Biographical Sketch for Matthew Miller

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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
Professor, University of South Carolina	1991–
Assistant Chair, University of South Carolina	1991–1995
Visiting Associate Professor, Rutgers University	Spring, 1991
Associate Professor, University of South Carolina	1984–1991
Visiting Assistant Professor, University of Virginia	Spring, 1984
Assistant Professor, University of Tennessee	1979–1984

Publications in Mathematical Biology (4)

1. 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.
2. 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.
3. 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.
4. S. Berke, M. Miller, and S. Woodin, Modeling the energy-mortality trade-offs of invertebrate decorating behavior, *Evolutionary Ecology Research* **8** (2006), 1409–1425.

Publications in Commutative Algebra (5)

1. Algebra structures on minimal resolutions of Gorenstein rings of embedding codimension four (with A. Kustin), *Math. Z.* **173** (1980), 171–184.
2. A note on the multiplicity of Cohen-Macaulay algebras with pure resolutions (with C. Huneke), *Canadian J. Math.* **37** (1985), 1149–1162.
3. 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.
4. Betti numbers of modules of finite length (with H. Charalambous and E. G. Evans), *Proc. Amer. Math. Soc.* **109** (1990), 63–70.
5. A note on generators of least degree in Gorenstein ideals (with R. Villarreal), *Proc. Amer. Math. Soc.* **124** (1996), 377–382.

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, May, 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

Organizational Experience

National meeting (January, 2006), eight semi-annual sectional meetings, two joint international meetings (May, 2007, Mexico; December, 2007, New Zealand) in my capacity as Associate Secretary of the American Mathematical Society (AMS).
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.
Workshop on Mathematical Circles and Olympiads, co-organizer, December 16–18, 2004, MSRI.
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 by the NSA).
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.

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 of 2003, I taught a graduate biology course on my own, dealing with spatial ecology.
- 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 designed a one-semester course in mathematical modeling, as a sequel to one semester of calculus, aimed primarily at freshman level life science majors, taught a pilot version twice (Spring, 2002 and 2003), and have taught it in Spring, 2004, Spring, 2005, and Fall, 2007.
- I taught a 5-day, 6 hr/day course in mathematical modeling (first using Maple, then using MATLAB) with life science applications for the Summer Science Programs of 1999–2006 (excepting 2003) 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.
- 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.

Invited Addresses, Workshop Presentations, External Colloquia and Seminars

Approximately 40–45 in the US, Canada, Sweden, W. Germany, E. Germany, Poland, Brazil, Mexico at over 35 venues.

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