

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/>