

Curriculum Vitae

Selwyn Hollis

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Education

- B.S., Mathematics, 1981, Magna Cum Laude
University of Georgia; Athens, Georgia
- Ph.D., Mathematics, 1986
North Carolina State University; Raleigh, North Carolina
Dissertation: “Globally Bounded Solutions of Reaction-Diffusion Systems,”
under the direction of Professor R. H. Martin, Jr.

Experience

- September 2001 – present, Professor of Mathematics,
September 1996 – May 2001, Associate Professor of Mathematics,
Department of Mathematics,
Armstrong Atlantic State University; Savannah, Georgia
- September 1991 – May 1996, Assistant Professor of Mathematics,
Department of Mathematics and Computer Science,
Armstrong State College; Savannah, Georgia
- August 1988 – August 1991, Assistant Professor,
Department of Mathematics and Physical Sciences,
Embry-Riddle Aeronautical University; Daytona Beach, Florida
- November 1987, May 1988, Instructor,
North Carolina Institute for Transportation Research and Education;
Research Triangle Park, North Carolina
- May 1986 – July 1987, *Wissenschaftlicher Mitarbeiter* (Scientific Assistant),
Department of Mathematics, Universität Trier, Germany
- January 1986 – May 1986, Instructor,
August 1981 – December 1985, Teaching Assistant,
September 1984 – August 1985, Research Assistant,
Department of Mathematics, North Carolina State University,
Raleigh, North Carolina

Honors/Memberships

- Phi Beta Kappa
- Distinguished Faculty Service to the Discipline, AASU, 1997

Courses Taught at AASU

MATH 1111 College Algebra	MATH 3170 Advanced Linear Algebra
MATH 1113 Precalculus Mathematics	MATH 3411 Differential Equations I
MATH 1161 Calculus I	MATH 3422 Differential Equations II
MATH 2072 Calculus II	MATH 4011 Advanced Calculus I
MATH 2083 Calculus III	MATH 4022 Advanced Calculus II
MATH 2160 Linear Algebra	MATH 4060 Complex Variables
MATH 2200 Elementary Statistics	MATH 4610 Numerical Analysis
	MATH 4900 Special Topics in Mathematical Biology

Undergraduate Research Supervision

- Worked with student Jenny Seo on a modeling project concerning infestations of southern pine beetles. Jenny gave a presentation at the Southeast Section MAA meeting in Spring of 2004 and entered a poster in the AASU undergraduate research competition and the undergraduate poster competition at the 2005 national AMS meeting. Her poster won a prize at both competitions.

Department Colloquia

- September 2010 — “Creating Classroom Demonstrations with *Mathematica*”
- October 2009 — “Turing Instability and the Leopard’s Spots”
- February 2008 — “A Tour of *Mathematica* 6”
- January 2006 — “Nuts and Bolts of Nonlinear Optimization”
- March 2004 — “A Tour of Calculus with Graphics and Animations”
- September 2003 — “Reaction-diffusion Models of the Formation of Animal Pigmentation Patterns”
- February 2003 — “How the Work of an Engineer at the Renault Auto Company in 1962 Affects Your Life Every Day”
- April 2002 — “An Overview of Oscillators”
- January 1999 — “Newton and Gauss at the Movies: An Animated Tour of Calculus with *Mathematica*”
- February 1998 — “Oddities, Curios, and Counterexamples in Calculus”
- April 1997 — “The TI-92 Calculator”
- April 1996 — “The Joy of \TeX ”
- February 1996 — “Using Patterns and Rules in *Mathematica*”
- October 1995 — “Harvesting of a Population Governed by Logistic Growth”
- November 1994 — “The Mathematical Description of Curves”
- May 1993 — “The Effect of Atmospheric Conditions on the Flight of a Baseball”

Committee Work

Departmental committees:

- Mathematics Curriculum (91–02), chair (95–97), (00–12)
- Department Webmaster (sole member, 98–09)
- Mathematics Search (95–96, 96–97, 00–01, 01–02, 03–04, 05–06)
- Department Head Search (03–04)
- Scholarship and Recruitment (92–94)
- Graduate (93–97)
- Operations and Equipment (94–06), chair (97–01)

College and University committees:

- President’s *ad hoc* “Strategic Plan” committee (2001)
- Arts & Sciences Curriculum (01–02)
- Arts & Sciences Promotion and Tenure (97–98, 98–99)
- Research and Scholarship (93–94)
- Arts & Sciences *ad hoc* committee on promotion and tenure (95)

- Arts & Sciences Curriculum (95–96)
- Faculty Welfare (95–97)
- Semester conversion task force on faculty workload (96–97)
- Arts & Sciences Tenure and Promotion (98–00)
- Evaluation (99–00)

Other Service

- 1998–2005, 2008–2011 — Organizer of the Hudson Mathematics Colloquium series
- 2009–2012 — Site Administrator for *Mathematica* at AASU
- 2004–2007 — Editorial Board of *Mathematica in Education and Research*
- 1992–2009 — Participation in the Annual AASU High-school Mathematics Tournament
- Spring 2005 — Organized the AASU calculus contest.
- April 1999 — Presentation to Savannah Country Day School AP Calculus Class: “Are All Derivatives Continuous?”
- September 1997 — Presentations at AASU Technology Conference: “Mac OS 8: Why It’s So Great,” and “Using Adobe Acrobat”
- May 1996 — Organized the third annual ASC calculus contest.
- December 1995 — Developed a ten-part *Mathematica* tutorial.
- September 1995 — Assisted in the creation of a handbook for undergraduate mathematics majors.
- April 1995 — Organized the second annual ASC calculus contest.
- April 1994 — Organized the first annual ASC calculus contest.

Professional Review

- Spring 2010 — Beta-tested *Mathematica 8.0* for Wolfram Research, Inc.
- Spring 2009 — Reviewer/Graphics Consultant for Tan & Tan Calculus text, Brooks/Cole.
- August 2007 — Refereed two papers for *Mathematica in Education and Research*.
- May 2007 — Refereed a paper for *Mathematica in Education and Research*.
- April 2007 — Refereed a paper for the *Journal of Mathematical Analysis and Applications*.
- December 2006 — Refereed a paper for *Mathematica in Education and Research*.
- April 2004 — Refereed a paper for the *Journal of Mathematical Analysis and Applications*.
- September 2003 — Refereed a paper for the *Journal of Differential and Integral Equations*.
- February 2002 — Refereed a paper for the *Journal of Mathematical Analysis and Applications*.
- February 2001 — Refereed a paper for *Applied Mathematics Letters*.
- Spring 1999 — Beta-tested *Mathematica 4.0* for Wolfram Research, Inc.
- May 1999 — Refereed a paper for the *Journal of Mathematical Analysis and Applications*.
- February 1999 — Refereed a paper for the *Journal of Mathematical Analysis and Applications*.
- October 1997 — Reviewed a new edition of *College Algebra* by Barnett and Ziegler for McGraw-Hill.
- September 1996 — Refereed a paper for the *College Mathematics Journal*.
- August 1996 — Refereed a paper for the *Rocky Mountain Mathematics Journal*.
- June 1996 — Reviewed four grant proposals for the Georgia Board of Regents’ Connecting Teachers and Technology Initiative.
- May 1995 — Reviewed the book *Introduction to Differential Equations* by R. Redheffer for Jones and Bartlett Publishers, recommending changes for a second edition.
- April 1995 — Refereed a paper for the *Indian Journal of Pure & Applied Mathematics*.
- March 1994 — Refereed a paper for the *College Mathematics Journal*.
- November 1992 — Refereed a paper for the *SIAM Journal on Mathematical Analysis*.
- June 1992 — Refereed a paper for the *SIAM Journal on Mathematical Analysis*.
- February 1992 — Reviewed a proposal to the Applied Mathematics Division of the National Science Foundation.

Conference Participation (since Fall 1991)

- October 2005 — Wolfram Technology Conference, Champaign, IL
- January 2005 — Annual meeting of the American Mathematical Society, Atlanta
- October 2004 — Southeastern-Atlantic Regional Conference on Differential Equations, University of Tennessee at Chattanooga
- March 2002 — Southeastern Section meeting of the MAA, Georgia Tech
- October 1999 — Southeast-Atlantic Regional Conference on Differential Equations, University of Richmond
- May 1999 — SIAM Annual Meeting and Optimization Conference, Atlanta
- March 1997 — Southeastern Section meeting of the MAA, Spelman College/Georgia Tech
- October 1996 — Southeast-Atlantic Regional Conference on Differential Equations, Emory University
- April 1996 — Southeastern Section meeting of the MAA, University of Alabama at Huntsville
- March 1996 — Southeast section meeting of SIAM, Clemson University
- March 1995 — Southeastern Section meeting of the MAA, University of North Carolina at Asheville
- October 1994 — Southeast-Atlantic Regional Conference on Differential Equations, University of Tennessee at Knoxville
- October 1993 — Central section meeting of the AMS and special session on reaction-diffusion equations, Texas A&M University
- April 1993 — Meeting of the Southeast-Atlantic section of SIAM, Georgia Southern University
- April 1993 — Southeastern Section meeting of the MAA, Coastal Carolina College
- August 1992 — First World Congress of Nonlinear Analysts, Tampa
- April 1992 — Meeting of the Southeast-Atlantic section of SIAM, University of Alabama at Huntsville
- April 1992 — Southeastern Section meeting of the MAA, Kennesaw State College
- October 1991 — Southeast-Atlantic Regional Conference on Differential Equations, Mississippi State University

Invited Talks

- “Reaction-diffusion models of the formation of animal pigmentation patterns,” Annual Sherwood Ebey Lecture, September 2004, University of the South, Sewanee, Tennessee
- “Spatially local estimates for some quasilinear parabolic systems,” World Congress of Nonlinear Analysts, August 1992, Tampa, Florida
- “Periodic solutions of reaction-diffusion systems,” Special Session on Reaction-diffusion Equations, Central Section Meeting of the AMS, October 1993, Texas A&M University

Contributed Conference Talks

- “Spatial spread of bark beetle infestations: modeling and simulation,” Wolfram Technology Conference, October 2005, Champaign, IL
- “Modeling bark beetle infestations in pine forest ecosystems,” Southeastern-Atlantic Regional Conference on Differential Equations, October 2004, University of Tennessee at Chattanooga
- “Animating Mathematics with *Mathematica*,” T^3 Regional Conference on Mathematical Modeling and Representations, May 2000, AASU
- “*Mathematica* in the Differential Equations course: a toolbox, not a black box,” Southeastern Section meeting of the MAA, March 1997, Spelman College/Georgia Tech
- “Bounded absorbing sets in L^∞ for reaction-diffusion systems,” Southeastern-Atlantic Regional Conference on Differential Equations, October 1994, University of Tennessee at Knoxville
- “Interior estimates and applications in reaction-diffusion systems,” 16th Annual Meeting of the Southeastern-Atlantic Section of SIAM, April 1992, University of Alabama in Huntsville
- “Global existence for systems of convective reaction-diffusion equations,” Southeastern-Atlantic Regional Conference on Differential Equations, October 1989, University of North Carolina at Charlotte

- “Global bounds for reaction-diffusion systems,” Southeastern-Atlantic Regional Conference on Differential Equations, October 1985, Georgia Institute of Technology

Grants

- Connecting Teachers and Technology Grant. In April 1996, a \$20,000 grant was awarded to the AASU Department of Mathematics and Computer Science as part of the Board of Regents’ *Connecting Teachers and Technology Initiative*. The proposal was written by me, Ed Wheeler, and Dale Kilhefner. The project involved the design of a sophomore-level course entitled *Mathematical Problem Solving with Technology*, which was taught by Dr. Kilhefner and me in Spring 1997. (Part of this grant was used to purchase several computers for a small lab, which was the genesis of the current student study room in UH295.)
- Eisenhower Grant. In March 1997, Dale Kilhefner and I received a \$19,100 grant from the Eisenhower Higher Education program to teach a summer graduate course, *Mathematical Problem Solving with Technology*, for in-service high school teachers.

Refereed Journal Articles

- “Perspectives on *Mathematica 6*” (editor and contributor), *Mathematica in Education and Research*, 10 (1), 2007.
- “RestartingNDSolve,” *Mathematica in Education and Research*, 10 (1), 2005.
- “Steady state solutions for balanced reaction-diffusion systems on heterogenous domains” (with W. E. Fitzgibbon and J. Morgan), in *Differential and Integral Equations*, 12, 1999.
- “Mathematica(ℓ) Roller-Coasters,” in *Mathematica in Education and Research*, 8 (3-4), 1999.
- “Cones, k -Cycles of Linear Operators, and Problem B3 on the 1993 Putnam Competition,” in *Mathematics Magazine*, October 1999.
- “Stability and Lyapunov functions for reaction-diffusion systems” (with W. E. Fitzgibbon and J. Morgan), in *SIAM Journal on Mathematical Analysis*, 28 (3), 1997.
- “The existence of periodic solutions to reaction-diffusion systems with periodic data” (with J. Morgan), in *SIAM Journal on Mathematical Analysis*, 26 (5), 1995.
- “On the blow-up of solutions to some semilinear and quasilinear reaction-diffusion systems” (with J. Morgan), in *Rocky Mountain Journal of Mathematics*, 24 (3), 1994.
- “On the question of global existence for reaction-diffusion systems with mixed boundary conditions,” in *Quarterly of Applied Mathematics*, 51 (2), 1993.
- “Partly dissipative reaction-diffusion systems and a model of phosphorus diffusion in silicon” (with J. Morgan), in *J. Nonlinear Analysis: Theory, Methods and Applications*, 19 (5), 1992.
- “Interior estimates for a class of reaction-diffusion systems from L^1 a priori estimates” (with J. Morgan), in *J. Differential Equations*, 98 (2), 1992.
- “Global existence and asymptotic decay for systems of convective reaction-diffusion equations” (with J. Morgan), in *J. Nonlinear Analysis: Theory, Methods and Applications*, 17 (8), 1991.
- “Global existence and boundedness in reaction-diffusion systems” (with R. H. Martin and M. Pierre), in *SIAM Journal on Mathematical Analysis*, 18, 1987.
- “Vector algorithms for H-equations arising in radiative transfer through inhomogeneous media” (with C. T. Kelley), in *Transport Theory and Statistical Physics*, 15 (1&2), 1986.

Proceedings

- “On the blow-up of solutions to some semilinear parabolic systems arising in in chemical reaction modelling” (with J. Morgan), in *Proceedings of the First World Congress of Nonlinear Analysts '92*, Walter de Gruyter, 1996. (refereed)
- “Locally stable dynamics for reaction-diffusion systems” (with W. E. Fitzgibbon and J. Morgan), in *Semigroups of Linear and Nonlinear Operators and Applications*, G. R. Goldstein and J. A. Goldstein (eds.), Kluwer Academic Publishers, 1993.
- “Lyapunov stability for diffusive interactive biological systems” (with W. E. Fitzgibbon and J. Morgan), *Proceedings of the Third International Conference on Mathematical Population Dynamics* at Pau, France, August 1992 (ed. Arino, Axelrod, Kimmel) Marcel Dekker. (refereed)

Books/Manuals

- *CalcLabs with Mathematica, Single Variable Calculus*, 5th Edition, Brooks/Cole (2011)
- *CalcLabs with Mathematica, Multivariable Calculus*, 5th Edition, Brooks/Cole (2011)
- *CalcLabs with Mathematica, Single Variable Calculus*, 4th Edition, Brooks/Cole (2009)
- *CalcLabs with Mathematica, Multivariable Calculus*, 4th Edition, Brooks/Cole (2009)
- *Differential Equations with Boundary Value Problems*, Prentice-Hall (2002)
- *A Mathematica Companion for Differential Equations*, Prentice-Hall (2002)
- *CalcLabs with Mathematica for Stewart's Single Variable Calculus*, 4th Edition, Brooks/Cole (1999)
 - ◊ Updated for the 5th Edition in 2003
 - ◊ Updated for the 6th Edition (and *Mathematica* 6) in 2007
- *CalcLabs with Mathematica for Stewart's Multivariable Calculus*, 4th Edition, Brooks/Cole (1999)
 - ◊ Updated for the 5th Edition in 2003
 - ◊ Updated for the 6th Edition (and *Mathematica* 6) in 2007
- *CalcLabs with the TI-82/83 for Stewart's Single Variable Calculus*, 4th Edition, Brooks/Cole (1999) (with J Morgan)
 - ◊ Updated for the 5th Edition in 2003
- *CalcLabs with the TI-89/92 for Stewart's Single Variable Calculus*, 4th Edition, Brooks/Cole (1999)
- *CalcLabs with the TI-89/92 for Stewart's Multivariable Calculus*, 4th Edition, Brooks/Cole (1999) (with J Morgan)
- *CalcLabs with Mathematica for Stewart's Single Variable Calculus: Concepts and Contexts*, 2nd Edition, Brooks/Cole (1998)
 - ◊ Updated for the 2nd Edition in 2001
 - ◊ Updated for the 3rd Edition in 2005
- *CalcLabs with Mathematica for Stewart's Multivariable Calculus: Concepts and Contexts*, 3rd Edition, Brooks/Cole (2005)
- *CalcLabs with the TI-82/83 for Stewart's Single Variable Calculus: Concepts and Contexts*, 1st Edition, Brooks/Cole (1998) (with J Morgan)
 - ◊ Updated for the 2nd Edition in 2001
- *CalcLabs with the TI-89/92 for Stewart's Single Variable Calculus: Concepts and Contexts*, 1st Edition, Brooks/Cole (1998)
 - ◊ Updated for the 2nd Edition in 2001
- *CalcLabs with the TI-89/92 for Stewart's Multivariable Calculus: Concepts and Contexts*, 1st Edition, Brooks/Cole (1998) (with J Morgan)

Video

- A set of 60 video lectures for single-variable calculus. Funded by the University of Houston. (2005–2006) (math.armstrong.edu/faculty/hollis/CalculusVideos)
- A set of 24 video lectures for differential equations with linear algebra. Funded by the University of Houston. (2007–2008) (math.armstrong.edu/faculty/hollis/DEvideos)

Websites

- Differential Equations QuickTime Movies, math.armstrong.edu/faculty/hollis/DEmovies (2003, defunct)
- TI-89/92 Mathematical Software Library, math.armstrong.edu/ti92 (1999)

Mathematica Packages/Palettes (Published on library.wolfram.com)

- “DiffEqs” (2002, updated numerous times, currently supported)
- “Reaction Diffusion Lab” (2002, updated 2004)
- “Glue,” a palette for adjusting vertical space between cells in *Mathematica* documents (2002)
- “PolarDensityPlot” (2004)

Mathematica Demonstrations (Published on The Wolfram Demonstrations Project)

- “Fender Tone Circuit,” (2009) <http://demonstrations.wolfram.com/FenderToneCircuit/>
- “Pi Filter,” (2009) <http://demonstrations.wolfram.com/PiFilter/>
- “Eigenvalues and Linear Phase Portraits,” (2010) <http://demonstrations.wolfram.com/EigenvaluesAndLinearPhasePortraits/>
- “Bifurcation in a Model of Spruce Budworm Populations,” (2010) <http://demonstrations.wolfram.com/BifurcationInAModelOfSpruceBudwormPopulations/>