equations II” at the 97th Annual Joint meeting of the AMS and the MAA, San Francisco, California, January 1991.
7. Served as faculty advisor to the student war gaming club, The Mississippi State Gaming Association 1991–1994.
8. Served as the representative of the Mathematics and Statistics Department to the 1991, 1993, and 1995 MSU Scholar Recognition Days.
9. Chaired a session at the Southeastern Atlantic Regional Conference on Differential Equations as well as helping with local travel arrangements, Starkville, Mississippi, October, 1991.
10. Mathematics and Statistics Department representative to the Federal Funding Opportunities Conference, Tuscaloosa, Alabama, August 1992.
11. Involved in the writing and grading of graduate core exams.
12. Coached the 1993 Mississippi State University Mathematics team for the 1993 Mississippi–Louisiana section Mathematical Association of America mathematics competition. The team was awarded first place.
13. Chaired a session at the Mississippi State Annual Conference on Differential Equations and Computational Simulations as well as helping with local travel arrangements, Starkville, Mississippi, March, 1993.
14. Chaired a session at the Differential Equations Conference sponsored by Ohio University, Athens, Ohio, August, 1993.
15. Coached the Mississippi State University Putnam Competition team 1993–1997.
16. Coached the 1994 Mississippi State University Mathematics teams for the 1994 Mississippi–Louisiana section Mathematical Association of America mathematics competition. The teams took first and third place.

17. Supervised a Combination of Institutions Star-Search Scholar in her undergraduate research project during the summer of 1994.
18. Chaired a session at the Southeastern Atlantic Regional Conference on Differential Equations, Knoxville, Tennessee, October, 1994.
19. Worked with the Health–Science Enrichment Program since 1993, including giving summer 1994 and 1995 workshops on biological modeling using difference equations and Mathematica for rising 10th graders with Bonnie L. Oppenheimer.
20. Introduced the principal speaker at the 1995 Mississippi–Louisiana Section Mathematical Association of America meeting.
21. Coached the 1995 Mississippi State University Mathematics team for the 1995 Mississippi–Louisiana Section Mathematical Association of America mathematics competition. The team took first place
22. Introduced the principal speaker at the Mississippi State Second Conference on Differential Equations and Computational Simulations as well as helping with local travel arrangements, Starkville, Mississippi, March, 1995.
23. Coached the 1996 Mississippi State University Mathematics team for the 1996 Mississippi–Louisiana section Mathematical Association of America mathematics competition.
24. **A model for batch tests**, a talk for the Society of Black Engineers of Mississippi State University, Fall, 1996.
25. Coached the 1997 Mississippi State University Mathematics team for the 1997 Mississippi–Louisiana section Mathematical Association of America mathematics competition.
26. Co-coached the 1998 Mississippi State University Mathematics team for the 1998 Mississippi–Louisiana section Mathematical Association of America mathematics competition. The team took third place.
27. Chaired a session at the Southeastern Atlantic Regional Conference on Differential Equations, Nashville, Tennessee, October, 1997.
28. Judged the 1997 Outstanding Instructional Paper Competition for the College of Engineering, Mississippi State University.
29. Named to the swine waste management research team, Fall, 1997.
30. Chaired a session at the Southeastern Atlantic Regional Conference on Differential Equations, Auburn, Alabama, October, 1998.

31. Introduced the principal speaker at First Southern Symposium On Computing, University of Southern Mississippi, Hattiesburg, Mississippi, December 4-5, 1998.
32. Introduced the principal speaker Mississippi State Fourth Conference on Differential Equations and Computational Simulations as well as helping with local travel arrangements and chairing two paper sessions, Starkville, Mississippi, May, 1999.
33. Chaired a session at the Southeastern Atlantic Regional Conference on Differential Equations, University of Richmond, Richmond, Virginia, October, 1999.
34. Faculty advisor for Mississippi State University College Democrats since Spring, 2001.
35. Gave the Invocation at the Spring, 2001 Mississippi State University Graduation.
36. Mentored a summer undergraduate research student.
37. Taught at the MUW summer 2002 math camp middle and high school students.
38. Project NEXT consultant 2002-2004, 2006-2008
39. Since 2002, along with Donna Reese of Computer Science, I have reviewed and arranged reviews for mathematics and computer science proposals for the Ralph E. Powe Junior Faculty Award.
40. Served on a panel on the education of mathematics teachers at the MAA Louisiana/Mississippi Section meeting, Clinton, MS March 2003.
41. Spoke at Sonya Kovalevsky High School Mathematics Day, 2003.
42. Gave lectures to the Summer, 2003 and 2004 REU students at Mississippi State University.
43. Taught at the MUW summer 2004 math camp middle and high school students.
44. Chaired a session at the Southeastern Atlantic Regional Conference on Differential Equations, Murray, KY, October 2007.
45. Introduced the principal speaker at the Mississippi State-UAB Seventh Conference on Differential Equations and Computational Simulations , Birmingham, AL, November 2007.
46. Chaired a session at DIFFERENTIAL EQUATIONS WEEKEND, November 7, 2009, Memphis, Tennessee

47. Introduced the principal speaker at the Mississippi State-UAB ninth Conference on Differential Equations and Computational Simulations , Mississippi State University and served on the local organizing committee, October 2012.
48. Chaired a session at 10th Mississippi State Conference on Differential Equations and Computational Simulations, October 23-25, 2014, Mississippi State University, Starkville, MS, USA
49. Introduced a principle speaker at 10th Mississippi State Conference on Differential Equations and Computational Simulations, October 23-25, 2014, Mississippi State University, Starkville, MS, USA

REFEREEING AND REVIEWING

1. Referee for the journals Applied Mathematics and Computation, The Journal of Hydraulic Engineering, The Electronic Journal of Differential Equations, Dynamic Systems and Applications, The Journal of Toxicology, Journal of Mathematical Analysis and Applications, and The Journal of Solar Energy Engineering. Discrete and Continuous Dynamical Systems, Applied Mathematics Letters, SIAM Journal of Math. Analysis, Applied Mathematics and Optimization, Nonlinear Analysis, and Natural Resource Modeling. I have also done refereeing work for The Water Resources Institute.
2. Serve as a reviewer for The Mathematical Reviews.
3. Serve as a textbook reviewer for publishers.

MEMBERSHIPS

1. American Mathematical Society
2. Society for Industrial and Applied Mathematics
3. Graduate Faculty at Mississippi State University
4. Mathematical Association of America (Mississippi vice-Chair for the Louisiana-Mississippi section 2004-2006, section chair 2006-2007)
5. Society for Mathematical Biology
6. OHALAH: Association of Rabbis for Jewish Renewal (Member of the finance committee since 2012)

COMMITTEES

1. Mississippi State University

- (a) Departmental Committees
 - i. Undergraduate Curriculum Committee 1994–1996, and since 1999 (Chair 1994-1995, and 1999–2002)
 - ii. Graduate Student Recruiting Committee—I have traveled to various schools in order to recruit students. I have also obtained extradepartmental University funding for recruiting.
 - iii. Differential Equations Committee (including writing and grading graduate qualifying exams), since 1988
 - iv. Analysis Committee (including writing and grading graduate qualifying exams), since 1995–1999
 - v. Trigonometry Committee, Spring 1989
 - vi. Colloquium Committee, 1990–1994
 - vii. Departmental Evaluation of Classroom Teaching Committee, 1995–1998, 2002-2004.
 - viii. Tenure and Promotion Committee, 1997–2000, 2003-2006 (chair, including rewriting the departmental document), 2006-to date (chair for three of those years).
 - ix. Department Head search Committee, 1999-2000, 2006-2007
 - x. Internal self-study committee, 2000-2001. 2016-2017
 - xi. Screening Committee, since 2001.
 - xii. Committee on the first two years, Fall, 2001-Spring 2003.
 - xiii. Numerical Analysis Committee
 - xiv. Linear Algebra Committee, (including writing and grading graduate qualifying exams), since 2003.
 - xv. Assessment Committee, 2005-2009, 2013 to date
 - xvi. Internal self-study committee, 2007-2008.
 - xvii. Committee on the Masters of Arts in Interdisciplinary Science, spring 2008 -2010(chair)
 - xviii. Calculus sequence committee fall 2014-present (Chair)
- (b) College Committees
 - i. College Ad Hoc Committee on Assessment
 - ii. Academic Excellence Committee 1996–1999
 - iii. Council of Advisors, since 1996. Vice-Chair 1999–2000, chair 2000–2001.
 - iv. Search Committee for Dean of The College of Arts and Sciences, 2007-2008.
 - v. Founding member for the still being established Center for Earth Systems, Education, and Society, C(CS)².
- (c) University Committees

- i. Steering Committee of the Mississippi Alliance for Minority Participation, for which I have designed and taught a summer bridge course for entering freshmen on finite difference equations, contributed to the tutoring program for MAMP students, and attended a two-day cultural diversity workshop in September, 1992.
- ii. Speakers Series Advisory Committee, 1993–1994.
- iii. Committee on the Masters of Arts in Teaching program.
- iv. Committee for the Health/Science Enrichment Program, 1993–1995.
- v. Founding Member of the Asian Studies Committee, Fall, 1996.
- vi. Arts and Sciences Senator to the Holland (University-wide) Faculty Senate, 1997–2000, Chair of the Student Affairs Committee, 1998–2000.
- vii. SACS subcommittee on admissions, Spring, 2001–Spring 2003
- viii. Ad Hoc committee to select the university candidates for the 2005 Ralph E. Powe Junior Faculty Award.
- ix. Search Committee for Graduate Dean and Associate Vice-President for Graduate Studies, 2006-2007.
- x. Search Committee for Dean of Students, 2009.
- xi. Committee on Undergraduate Research and Creative Discovery, since 2013.
- xii. Search Committee for joint Honors-Philosophy position, 2013-2014
- xiii. Provost search Committee, elected Arts & Sciences member. 2015-2016

2. Other Committees

- (a) Steering Committee for the Southeast Atlantic Differential Equations Meeting, 1998–2001.
- (b) Program Committee for the First Southern Symposium On Computing, University of Southern Mississippi, Hattiesburg, Mississippi, December 4-5, 1998.

ADVISING

- I have been advising undergraduate students at Mississippi State since 1988.
- My duties as ombudsman at The University of Texas included undergraduate advising.
- Helen Yang (Examination)-MS
- Charles Leslie Stewart (Project: The controllability of a batch test with competitive adsorption)-MS

- A. Sunshine Smith–Carroll (Project: A discrete predator–prey model)-MS
- Mark Riggs (Project: Recovery of a heat flux from a temperature profile)-MS
- Tess Weir Creel– MS (Project: A Discrete Spatially Varying Population Model, 2004)
- Sirisha L. Kala–MS (Deblurring images via partial differential equations, 2004)
- Ashley Gilliland-MS (A fisheries model, 2004)
- Jay Solavaram Srinivasan-MS (finite difference approach to a class of elementary optimal control problems, 2005)
- Jennifer Bell-MS (Kernel Integration Method for the Heat Equation, 2008)
- Yangyang Deng-MS (A PBPK model with feedback). 2010
- Bonnie Roberson (a nonlinear population model) 2013.
- Serve on several master’s and Ph.D. committees in Mathematics and Statistics, various areas of Engineering, and Education, including several times as minor professor.