

# Matthew Miller

## Curriculum Vitæ

Department of Mathematics  
University of South Carolina  
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### Education

Ph.D.	University of Illinois (Urbana)	May, 1979
M.A.	University of Illinois (Urbana)	August, 1974
Auditor	ETH Zürich	Spring, 1973
A.B.	Columbia University	February, 1973

### Professional Experience

Associate Secretary of the AMS for the SE Section	February, 2005–
Graduate Director, Dept. of Math, USC	January, 2005–
Assistant Director, Mathematical Sciences Research Institute (MSRI)	August–December, 2004
Sabbatical, USC Dept. of Biological Sciences	1999–2000
Professor, University of South Carolina	1991–
Assistant Chair, University of South Carolina	1991–1995
Visiting Associate Professor, Rutgers University	Spring, 1991
Visiting Scholar, Brandeis University	Fall, 1990
Associate Professor, University of South Carolina	1984–1991
Visiting Assistant Professor, University of Virginia	Spring, 1984
Visiting Assistant Professor, University of S. Carolina	Fall, 1983
Assistant Professor, University of Tennessee	1979–1984
Graduate Teaching Assistant, University of Illinois	1973–1979

### Grant Support

NSA conference grant (PhilFest)	September, 2005
Course Development Grant (for MATH 120)	2003–2004
USC Research and Productive Scholarship Grant	April, 2003–June, 2004
Provost's Teaching Development Grant	1999
Provost's Instructional Innovation Grant	1996–97
Provost's Instructional Innovation Grant	1994–95
NSF ILIG Grant	1994
Provost's Instructional Development Fund	1994
National Science Foundation Equipment Grant	1992
National Science Foundation	Summers 1989, 91, 92
National Science Foundation	Summers 1986, 87, 88
University of South Carolina Research Grant	Summer, 1985
Travel Grant, Nordic Research Fund	August, 1983
German Academic Exchange Service Study Grant (DAAD)	May–July, 1983
National Science Foundation	Summers, 1981, 82, 83
Royal Swedish Academy of Science, Institut Mittag-Leffler	Feb.–March, 1981
University of Tennessee Faculty Research Grant	Summer, 1980

### Memberships and Awards

American Mathematical Society (AMS)  
Mathematical Association of America (MAA)  
Association for Women in Mathematics (AWM)

Society for Mathematical Biology (SMB)  
Finalist (of 6) Outstanding Freshman Advocate (2002-2003)  
Preston Faculty Associate of the Year (2002-2003, 2006-2007)  
Towers Residence Faculty Recognition Award (2003)

## Publications

1. Self-duality of rank 2 reflexive modules, *J. Pure and Applied Algebra* **16** (1980), 275–284.
2. Bourbaki's theorem and prime ideals, *J. Algebra* **64** (1980), 29–36.
3. Algebra structures on minimal resolutions of Gorenstein rings of embedding codimension four (with A. Kustin), *Math. Z.* **173** (1980), 171–184.
4. Algebra structures on minimal resolutions of Gorenstein rings (with A. Kustin), *Commutative Algebra: Analytic Methods*, Marcel Dekker, 1981.
5. Structure theory of a class of grade four Gorenstein ideals (with A. Kustin), *Trans. Amer. Math. Soc.* **270** (1982), 287–307.
6. A general resolution for grade four Gorenstein ideals (with A. Kustin), *manus. math.* **35** (1981), 221–269.
7. Constructing big Gorenstein ideals from small ones (with A. Kustin), *J. Algebra* **85** (1983), 303–322.
8. Deformation and linkage of Gorenstein algebras (with A. Kustin), *Trans. Amer. Math. Soc.* **284** (1984), 501–534.
9. Multiplicative structure on resolutions defined by Herzog ideals (with A. Kustin), *J. London Math. Soc.* **28** (1983), 247–260.
10. Tight double links of Gorenstein algebras (with A. Kustin), *J. Algebra* **95** (1985), 384–397.
11. Gorenstein ideals of deviation two (with J. Herzog), *Comm. in Algebra* **13** (1985), 1977–1990.
12. A note on the multiplicity of Cohen-Macaulay algebras with pure resolutions (with C. Huneke), *Canadian J. Math.* **37** (1985), 1149–1162.
13. Complete local domains of type two are Cohen-Macaulay (with D. Costa and C. Huneke), *Bull. London Math. Soc.* **17** (1985), 29–31.
14. Classification of the Tor-algebras of codimension four Gorenstein local rings (with A. Kustin), *Math. Z.* **190** (1985), 341–355.
15. The Poincaré series of a codimension four Gorenstein ring is rational (with C. Jacobsson and A. Kustin), *J. Pure and Applied Algebra* **38** (1985), 255–275.
16. Linkage theory for algebras with pure resolutions (with A. Kustin and B. Ulrich), *J. Algebra* **102** (1986), 199–228.
17. Linkage and compressed algebras (with B. Ulrich), in Proceedings Conference on Algebraic Geometry in Berlin 1985, *Teubner Texte* **92** (1986), 267–275.
18. Poincaré series of modules over local rings of small embedding codepth or small linking number (with L. Avramov and A. Kustin), *J. Algebra* **118** (1988), 162–204.
19. The resolution of the generic residual intersection of a complete intersection (with W. Bruns and A. Kustin), *J. Algebra* **128** (1990), 214–239.
20. Betti numbers of modules of finite length (with H. Charalambous and E. G. Evans), *Proc. Amer. Math. Soc.* **109** (1990), 63–70.
21. Generating a residual intersection (with A. Kustin and B. Ulrich), *J. Algebra* **146** (1992), 335–384.
22. Multiplicative structures on finite free resolutions (survey article), in Free Resolutions in Commutative Algebra and Algebraic Geometry: Sundance 90, *Research Notes in Math* **2**, Jones and Bartlett, Boston, 1992.
23. Betti numbers of modules of finite length (survey-research article), in Proc. International Seminar in Algebra and its Applications, *Aportaciones Matemáticas, Notas de Investigacion* **6** (1992), 43–48.
24. A note on generators of least degree in Gorenstein ideals (with R. Villarreal), *Proc. Amer. Math. Soc.* **124** (1996), 377–382.

25. Resource competition in algae: a class project in Mathematical Biology (educational article based on work by students H. Agler, A. Ahearn, A. Kitchell, N. Lopanik, H. Miller, with Prof. D. S. Wethey), *MapleTech* **4** (1997), 78–85.
26. The response of a selfish herd to an an attack from outside the group perimeter (with S. Viscido and D. S. Wethey), *Journal of Theoretical Biology* **208** (2001), 315–328.
27. The dilemma of the selfish herd: the search for a realistic movement rule (with S. Viscido and D. S. Wethey), *Journal of Theoretical Biology* **217** (2002), 183–194.
28. S. Berke, M. Miller, and S. Woodin, Modeling the energy-mortality trade-offs of invertebrate decorating behavior, *Evolutionary Ecology Research* **8** (2006), 1409–1425.

### Other publicly available materials

Course materials for MATH 172, Mathematical modeling for the life sciences

<http://www.math.sc.edu/~miller/172/>

Course materials for Population Biology (with D. S. Wethey), <http://www.math.sc.edu/~miller/763/>

Other course materials may be obtained through <http://www.math.sc.edu/~miller/>

A project oriented course in Mathematical Biology using Maple, University of Tennessee, Knoxville, Mathematical Archives <http://archives.math.utk.edu/CTM>.

### PhD advisor and Graduate Students

Philip A. Griffith, University of Illinois at Urbana-Champaign

Mark A. Beintema, Ph.D., Gorenstein Algebras with Unimodal  $h$ -Sequences, 1990.

Kimberly Presser, Ph.D., An Analysis of the Maximal Growth of Hilbert Functions, 2000.

(unofficial co-advisor) Steven Viscido, Ph.D. (Biological Sciences), Why Animals Form Groups: the Case for the Selfish Herd Hypothesis, 2000

(unofficial co-advisor) Sarah Berke, Ph.D. (Biological Sciences), The Fitness Consequences of Invertebrate Decorating Behaviors, 2007

### Collaborators within the last 48 months

S. Berke      Department of Biological Sciences, University of South Carolina

S. Woodin     Department of Biological Sciences, University of South Carolina

### Invited Colloquium and Seminar Talks

#### 1980

Mathematics Department Colloquium and Algebra Seminar, August, University of Kansas.

#### 1981

Special Year in Commutative Algebra, Combinatorics, and Syzygies, February, Institut Mittag-Leffler, Djursholm, Sweden.

Algebra Seminar, February, Stockholm University.

Algebra Seminar, April, University of Illinois.

“On  $k[T^6, T^7, T^8, T^9, T^{10}]$ ,” Deformation Theory Seminar, September 8, 10, University of Illinois.

“Resolutions: structure and deformation,” Mathematics Department Colloquium, October 4, University of Tennessee.

#### 1983

“Finite free resolutions of Gorenstein algebras,” a series of six talks, May 10, 24, 27, 31, June 1, July 20, Universität Essen, W. Germany. Also given as a series of four talks, June 13–16, Universität Osnabrück, Vechta campus, W. Germany.

“Linkage and the singular locus of Gorenstein algebras,” in various versions:

April 7, University of Illinois, Urbana.

April 12, Purdue University, West Lafayette.

April 14, University of Kentucky, Lexington.

April 20, University of South Carolina, Columbia.

May 19, Oberwolfach Conference in Commutative Algebra, West Germany.

July 5, Martin-Luther-Universität Halle-Wittenberg, Halle, East Germany.

July 13, Universität Regensburg, Regensburg, West Germany.

**1984**

“Gorenstein ideals of deviation two,” February 15, Michigan State University.

“Multiplicity of Cohen-Macaulay algebras with pure resolutions,” Algebra Seminar, May 17, Northwestern University.

**1985**

“Classification of the Tor-algebras of codimension four Gorenstein local rings,” Algebra seminar, March 13, Michigan State University.

“Linkage of algebras with pure resolutions,” Algebra Seminar, July, Universität Essen.

**1988**

“Algebra structure, linkage and Poincaré series,” April 19, Copernicus University, Torun, Poland.

**1989**

“Betti numbers of modules of finite length,” Commutative Algebra Seminar, May 23, Michigan State University.

**1990**

“Free resolutions 100 years after Hilbert,” Mathematics Department Colloquium, March 13, Florida State University.

“Multiplicative structures on free resolutions,” Fellowship of the Ring (Algebra Seminar), September, Brandeis University.

**1991**

“Betti numbers of modules of finite length,” in various versions:

January 20–26, International Seminar of Algebra and its Applications, National Polytechnic Institute, Mexico City.

March 8, Algebra seminar, Rutgers University.

August 7–11, Special Session in Commutative Algebra, AMS Summer Meeting, Orono, Maine.

**1992–2000**

See below for talks on teaching, curriculum, and educational reform

**2001**

“What is mathematical biology, anyhow?,” Mathematics Colloquium, October 2, South Carolina State University, Orangeburg.

**2002**

“Geometry of ‘Flocks’: Animal aggregations during foraging and under predation” Mathematics Colloquium, April 15, South Carolina State University, Orangeburg.

**2003**

**2004**

**2005**

“Modeling the energy-mortality trade-offs of invertebrate decorating behavior”; delivered in two versions:

AMS Special Session on Mathematical Biology, October 22, Lincoln, NE.

Undergraduate Colloquium, Georgia State University, November 4, Atlanta, GA.

**Conferences and Workshops (attended only, if no title given)**

**1979**

Winter AMS Meeting, General Session, January, Biloxi.

Conference on Analytic Methods in Commutative Algebra, August, George Mason University (a joint paper delivered by Andrew Kustin).

**1980**

Regional AMS Meeting, April, Philadelphia, Special Session in Commutative Algebra.

**1981**

Participated in a working group on deformation theory, November 11–14, University of North Carolina, Chapel Hill.

**1982**

“Deformation theory of codimension four Gorenstein varieties,” Special Session in Commutative Algebra, Winter AMS Meeting, January, Cincinnati (joint paper delivered by A. Kustin).

**1983**

Participated in the Nordic Summer School and Research Symposium on “Algebra, algebraic topology, and their interactions,” Stockholm, Sweden.

**1984**

“Linkage of deviation two ideals,” Midwest Commutative Algebra Conference, May 12, Evanston, Illinois.

“Linkage and compressed algebras,” International Conference on Algebraic Geometry, Humboldt University, East Berlin, November 15.

**1986**

Midwest Commutative Algebra Conference, March 27–31, Purdue University.

**1987**

Microprogram in Commutative Algebra, Mathematical Sciences Research Institute, June 15–30, Berkeley.

**1988**

Organizer of Special Session in Commutative Algebra, AMS Southeast Regional Conference, March 25–26, Knoxville, Tennessee.

“A resolution of the generic residual intersection of a complete intersection,” Minisemester in Commutative Algebra and Algebraic Geometry, April 15–16, Banach Center, Warsaw, Poland.

“Resolutions and residual intersections,” (a series of 3 one-hour talks), Commutative Algebra Workshop, August 8–17, Universidade Federale de Bahia, Salvador, Brazil.

“Generators of residual intersections,” Special Session in Commutative Algebra, AMS Regional Conference, October 18, Lawrence, Kansas.

**1989**

Midwest - Great Plains Workshop in Commutative Algebra, November 2–5, University of Nebraska.

**1990**

Conference on Free Resolutions, May 20–26, Sundance, Utah. (Organized and spoke in session on multiplicative structures.)

**1991**

AMS Meeting, October 25–26, Fargo, North Dakota.

**1992**

Conference on Commutative Algebra: Syzygies, Multiplicities, and Birational Algebra, July 5–9, Mount Holyoke College.

Regional Geometry Institute on Computational Algebraic Geometry, July 10–25, Amherst.

“Hilbert functions of graded Gorenstein algebras,” Encuentro Latinoamericano de Algebra y Geometría, July 27–31, Morelia, Mexico.

“The  $h$ -vector of a graded Gorenstein algebra - the unimodality problem and related questions,” Workshop on Commutative Algebra, September 14–24, ICTP Trieste, Italy.

**1993**

AMS Special Session on Commutative Algebra, March 26–27, Knoxville.

Conference on Interactions between Commutative Algebra and Algebraic Geometry, May 28–30, Columbia, Missouri.

“Initial generators of Gorenstein ideals,” Regional AMS Meeting, Special Session on Commutative Algebra and Algebraic Geometry, September 18–19, Syracuse, N.Y.

ACSyM Workshop on Hilbert Functions and Related Topics, October 28–30, Ithaca, N.Y.

**1994**

Workshop on Commutative Algebra and its Relation to Combinatorics and Computer Algebra, May 16–27, ICTP, Trieste, Italy.

**1995**

AMS Regional Meeting, March 17–18, Orlando, Florida.

AMS Regional Meeting, organized Special Session with A. Kustin, November 3–4, Kent, Ohio.

**1996**

Summer School on Commutative Algebra, July 16–26, 1996, Bellaterra, Spain.

**1997**

“Free resolutions in commutative algebra,” and Mathematics-Statistics session co-chair, Annual Meeting South Carolina Academy of Science, April 11, 1997, Columbia, SC.

Commutative Algebra, Representation Theory, and Combinatorics Conference in honor of David Buchsbaum, October 18–20, Northeastern University, Boston.

Midwest Algebraic Geometry Conference, November 7–9, University of Notre Dame, South Bend, Indiana.

**1998**

Homological Methods in Commutative Algebra and Algebraic Geometry, May 29–June 6, University of Genoa, Italy.

**1999****2000**

Benthic Ecology Meeting, March 2000, Wilmington.

**2001**

Special Session in Mathematical Biology, Regional Meeting of the American Mathematical Society, co-organizer with David Wethey and Doug Meade, March 16–17, Columbia, SC.

International Conference on Mathematical and Theoretical Biology (Joint Meeting of the SMB and the Japanese Society for Mathematical Biology), July 15–19, Hilo.

Participated in NSF workshop on biocomplexity, Sept. 23–27, W. Alton Jones Conference Center, RI.

**2002**

Current Trends in Commutative Algebra, Centro Internazionale di Ricerca Matematica, June 17–21, Levico Terme, Trento, Italy.

“A model for Hamilton’s selfish herd hypothesis, with application to fiddler crab behaviour,” Biannual meeting of the International Society for Behavioural ecology, July 7–12, Montreal (contributed paper, selected for oral presentation).

“Geometric analysis of flocking behavior,” Annual Meeting of the Society for Mathematical Biology, July 13–16, Knoxville (contributed paper, selected for oral presentation).

**2003****2004**

Annual Joint Meeting of the AMS, MAA, SIAM, January 7–11, Phoenix, AZ.

MAA Sectional Meeting, Meredith College, April 11–12, Raleigh, NC.

MSRI Workshop on Modern Mathematics, San Francisco State University, October, San Francisco, CA.

**2005**

Annual Joint Meeting of the AMS, MAA, SIAM, January 5–8, Atlanta, GA.

European Conference on Mathematical and Theoretical Biology, July 18–22, Dresden, Germany.

AMS Committee on Education, October 27–30, Washington, DC.

MSRI Workshop on Modern Mathematics, Morehouse and Spelman Colleges, November 5–6, Atlanta, GA.

**2006**

Annual Joint Meeting of the AMS, MAA, SIAM, January 12–15, San Antonio, TX.

Presentation on preparing to apply to graduate school in mathematics, and recruiting for USC, Francis Marion University, April 7, Florence, SC.

**2007**

Annual Joint Meeting of the AMS, MAA, SIAM, January 6–8, New Orleans, LA.

**2008**

Annual Joint Meeting of the AMS, MAA, SIAM, January 6–9, San Diego, CA.

**Conferences and workshops organized**

Organizer of Special Session in Commutative Algebra, AMS Southeast Regional Conference, March 25–26, 1988, Knoxville, Tennessee.

AMS Regional Meeting, organized Special Session with A. Kustin, November 3–4, 1995, Kent, Ohio.  
 “Free resolutions in commutative algebra,” and Mathematics-Statistics session co-chair, Annual Meeting  
 South Carolina Academy of Science, April 11, 1997, Columbia, SC.  
 Special Session in Mathematical Biology, Regional Meeting of the American Mathematical Society, co-  
 organizer with David Wethey and Doug Meade, March 16–17, 2001, Columbia, SC.  
 Wrote proposals for two Modern Mathematics Workshops and an AWM-MSRI Workshop: Celebration of  
 the Legacies of O. Ladyzhenskaya and O. Oleinik, Fall term, 2004, MSRI (all funded).  
 Workshop on Mathematical Circles and Olympiads, co-organizer, December 16–18, 2004, MSRI.  
 AMS Sectional Meeting, Western Kentucky University, March 18–19, 2005, Bowling Green, KY.  
 Co-organizer of an NSA funded Workshop on Commutative Algebra in honor of the retirement of Professor  
 Phillip A. Griffith (PhilFest), September 16–18, 2005, Urbana, IL.  
 AMS Sectional Meeting, East Tennessee State University, October 15–16, 2005 Johnson City, TN.  
 Annual Joint Meeting of the AMS, MAA, SIAM, January 11–16, 2006, San Antonio, TX.  
 AMS Sectional Meeting, Florida International University, April 1–2, 2006, Miami, FL.  
 AMS Sectional Meeting, University of Arkansas, November 3–4, 2006, Fayetteville, AR.  
 AMS Sectional Meeting, Davidson College, March 3–4, 2007, Davidson, NC.  
 Seventh Joint Meeting of the AMS and the SMM, Universidad Autónoma de Zacatecas, May 23–26, 2007,  
 Zacatecas, Mexico.  
 AMS Sectional Meeting, Middle Tennessee State University, November 3–4, 2007, Murfreesboro, TN.  
 First Joint Meeting of the AMS and the NZMS, Victoria University, December 12–15, 2007, Wellington,  
 New Zealand.  
 AMS Sectional Meeting, Louisiana State University, March 28–30, 2008, Baton Rouge, LA.  
 (upcoming) AMS Sectional Meeting, University of Alabama, October 24–26, 2008, Huntsville, AL.  
 (upcoming) AMS Sectional Meeting, North Carolina State University, April 4–5, 2009, Raleigh, NC.  
 (upcoming) AMS Sectional Meeting, Florida Atlantic University, October 30–November 1, 2009, Boca  
 Raton, FL.  
 (upcoming) Annual Joint Meeting of the AMS, MAA, SIAM, January, 2010, San Francisco, CA.  
 (upcoming) AMS Sectional Meeting, University of Kentucky, March 27–28, 2010, Lexington, KY.

## Teaching Related Activities

### 1992

Mathematics Education Reform Workshop, November 5–8, Rutgers University, New Brunswick, N.J.

### 1993

Faculty Enhancement Workshop, July 9–11, Clemson University.

Informal Workshop on *Calculus in Context*, August 19–22, Mt. Holyoke College, S. Hadley, Mass.

### 1994

AMS National Meeting and participated in *Calculus in Context* mid-year debriefing, January 14–16, Cincinnati, Ohio.

“Some uses of Maple in the teaching of calculus” (with D. Meade), Department of Mathematics Computer  
 Demonstration, May 3, USC, Columbia.

NSF Workshop on Revitalizing the Engineering, Mathematics, and Science Curricula via Symbolic Algebra,  
 July 11–16, Rose-Hulman Institute of Technology, Terre Haute, Indiana.

Maple Summer Workshop and Symposium (MSWS '94), August 8–13, Rensselaer Polytechnic Institute,  
 Troy, N.Y.

“SCAMP, calculus reform and the implications for introductory physics” (with M. E. O’Leary), Amer.  
 Assoc. of Physics Teachers, October 29, Orangeburg, S.C.

### 1995

AMS National Meeting and participated in *Calculus in Context* mid-year debriefing, January 3–7, San  
 Francisco.

“The calculus reform project at USC” (with M. E. O’Leary, R. Murphy, and R. Howard), Physics Depart-  
 ment Colloquium, March 31, USC, Columbia.

“Calculus reform at USC”, Lilly Conference on Teaching–South, June 2–4, Columbia, S.C.

**1996**

Department of Mathematics Teaching Seminar: *Calculus in Context* (with Howard, Murphy, and O’Leary), January 23, USC, Columbia.

“Projects in math/biology,” College of Science and Mathematics Undergraduate Teaching Forum on Local Innovations, February 16, USC, Columbia, S.C.

Mathematics for Undergraduate Life Sciences Students Conference, May 17-18, Iowa State University, Ames, Iowa.

“A project oriented course in Mathematical Biology using Maple,” Fifth Conference on the Teaching of Mathematics, June 20-22, Baltimore, Maryland.

“Using Maple to explore mathematical models in biology,” Ninth Annual International Conference on Technology in Collegiate Mathematics, November 7-10, Reno, Nevada.

“Computer algebra and the world wide web across the mathematics curriculum” (a computer workshop with R. Murphy, and D. Meade), Ninth Annual International Conference on Technology in Collegiate Mathematics, November 7-10, Reno, Nevada.

**1997**

“Models from Mathematical Biology,” Special Session on Computer Enhanced Modeling, MAA Southeast regional meeting, March 13-15, Atlanta, GA.

NSF Faculty Enhancement Workshop: Teaching Differential Equations Using a Dynamical Systems Perspective, June 1-4, Davidson, NC.

“Mathematical models in Biology” (a computer workshop with D. Meade), Sixth Conference on the Teaching of Mathematics and Calculus Consortium Harvard workshop, June 19-21, Milwaukee, WI.

BioQUEST Curriculum Consortium Workshop on Mathematics in Biology Education, June 21-29, Beloit, WI.

**1998****1999**

“What is mathematical biology, anyhow?”, February 3, IIME presentation, USC.

“A Course in Mathematical Biology”, Poster session (with D. Wethey), MATC (Math Sciences and their Application throughout the Curriculum), July 9–10, University of Indiana, Bloomington.

Course in Mathematical Biology for rising 10th graders at the Governor’s School for Science and Mathematics, July 11–18, Hartsville, SC.

**2000**

Organized the Journal Reading Club with Drs. Viscido and Wethey to discuss mathematically oriented articles, participants including faculty and graduate students in the Dept. of Biological Sciences and the Marine Science Program, Spring and Fall, 2000.

Design of a new course (MATH 172X) for students in the biological sciences, Spring, 2000; first offered Spring, 2001; offered as MATH 172 in Spring, 2002, 2004 (now listed as a regular course in the catalog).

Judge for the GABS Graduate Student Symposium, April 7–9, Baruch Institute, Georgetown, SC.

Course in Mathematical Biology for rising 10th graders at the Governor’s School for Science and Mathematics, July 13–20, Hartsville, SC.

**2001**

Course in Mathematical Biology for rising 10th graders at the Governor’s School for Science and Mathematics, July 22–28, Hartsville, SC.

Participated in Enhancing the Effectiveness of Courses for Teachers, an Experiential Workshop for Science and Mathematics Faculty, August 13–14, Columbia, SC.

Gave two-session workshop for the SC Elementary and Middle School Academy of Science, October 6, USC, Columbia, SC.

Sat in on two days of math classes at Hand Middle School, October 15-16, Columbia, SC.

**2002**

AMS–MER Workshop on Excellence in Undergraduate education: Mathematics for the Non-traditional Major, May 2–5, Washington University, St. Louis.

Course in Mathematical Biology for rising 10th graders at the Governor’s School for Science and Mathematics, July 21–27, Hartsville, SC.

**2003**

Design of a new course (MATH 120) for pre-service middle school teachers, pre-calculus mathematical modeling

Creation of a new applied math elective (MATH 523) from the existing upper level team-taught mathematical biology course SCCC411B (for honors students) / BIOL 763 (for biology and marine science graduate students)

**2004**

Course in Mathematical Biology for rising 10th graders at the Governor's School for Science and Mathematics, Hartsville, SC.

**2005**

Course in Mathematical Biology for rising 10th graders at the Governor's School for Science and Mathematics, Hartsville, SC.

Presentation at Workshop on training of biologists in mathematics, October 20-21, University of Nebraska, Lincoln.

**2006**

Course in Mathematical Biology for rising 10th graders at the Governor's School for Science and Mathematics, Hartsville, SC.

**Synergistic Activities**

- I have team taught a course in mathematical biology with David Wethey (Biological Sciences) to beginning graduate students in ecology and evolution and upper level undergraduates in biology and marine science. We have taught this one semester course, which deals principally with discrete and continuous modeling of population dynamics, every other year from 1995 through 2003.
- In the spring semester, 2003, I taught a graduate biology course on spatial modeling in ecology dealing with long distance dispersal, diffusion, metapopulation theory, down to the geometry of small-scale aggregations. The audience consisted of graduate students in biology, marine science, and geology, and undergraduates in marine science and mathematics.
- I have written letters of nomination and recommendation for graduate students to be supported to attend "summer schools" in the US and Europe, which I believe helps to integrate them into the community of active researchers. Several biology graduate students have asked that I be on their committee, because they know they will get critical but constructive feedback, in the biology, as well as possible assistance with mathematical modeling.
- I have designed a one-semester course in mathematical modeling, as a sequel to one semester of calculus, aimed primarily at freshman level life science majors, have taught a pilot version twice (Spring, 2002 and 2003), and have taught it in Spring, 2004 and Spring, 2005 with greatly expanded enrollment (around 50).
- I have taught a 5-day, 6 hr/day course in mathematical modeling and Maple with life science applications for the the summers of 1999, 2000, 2001, 2002, 2004, 2005, and 2006 at the South Carolina Governor's School for Science and Mathematics. The audience consists of high school students who will be sophomores in the fall. The class is selected to reflect the demographic mix of South Carolina, and always has a substantial number of Afro-American students.
- I have attended and spoken at numerous conferences and workshops on interdisciplinary teaching and the use of technology.
- Though not conceived by me, in the Fall of 2004 I took over the direction of the Puzzles on Wheels Project at MSRI. Math puzzles were displayed on bus advertising placards in San Francisco. High school students and teachers were especially encouraged to participate in the competition and to extend the puzzles into individual and classroom exploration of a variety of mathematical themes.

**Administrative positions**

Math Department Assistant Chair	1991-95
Assistant Director, MSRI	Fall, 2004
Associate Secretary for the SE section of the AMS	Spring, 2005–
Math Department Graduate Director	Spring, 2005–
Interim Principal Preston Residential College	Fall, 2006

## Professional Service

Journal refereeing -1992: Illinois J. Math (2), Proc. Amer. Math. Soc., Proc. MSRI Conference, J. Pure Appl. Algebra (2), J. Algebra (2); 1993: AMS Conference Proceeding, Communications in Algebra, Trieste Conference Proceeding; 1995: J. Pure Appl. Algebra; 1997: Proc. Amer. Math. Soc., J. Algebra.; 2008: American Mathematical Monthly

NSF proposal refereeing 1985 & before: 7; 1986: 3; 1987: 1; 1988: 3; 1989: 4; 1991: 2; 1992: 6; 1993: 1; 1995: 2; 1996: 1; 1999: 1; 2002: 4; 2005 (Program in Ecology and Evolution): 1.

NSF Panel for the IGERT program, September 25–26, 2000, focus on proposals in biological and medical engineering.

NSA proposal refereeing 1996: 1, 1997: 1, 2001: 1, 2003: 1, 2004: 1.

Math Reviews abstracts 1986: 8, 1987: 12, 1988: 10, 1989: 8, 1990: 7, 1991: 8, 1992: 8, 1993: 5, 1994: 6, 1995: 5, 1996: 6, 1997: 5.

Zentralblatt für Mathematik abstracts 1988: 1, 1989: 5, 1990: 6, 1991: 2, 1992: 4, 1993: 1, 1994: 2, 1995: 5, 1996: 3, 1997: 1.

External evaluator for retention, promotion, and tenure: 1990, 1994 (2), 1995, 1998.

AMS Southeastern Region Program Selection Committee, 1993–1995.

Future meetings committee of the SMB, 2004–2005

USC R&PS proposal reviewing 2004: 2, 2006: 2, 2007: 3

## Department and University Service

### University of Tennessee

Registration	1979-81	Allen medal exam	1980
Advisory	1980-81	GTA teaching awards	1981
Orientation (chair)	1981-82	Honors	1981-82
Teaching effectiveness	1981-83	Graduate	1981-83
Supervisory committees	1982-83	Volunteer community (LAS)	1982-83

### University of S. Carolina Comprehensive Examination, Doctoral and Master's Committees, Department of Mathematics unless otherwise noted

Shiying Zhao	Susan Palmer
David Harvey	Borislav Karaivanov
Emil Cornea	Tibor Szarvas
Yu Chen	Kanadpriya Basu
Steve Viscido (PhD, Biology)	Wade Winterhalter (PhD, Biology)
Sandra Shotwell (PhD, Chemistry)	Rebecca Shuford (PhD, Marine Science)
Sarah Berke (PhD, Biology)	Jenice Emord (MS, Biology)
Amelia Taylor (PhD, Chemistry)	Josh Loefer (Biology)

### University of S. Carolina Committees

Academic affairs and curriculum	1984–85
Ad hoc committee on undergraduate component of VIGRE proposal	Spring, 2003
Bioinformatics search committee	2005–2006
Calculus (chair)	1992–93
Calculus renovation	1993–94
Classroom enhancement planning	1994–1995
College committee on the evaluation of teaching	Spring, 1996
Colloquium (chair)	1987–88

Computer	1996–1997, Fall, 1997
Curriculum and Courses	Spring, 2005–Spring, 2006
Committee of the Fac. Senate	Spring, 2007 (chair)
Environmental res. initiative panel	December, 2004
Events	2008–
F1 peer review of teaching	2002–2003, 2007–2008
F2 peer review of teaching	2006–2007
Facilities and offices	2008–
Faculty Senate	2006–2008
FEI search committee in bioinformatics	Fall, 2005
Full professors (chair)	1998–99
GSSM-USC “articulation”	Fall, 2005
Graduate advisory council	1988–89
Graduate School policies and practices	Spring, 1997
Hiring	1985–86, 1986–87 (chair), 2000–02 (chair)
Integration Bee judge	30 April, 2002
Mathematics education	2001–2002 (chair), 2002–2003
MATH 122 ad hoc	2001 (also many previous times)
MATH 241/250, 550 revision (chair)	2003–2004
MATH 574 coordinator	1984–85
Math T&P criteria and procedures document (chair)	1988–90, 2002–2004
MSRI academic sponsor liaison	2007–
MSRI summer graduate student workshops	2008–
Peer review of teaching	1997–1998
Post-tenure review	2000–2001, 2001–2002 (chair)
Preston Residential College, faculty associate	1999–
Preston Residential College, advisory board	2000–
Preston Residential College, selection	Spring, 2001, 2002, 2005
Preston Residential College, strategic planning group	2003–2004
Preston principal review	Fall, 2005
Provost’s advisory comm. on women’s issues	1998–1999
Qualifying exam (January)	1986, 87, 88, 89, 92, 96, 98, 07
Qualifying exam (August)	1988, 89, 92, 94, 96, 01, 06
Reader, interviewer for McNair and SC Scholars applications	Spring, 2002
R&PS science subcommittee (SPAR)	1984–87, 1987–88 (chair)
Session with AP high school students taking the BC calculus exam	Spring, annually
Space utilization committee	1995–1996
Tenured faculty peer review document (chair)	Spring, 1989
UCTP (Univ. Comm. on Tenure and Promotion)	1995–1996
UCTP (panel chair)	1996–1997
UCTP (Criteria and Procedures subcomm. chair)	1997–1998
Undergraduate advisor	1984–85, 1989–90, 1996–99, 2002–2003
Undergraduate advisory council	Fall, 2003–Spring, 2004
Undergraduate mentor	1998, 1999
Undergraduate research supervisor	Summer, 2003 (2), Summer, 2004 (1), Spring, 2005 (2)
USC-Midlands Tech remedial algebra coordination	1994–1995

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