

CURRICULUM VITAE

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Personal:

Born April 9, 1948, Lawrence, MA
Married to Kathleen F. Devaney, three children, two (crazy) dogs

Education:

1965-69 Holy Cross College, Worcester MA, BA 1969
1969-73 University of California, Berkeley, PhD 1973

Experience:

1974-76 Postdoctoral Fellow, Northwestern University, Evanston IL
1976-80 Assistant Professor, Tufts University, Medford MA
1980 Visiting Assistant Professor (Spring Semester),
University of Maryland, College Park MD
1980-85 Associate Professor, Boston University
1983-86 Chairman, Department of Mathematics, Boston University
1986- Professor, Boston University
1991- Director, Dynamical Systems and Technology Project
1998-2002 Director, LERNet (Boston University Outreach Program)
2006- Director, LERNet (Boston University Outreach Program)
2010- Feld Family Professor of Teaching Excellence
2012 President Elect, Mathematical Association of America
2013-14 President, Mathematical Association of America

Other Positions:

1973 Visiting Scholar, University of California, Berkeley
1984 Visiting Member, Mathematical Sciences Research Institute,
University of California, Berkeley
1988 Visiting Professor, Université de Paris - Sud
1988 Visiting Member, Max-Planck-Institut für Mathematik, Bonn
1989 Visiting Member, Mathematical Sciences Research Institute
University of California, Berkeley
2001 Visiting Member, CRM, Autonomous University of Barcelona
2006 Visiting Scholar, London Math Society Scheme 2 Visitors Program
2008 Visiting Scholar, University of Barcelona

Awards:

McBrien Prize, Holy Cross College, 1969
Woodrow Wilson Fellowship, 1969
Richard V. Andree Award, Pi Mu Epsilon, 1969
Excellence in Teaching Award, MAA Northeastern Section, 1994
Deborah and Franklin Tepper Haimo Award for Distinguished University or College Teaching of Mathematics, 1995
Boston University Scholar/Teacher of the Year Award, 1996
National Science Foundation Director's Award for Distinguished Teaching Scholars, 2002
ICTCM Award for Excellence and Innovation with the Use of Technology in Collegiate Mathematics, 2002
Metcalf Award for Excellence in Teaching, Boston University, 2003
Carnegie Foundation Massachusetts Professor of the Year, 2004
Trevor Evans Award, MAA, 2005
Elected to Massachusetts Math Educators Hall of Fame, 2009
Named Feld Family Professor of Teaching Excellence, 2010
Christopher Clavius Award, Sigma Xi Society, 2011
Elected Fellow of the American Mathematical Society, 2012

Professional Societies:

American Mathematical Society
Mathematical Association of America
Society for Industrial and Applied Mathematics
London Mathematics Society
Irish Mathematical Society
National Council of Teachers of Mathematics
Association of Teachers of Mathematics in Massachusetts
International Society of Difference Equations

Ph.D. Students:

1. Ann K. Sawyer, 1984, *Dynamics of the Lozi Map*
2. Pau Atela, 1989, *Codes and Collisions in Dynamics*
3. Marilyn B. Durkin, 1989, *Algorithms for Complex Dynamics*
4. Robert Winters, 1990, *Bifurcations in Families of Antiholomorphic and Biquadratic Maps*
5. Mako Haruta, 1992, *Newton's Method for Exponential Functions*
6. Núria Fagella, 1995, *Dynamics of the Standard Map*
7. Eileen O'Sullivan Lee, 1997, *The Structure and Geometry of the Bryuno Numbers*
8. Ranjit Bhattacharjee, 2000, *Bifurcation to an Entire Function*
9. Mónica Moreno Rocha, 2002, *Indecomposable Continua and Complex Dynamics*

10. Alexander Frumosu, 2003, *Itineraries for Complex Exponentials*
11. Daniel M. Look, 2005, *Circle Inversions and Sierpiński Curve Julia Sets*
12. Sebastian Marotta, 2008, *The Complex Dynamics of Singularly Perturbed Rational Maps*
13. Elizabeth D. Russell, 2009, *The Complex Dynamics of Rational Maps*
14. Daniel Cuzzocreo, current.
15. Elizabeth Fitzgibbon, current.

Grants:

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| 1974-76 | NSF Grant: Dynamical Systems, Northwestern University |
| 1976-78 | NSF Grant: Homoclinic Orbits, Tufts University, PI |
| 1978-81 | NSF Grant: Homoclinic Orbits, Tufts University, PI |
| 1979 | NSF-CBMS Grant for a Regional Conference in Mathematics, Tufts University, Co-PI |
| 1981-83 | NSF Grant: Classical Mechanics and Dynamical Systems, Boston University, PI |
| 1982 | NSF Equipment Grant: Dynamical Systems and Graphics, Boston University, Co-PI |
| 1983-85 | NSF Grant: Discrete and Continuous Conservative Dynamical Systems, Boston University, PI |
| 1984 | Sloan Foundation Grant for a Conference on Chaos: Applications of Nonlinear Dynamics in the Sciences, PI |
| 1985 | NSF Equipment Grant: Computers and Mathematical Research, PI |
| 1985-88 | NSF Grant: Planar Dynamical Systems, Boston University, PI |
| 1986 | NSF Grant: Advanced Scientific Computing, Digital Productions, PI |
| 1985-87 | DARPA: The Transition to Chaotic Dynamics in Nonlinear Systems, PI |
| 1987-89 | NSF Grant: Complex Dynamics and Computer Experimentation, Boston University, PI |
| 1987-88 | NSF Grant: Advanced Scientific Computing, University of Illinois, PI |
| 1988-91 | NSF Grant: Complex Analytic Dynamics, Boston University, PI |
| 1988-89 | NSF Grant: Dynamic Calculus, Boston University, PI |
| 1988-90 | NSF Equipment Grant: Computer Graphics and Dynamics Lab, Boston University, PI |
| 1988-90 | DARPA: The Transition to Chaotic Dynamics in Nonlinear Systems, PI |
| 1990-93 | NSF: Contemporary Mathematics and Technology as a Driving Force for School Reform, Boston University, PI |
| 1990-92 | NSF: Regional Institute in Dynamical Systems, Boston University, PI |
| 1991-93 | NSF Grant: Complex Analytic Dynamics, Boston University, PI |
| 1993-98 | NSF Grant: Chaos and Fractal Teaching Material, Boston University, PI |
| 1993-96 | NSF Grant: Planar Dynamical Systems, Boston University, PI |
| 1993-96 | NSF Grant: Differential Equations: A Dynamical Systems Approach, Boston University, Co-PI |

- 1995-98 NSF Grant: Teaching Differential Equations, Boston University, Co-PI
- 1997-99 NSF Grant: Computer Lab for Differential Equations and Dynamical Systems Courses, Boston University, PI
- 1999-02 NSF Grant: Contemporary Mathematics and the Internet, Boston University, PI
- 2002-07 NSF Grant: Exploring Dynamical Systems: Exposing Students to Contemporary Mathematics, Boston University, PI
- 2011-16 Simons Foundation Collaboration Grant, PI

Publications

Books:

1. *Classical Mechanics and Dynamical Systems* (coedited with Z. Nitecki). New York: Marcel Dekker, Inc., 1981.
2. *An Introduction to Chaotic Dynamical Systems*. Redwood City, CA: Addison-Wesley, 1986. Second Edition, 1989. Japanese Translation by Kyoritsu Press, 1988. Second Edition, 1990.
3. *Chaos, Fractals, and Dynamics: Computer Experiments in Mathematics*. Menlo Park, Calif.: Addison-Wesley, 1989. Italian Translation: *Caos e Frattali—Matematica dei Sistemi Dinamici e Applicazioni al Calcolatore*. Libreria Ulrico Hoepli, Milano, 1990. Dutch Translation: *Chaos, Fractals, & Dynamica: Computer-Experimenten in de Wiskunde*. Addison-Wesley: Amsterdam.
4. *Chaos and Fractals: The Mathematics Behind the Computer Graphics* (coedited with L. Keen). American Mathematical Society, 1989.
5. *A First Course in Chaotic Dynamical Systems: Theory and Experiment*. Perseus Press, 1992. Japanese Translation, 1997, by Addison-Wesley.
6. *Complex Dynamical Systems: The Mathematics Behind the Mandelbrot and Julia Sets*. Editor. American Mathematics Society, 1994.
7. *Differential Equations* (with P. Blanchard and G. R. Hall). First Edition, Brooks-Cole, 1998. Second Edition, 2002. Third Edition, Thomson/Brooks-Cole, 2006. Fourth Edition, 2011. Spanish Translation: *Ecuaciones Diferenciales*. International Thomson Editores. México, 1999.
8. *Iteration* (with J. Choate and A. Foster). Key Curriculum Press, 1999.
9. *Fractals* (with J. Choate and A. Foster). Key Curriculum Press, 1999.
10. *Chaos* (with J. Choate). Key Curriculum Press, 2000.
11. *The Mandelbrot and Julia Sets*. Key Curriculum Press, 2000.
12. *Differential Equations, Dynamical Systems, and an Introduction to Chaos* (with M. W. Hirsch and S. Smale). Third Edition, Elsevier Academic Press, 2013. Chinese edition,

2008.

13. *Complex Dynamics: Twenty Five Years After the Appearance of the Mandelbrot Set* (coedited with L. Keen). American Mathematical Society, Contemporary Math, **396** 2006.
14. *Mastering Differential Equations: The Visual Method* (Course Guidebook for the Corresponding Series of Twenty Four Videotaped Lectures). The Teaching Company, Chantilly, VA, 2011.
15. *Conformal Dynamics and Hyperbolic Geometry* (coedited with F. Bonahon, F. P. Gardiner, and D. Saric). American Mathematical Society, Contemporary Math, **573** 2012.

Research Articles:

0. Lens Spaces as Coset Spaces. *Pi Mu Epsilon Journal*. **5** (1969), 7-11. (Undergraduate Thesis)
1. Reversible Diffeomorphisms and Flows. *Transactions of the American Mathematics Society*. **218** (1976), 89-113.
2. Homoclinic Orbits in Hamiltonian Systems. *Journal of Differential Equations*. **21** (1976), 431-438.
3. Blue Sky Catastrophes in Reversible and Hamiltonian Systems. *Indiana University Mathematics Journal*. **26** (1977), 247-263.
4. Transversal Homoclinic Orbits in an Integrable System. *American Journal of Mathematics*. **100** (1978), 631-642.
5. Non-regularizability of the Anisotropic Kepler Problem. *Journal of Differential Equations*. **29** (1978), 253-268.
6. Collision Orbits in the Anisotropic Kepler Problem. *Inventiones Mathematicae*. **45** (1978), 221-251.
7. Transverse Heteroclinic Orbits in the Anisotropic Kepler Problem. In: *Structure of Attractors in Dynamical Systems*. New York: Springer-Verlag (1978), 67-87.
8. Subshifts of Finite Type in Linked Twist Maps. *Proceedings of the American Mathematical Society*. **71** (1978), 334-338.
9. Homoclinic Orbits to Hyperbolic Equilibria. In: *Bifurcation Theory and its Applications in the Scientific Disciplines*. Annals of the New York Academy of Sciences. **316** (1979), 108-117.
10. Structural Stability of Homothetic Solutions of the Collinear N-Body Problem. *Celestial Mechanics*. **19** (1979), 108-117.
11. Shift Automorphisms in the Hénon Mapping (with Z. Nitecki). *Communications in Mathematical Physics*. **67** (1979), 137-146. Reprinted in: R. S. Mackay, J. D. Meiss (eds.) *Hamiltonian Dynamical Systems*. Bristol: Adam Hilger (1987), 555-565.
12. Triple Collision in the Planar Isosceles Three Body Problem. *Inventiones Mathematicae*. **60** (1980), 249-267.

13. Morse-Smale Singularities in Simple Mechanical Systems. *Journal of Differential Geometry*. **15** (1980), 285-305.
14. Linked Twist Mappings Are Almost Anosov. In *Global Theory of Dynamical Systems*. New York: Springer-Verlag (1980), 121-145.
15. Genealogy of Periodic Points of Maps of the Interval. *Transactions of the American Mathematical Society*. **265** (1981), 136-146.
16. The Baker Transformation and a Mapping Associated to the Restricted Three Body Problem. *Communications in Mathematical Physics*. **80** (1981), 465-476.
17. Three Area-Preserving Mappings Exhibiting Stochastic Behavior. In: *Classical Mechanics and Dynamical Systems*. New York: Marcel Dekker, Inc. (1981), 39-53.
18. Motion Near Total Collapse in the Planar Isosceles Three Body Problem. *Celestial Mechanics*. **28** (1982), 25-36.
19. Blowing Up Singularities in Classical Mechanical Systems. *American Mathematical Monthly*. **89** (1982), 535-552.
20. Homoclinic Bifurcations and the Area-conserving Hénon Map. *Journal of Differential Equations*. **51** (1984), 254-266.
21. A Piecewise Linear Model for the Zones of Instability of an Area Preserving Map. *Physica D*. **10** (1984), 387-393.
22. Julia Sets and Bifurcation Diagrams for Exponential Maps. *Bulletin of the American Mathematical Society*. **11** (1984), 167-172.
23. Bursts into Chaos. *Physics Letters*. **104** (1984), 385-387.
24. Dynamics of $\text{Exp}(z)$ (with M. Krych). *Ergodic Theory and Dynamical Systems*. **4** (1984), 35-52.
25. Structural Instability of $\text{Exp}(z)$. *Proceedings of the American Mathematical Society*. **94** (1985), 545-548.
26. Symbolic Dynamics of Complex Exponential Maps. In *Proceedings of the 1983 Beijing Symposium on Differential Geometry and Differential Equations*. Science Press, Beijing, China (1986), 329-334.
27. Exploding Julia Sets. In *Chaotic Dynamics and Fractals*. New York: Academic Press, Inc. (1986), 141-154.
28. Dynamics near an Essential Singularity (with F. Tangerman). *Ergodic Theory and Dynamical Systems*. **6** (1986), 489-503.
29. Uniformization of Attracting Basins for Exponential Maps (with L. Goldberg). *Duke Mathematics Journal*. **55** (1987), 253-266.
30. Chaotic Bursts in Nonlinear Dynamical Systems. *Science*. **235** (1987), 342-345.
31. Dynamics of Maps with Constant Schwarzian Derivative (with L. Keen). In *Proceedings of the Nevanlinna Colloquium* Springer-Verlag Lecture Notes **1351**, 1987.
32. Reversibility, Homoclinic Points, and the Hénon Map. In *Dynamical Systems Approaches to Nonlinear Problems in Systems and Circuits*. Philadelphia: SIAM (1988), 3-14.

33. Dynamics of Tangent (with L. Keen). In *Dynamical Systems, Proceedings, University of Maryland*, Springer-Verlag Lecture Notes in Mathematics 1987. **1342** (1988), 105-111.
34. Dynamics of Meromorphic Maps: Maps with Polynomial Schwarzian Derivative (with L. Keen). *Annales Scientifiques de l'Ecole Normale Supérieure*. **22** (1989), 55-79.
35. Film and Video as a Tool in Mathematical Research. *The Mathematical Intelligencer*. **11** No. 2 (1989), 33-38.
36. Dynamics of Entire Maps. *Dynamical Systems and Ergodic Theory*. Banach Center Publ. **23** (1989), 221-228.
37. Dynamics of Simple Maps. In *Chaos and Fractals: The Mathematics Behind the Computer Graphics*, American Mathematical Society (1989), 1-24.
38. Dynamics of Entire Maps. In *Workshop on Dynamical Systems, ICTP Trieste, 1988*. Longman Scientific: Pitman Research Notes in Mathematics **221** (1990), 1-10.
39. Chaotic Explosions in Simple Dynamical Systems. In *The Ubiquity of Chaos*, ed. S. Krasner, AAAS (1990), 1-9.
40. The Orbit Diagram and the Mandelbrot Set. *The College Mathematics Journal*. **22** (1991), 23-38.
41. The Exploding Exponential and Other Chaotic Bursts in Complex Dynamics (with M. Durkin). *American Mathematical Monthly*. **98** (1991), 217-233.
42. Putting Chaos in the Classroom. In *NCTM 1991 Yearbook: Discrete Mathematics across the Curriculum*, eds. M. Kenney and C. R. Hirsch, NCTM (1991), 184-194.
43. The Dynamics of Complex Polynomials and Automorphisms of the Shift (with P. Blanchard and L. Keen). *Inventiones Mathematicae*. **104** (1991), 545-580.
44. e^z : Dynamics and Bifurcations. *Bifurcation and Chaos*. **1** (1991), 287-308.
45. The Gingerbreadman. *Algorithm*. **3** (1992), 15-16.
46. Chaotic Bursts in Complex Dynamical Systems. In *Applications of Fractals and Chaos*. Springer-Verlag (1993), 195-206.
47. Knaster-like Continua and Complex Dynamics. *Ergodic Theory and Dynamical Systems* **13** (1993), 627-634.
48. Chaotic Dynamics and Julia Sets. In *Fractals in Nature and in Mathematics*. Enciclopedia Italiana (1993), 51-60.
49. Open Questions in Non-rational Complex Dynamics. In *Problems in Holomorphic Dynamics*. Springer-Verlag Lecture Notes in Mathematics **1574** (1994).
50. Complex Dynamics and Entire Functions. *Proceedings of the Symposia in Applied Math.* **49** (1995), 181-206.
51. The Complex Dynamics of Quadratic Polynomials. *Proceedings of the Symposia in Applied Math.* **49** (1995), 1-27.
52. Explorations in the Chaos Club. *Focus*. **15** (1995), 8-9.
53. The Fractal Geometry of the Mandelbrot Set: II. How to Add and How to Count. *Fractals* **3** (1995), 629-640. Also appearing in *Fractal Geometry and Analysis: The Mandelbrot Festschrift, Curacao, 1995*, ed. Evertsz, C., Peitgen, H.-O., Voss, R. World

Scientific Press, 1996, 225-236. Interactive version online at:
<http://math.bu.edu/DYSYS/FACGEOM2/FACGEOM2.html>

54. The Dynamics of a Piecewise Linear Map and Its Smooth Approximation (with D. Aharonov and U. Elias). *Bifurcation and Chaos*. **7** (1997), 351-372.
55. Putting Chaos into Calculus Courses. In *Discrete Mathematics in the Schools* DIMACS Series in Discrete Mathematics, ed. J. G. Rosenstein, et. al. American Mathematics Society (1997), 239-254.
56. Misiurewicz Points for Complex Exponentials (with X. Jarque). *Bifurcation and Chaos*. **7** (1997), 1599-1616.
57. Chaos in the Classroom. In *Designing Learning Environments for Developing Understanding of Learning Geometry and Space*, ed. R. Lehrer and D. Chazan. Erlbaum Associates (1998), 91-104. Interactive version online at:
<http://math.bu.edu/DYSYS/chaos-game/chaos-game.html>
58. Caos. *Enciclopedia del Novecento*. Istituto della Enciclopedia Italiana. **10** (1998), 176-187.
59. The Mandelbrot Set, the Farey Tree, and the Fibonacci Sequence. *American Mathematical Monthly*. **106** (1999), 289-302.
60. Cantor Bouquets, Explosions, and Knaster Continua: Dynamics of Complex Exponentials. *Publicacions Matemàtiques*. **43** (1999), 27-54.
61. Hairs for the Complex Exponential Family (with C. Bodelón, M. Hayes, L. Goldberg, J. Hubbard and G. Roberts). *International Journal of Bifurcation and Chaos*. **9** (1999), 1517-1534.
62. Baby Mandelbrot Sets are Born in Cauliflowers (with X. Buff, A. Douady and P. Sentenac). In *The Mandelbrot Set: Theme and Variations*, ed., Tan Lei. London Mathematical Society Lecture Notes, Cambridge University Press **274** (2000), 19-36.
63. Dynamical Convergence of Polynomials to the Exponential (with C. Bodelón, M. Hayes, L. Goldberg, J. Hubbard and G. Roberts). *Journal of Difference Equations and Applications*. **6** (2000), 275-307.
64. Tying Hairs for Structurally Stable Exponentials (with R. Bhattacharjee). *Ergodic Theory and Dynamical Systems* **20** (2000), 1603-1617.
65. Se^x : Dynamics, Topology, and Bifurcations of Complex Exponentials. *Topology and its Applications*. **110** (2001), 133-161.
66. Homoclinic Points in Complex Dynamical Systems. In *Global Analysis of Dynamical Systems*, ed. H. Broer, B. Krauskopf, G. Vegter. IOP Publishing (2001), 329-338.
67. Accessible Points in the Julia Sets of Stable Exponentials (with R. Bhattacharjee, R. E. Lee Deville, K. Josic, M. Moreno Rocha). *Discrete and Continuous Dynamical Systems*. **1** (2001), 299-318.
68. Indecomposable Continua in Exponential Dynamics (with X. Jarque). *Conformal Geometry and Dynamics*. **6** (2002), 1-12.
69. Geometry of the Antennas in the Mandelbrot Set (with M. Moreno Rocha). *Fractals*. **10** (2002), 39-46.

70. Hyperbolic Components of the Complex Exponential Family (with N. Fagella and X. Jarque). *Fundamenta Mathematicae*. **174** (2002), 193-215.
71. The Fractal Geometry of the Mandelbrot Set: Periods of the Bulbs. In *Fractals, Graphics, and Mathematics Education*. MAA Notes Series **58** (2002), 61-68. Interactive version online at: <http://math.bu.edu/DYSYS/FRACGEOM/FRACGEOM.html>
72. A Semilinear Model for Exponential Dynamics and Topology (with M. Moreno Rocha). *Topology Proceedings*. **26** (2002), 153-167.
73. A Survey of Exponential Dynamics. In: *New Progress in Difference Equations*, ed. B. Aulbach, S. Elaydi, and G. Ladas. Chapman & Hall/CRC (2004), 105-122.
74. Complex Dynamics and Symbolic Dynamics (with P. Blanchard and L. Keen). *Proceedings of the Symposia in Applied Math* **60** (2004), 37-60.
75. The Dynamical Systems and Technology Project. In *ICTCM Proceedings 2004*. Pearson Education, 2004.
76. Cantor and Sierpiński, Julia and Fatou: Complex Topology Meets Complex Dynamics. *Notices of the American Mathematical Society*. **51** No. 1 (2004), 9-15.
77. Singular Perturbations of Quadratic Maps (with K. Josic and Y. Shapiro). *International Journal of Bifurcations and Chaos* **14** (2004), 161-169.
78. Playing Catchup with Iterated Exponentials (with K. Josić, M. Moreno Rocha, P. Seal, Y. Shapiro, A. T. Frumosu). *American Mathematical Monthly*. **111** (2004), 704-708.
79. Fractal Patterns and Chaos Games. *Mathematics Teacher* **98** (2004), 228-233.
80. Chaos Rules! *Math Horizons*. November, 2004, 11-14.
81. Topological Bifurcations. *Topology Proceedings*. **28** (2004), 99-112.
82. Sierpiński Curve Julia Sets and Singular Perturbations of Complex Polynomials (with P. Blanchard, D. M. Look, P. Seal, and Y. Shapiro). *Ergodic Theory and Dynamical Systems* **25** (2005), 1047-1055.
83. Buried Sierpiński Curve Julia Sets (with D. M. Look). *Discrete and Continuous Dynamical Systems* **13** (2005), 1035-1046.
84. Structure of the McMullen Domain in the Parameter Planes for Rational Maps. *Fundamenta Mathematicae* **185** (2005), 267-285.
85. Symbolic Dynamics for a Sierpiński Curve Julia Set (with D. M. Look). *Journal of Difference Equations and Applications* **11** (2005), 581-596.
86. Rational Maps with Generalized Sierpiński Gasket Julia Sets (with M. Moreno Rocha and S. Siegmund). *Topology and its Applications* **154** (2007), 11-27.
87. The Escape Trichotomy for Singularly Perturbed Rational Maps (with D. M. Look and D. Uminsky). *Indiana University Mathematics Journal* **54** (2005), 1621-1634.
88. Cantor Necklaces and Structurally Unstable Sierpiński Curve Julia Sets for Rational Maps. *Qualitative Theory of Dynamical Systems* **5** (2004), 337-359.
89. A Criterion for Sierpiński Curve Julia Sets (with D. M. Look). *Topology Proceedings* **30** (2006), 163-179.

90. Singular Perturbations of z^n (with M. Holzer, D. M. Look, M. Moreno Rocha, and D. Uminsky). In *Transcendental Dynamics and Complex Analysis*, London Math Society Lecture Notes Series, eds. P. Rippon and G. Stallard. Cambridge Univ. Press, Vol. 348 (2008), 111-137.
91. Baby Mandelbrot Sets Adorned with Halos in Families of Rational Maps. In *Complex Dynamics: Twenty-Five Years after the Appearance of the Mandelbrot Set*. American Math Society, Contemporary Math **396** (2006), 37-50.
92. Sierpiński Carpets And Gaskets As Julia Sets Of Rational Maps (With P. Blanchard, D. M. Look, M. Moreno Rocha, P. Seal, S. Siegmund, And D. Uminsky). In *Dynamics On The Riemann Sphere*, Ed., P. Horth And C. Petersen. European Math Society (2006), 97-119.
93. Blowup Points and Baby Mandelbrot Sets for Singularly Perturbed Rational Maps (with M. Holzer and D. Uminsky). In *Complex Dynamics: Twenty-Five Years after the Appearance of the Mandelbrot Set*. American Math Society, Contemporary Math **396** (2006), 51-62.
94. Indecomposable Continua and Misiurewicz Points in Exponential Dynamics (with X. Jarque and M. Moreno Rocha). *International Journal of Bifurcation and Chaos* **15** (2006), 3281-3293.
95. The McMullen Domain: Rings Around the Boundary (with S. Marotta). *Transactions of the American Mathematical Society* **359** (2007), 3251-3273.
96. The McMullen Domain: Satellite Mandelbrot Sets and Sierpiński Holes. *Conformal Geometry and Dynamics* **11** (2007), 164-190.
97. A Myriad of Sierpiński Curve Julia Sets. In *Difference Equations, Special Functions, and Orthogonal Polynomials*. World Scientific, 2007, 131-148.
98. Open Problems in Complex Dynamics and “Complex” Topology. In *Open Problems in Topology II*, ed., Elliott Pearl, Elsevier, (2007), 469-478.
99. Evolution of the McMullen Domain for Singularly Perturbed Rational Maps (with S. Marotta). *Topology Proceedings* **32** (2008), 301-320.
100. Cantor Webs in the Parameter and Dynamical Planes of Rational Maps. *Fields Institute Communications* **53** (2008), 105-123.
101. Cantor Sets of Circles of Sierpiński Curve Julia Sets. *Ergodic Theory and Dynamical Systems* **27** (2007), 1525-1539.
102. Unveiling the Mandelbrot Set. *Plus Magazine* **40** (2006). Online version available at <http://www.plus.maths.org/issue40>.
103. Julia Sets Converging to the Unit Disk (with A. Garijo). *Proceedings of the American Mathematical Society* **136** (2008), 981-988.
104. Limiting Julia Sets for Singularly Perturbed Rational Maps (with M. Morabito). *International Journal of Bifurcation and Chaos* **18** (2008), 3175-3181.
105. A Generalized Version of the McMullen Domain (with P. Blanchard, A. Garijo, and E. D. Russell). *International Journal of Bifurcation and Chaos* **18** (2008), 2309-2318.

106. The Rabbit and Other Filled Julia Sets Wrapped in Sierpiński Carpets (with P. Blanchard, A. Garijo, S. Marotta, E. D. Russell). *Complex Dynamics: Families and Friends*, A. K. Peters (2009), 277-296.
107. Dynamic Classification of Escape Time Sierpiński Curve Julia Sets (with K. Pilgrim). *Fundamenta Mathematicae* **202** (2009), 181-198.
108. Intertwined Internal Rays in the Julia Sets of Rational Maps. *Fundamenta Mathematicae* **206** (2009), 139-159.
109. Complex Exponential Dynamics. In *Handbook of Dynamical Systems*, Vol. 3, ed., H. Broer, F. Takens, B. Hasselblatt, Elsevier, **2010**, 125-224.
110. Singular Perturbations of Complex Analytic Dynamical Systems. In *Nonlinear Dynamics and Chaos: Advances and Perspectives*. Springer-Verlag, Berlin, 2010, 13-29.
111. Extending External Rays Throughout the Julia Sets of Rational maps (with F. Çilingir, E. D. Russell). *J. Fixed Point Theory and Applications* **7** (2010), 223-240.
112. Dynamics of $z^n + \lambda/z^n$; Why the Case $n = 2$ is Crazy. *Conformal Dynamics and Hyperbolic Geometry* Contemporary Math. AMS **573** (2012), 49-65.
113. Checkerboard Julia Sets for Rational Maps (with P. Blanchard, F. Çilingir, D. Cuzzocreo, D. M. Look, and E. D. Russell). *Int'l Journal of Bifurcation and Chaos* **23** (2013).
114. Julia Sets Converging to Filled Quadratic Julia Sets (with R. Kozma). *Ergodic Theory and Dynamical Systems*. **34** (2014), 171-184.
115. Sierpiński Curve Julia Sets for Quadratic Rational Maps (with N. Fagella, A. Garijo, and X. Jarque). To appear in *Annales Acadademiae Scientarum Fennicae*.
116. A Cantor-Mandelbrot-Sierpinski Tree in the Parameter Plane for Rational Maps. To appear in *Transactions of the AMS*.
117. Limiting Behavior of Julia Sets of Singularly Perturbed Rational Maps. To appear in *Frontiers of Complex Dynamics: In Celebration of John Milnor's 80th Birthday*.
118. Connectivity of Julia Sets for Singularly Perturbed Rational Maps (with E. D. Russell). *Chaos, CNN, Memristors and Beyond*, World Scientific (2013), 239-245.
119. Simple Mandelpinski Necklaces for $z^2 + \lambda/z^2$ (with D. Cuzzocreo). To appear.
120. Singular Perturbations of Complex Polynomials. *Bulletin of the American Math. Society*. **50** (2013), 391-429.
121. A Dynamical Invariant for Sierpinski Cardioid Julia Sets (with P. Blanchard, D. Cuzzocreo, E. Fitzgibbon, and S. Silvestri). To appear.
122. My Favorite Planar Fractal. *Canadian Math Society Notes*. **45** No. 3 (2013), 13.
123. A Century of Complex Dynamics (with Daniel Alexander). To appear in the volume commemorating the Centennial of the Mathematical Association of America.
124. Parameter Planes for Complex Analytic Maps. To appear.
125. Crazy Topology in Complex Dynamics To appear.
126. The Complex Geometry of the Mandelbrot Set. To appear.

Lecture Notes and Other Articles:

1. Singularities in Classical Mechanical Systems. In *Ergodic Theory and Dynamical Systems I*. Boston: Birkhäuser–Boston, Inc. (1981), 211-333.
2. Fractal Patterns Arising in Dynamical Systems. In *Course Notes for the SIGGRAPH Summer Course in Fractal Geometry* (1987). Also in *The Science of Fractal Images*, eds. Peitgen, H. and Saupe, D. New York: Springer-Verlag (1989). Japanese edition by Springer-Verlag, 1990.
3. Cantor Bouquets, Explosions, and Knaster Continua: Dynamics of Complex Exponentials. CRM Letcure Notes. Autonomous University of Barcelona (1999).
4. Se^x : Dynamics, Topology, and Bifurcations. Topology Conference at C. W. Post College (1999).
5. Mandelbrot's Vision for Mathematics. In *Fractal Geometry and Applications: A Jubilee of Benoit Mandelbrot*. Proceedings of Symposia in Pure Mathematics. **72** (2004), 39-40.
6. Chaos, Fractals, and Tom Stoppard's Arcadia. In *The Beauty of Fractals: 6 Different Viewpoints*. Mathematical Association of America. Eds. Jon Scott and Dennis Gulick. (2010). <http://math.bu.edu/DYSYS/arcadia/index.html>

Software:

1. *A First Course in Chaotic Dynamical Systems: Theory and Experiment: Software* (with J. Georges and D. Johnson). Addison Wesley, 1992.
2. *The Chaos Game* <http://math.bu.edu/DYSYS>
3. *Fractalina* <http://math.bu.edu/DYSYS>
4. *Fractanimate* <http://math.bu.edu/DYSYS>
5. *Linear Web* <http://math.bu.edu/DYSYS>
6. *Nonlinear Web* <http://math.bu.edu/DYSYS>
7. *Target Practice* <http://math.bu.edu/DYSYS>
8. *Cycle Practice* <http://math.bu.edu/DYSYS>
9. *Orbit Diagram* <http://math.bu.edu/DYSYS>
10. *Towers of Hanoi* <http://math.bu.edu/DYSYS>
11. *The Mandelbrot Iterator* <http://math.bu.edu/DYSYS>
12. *The Mandelbrot/Julia Set Applet* <http://math.bu.edu/DYSYS>
13. *The Function Iterator* <http://math.bu.edu/DYSYS>
14. *Quartic Polynomials Applet* <http://math.bu.edu/DYSYS>
15. *Rational Maps Applets* <http://math.bu.edu/DYSYS/applets/singperts>

Including:

Degree Three Maps Applet

Degree Four Maps Applet

Higher Degree Rational Maps Applet

Perturbations of the Douady Rabbit Applet

Perturbations of the Basilica Applet

Perturbations of the Cubic Rat Applet

Sebastian's Family Applet

16. *Exponential Map Applet* <http://math.bu.edu/DYSYS>
17. *Sine Map Applet* <http://math.bu.edu/DYSYS>
18. *Cosine Map Applet* <http://math.bu.edu/DYSYS>

Films and Videos:

1. Chaos. Produced at Boston University Academic Computing Center, 1984. A visual description of the bursts into chaos that occur in families of entire functions such as $\lambda \sin z$ and $\lambda \cos z$.
2. Exploding Bubbles. Produced at Digital Productions, Inc. Los Angeles, 1986. The repetitive patterns which accompany the birth of infinitely many attractors after a homoclinic bifurcation.
3. Tangled Spirals. Produced at Omnibus Simulations, Inc. Los Angeles, 1987. Structural instability of $\lambda \cos z$.
4. Spirals and Slarips. Produced at the National Center for Supercomputer Applications, University of Illinois, 1987. The production of infinitely many attracting orbits near an exploding Julia set.
5. Slipped Disks. Produced at the National Center for Supercomputer Applications, University of Illinois, 1987. The destruction of a Siegel disk.
6. Chaos, Fractals, and Dynamics. A one hour lecture/demonstration for high school students and teachers. Produced by Science TV, New York City, 1989.
7. Chaotic Se^z . Produced at Boston University. Excursions through the bifurcation set of λe^z and the accompanying bifurcations in the dynamical plane.
8. Transition to Chaos: The Orbit Diagram and the Mandelbrot Set. A 65 minute lecture/demonstration aimed at college undergraduates. Produced by Science TV, New York City, 1990.
9. Chaos. Produced at Boston University. A trip through Julia sets associated to the Mandelbrot set, 1990.
10. Spiraling Fingers: A Trip through the Mandelbulbs. Produced at Boston University, 1991.
11. Down the Spine of the Mandelbrot Set. Produced at Boston University, 1991.
12. The Fibonacci Sequence and the Mandelbrot Set. Produced at Boston University, 1992.
13. Chaos, Fractals, and Dynamics. A three hour lecture/demonstration for engineers and scientists. Produced by IEEE, 1993.
14. The Parameter Plane for the Complex Standard Family. With Núria Fagella. Produced at Boston University, 1993.

15. The Fractal Geometry of the Mandelbrot set. A one hour lecture/demo about the mathematics behind the Mandelbrot set aimed at high school students and undergraduates. Key Curriculum Press, 1995.
16. Mastering Differential Equations: The Visual Method. A Series of Twenty Four Videotaped Lectures. The Teaching Company, Chantilly, VA (2011).

Book Reviews:

1. *Instabilities in Dynamical Systems*. Edited by V. Szebehely. *Science*. 1979.
2. *Chaos: Making a New Science*. By James Gleick. *SIAM News*. September, 1988.
3. *Global Bifurcations and Chaos*. By S. Wiggins. *Bulletin of the American Mathematical Society*. **20** (1989), 256-259.
4. *Practical Numerical Algorithms for Chaotic Systems*. By T.S. Parker and L. Chua. *SIAM Review*. **32** (1990), 501-503.
5. *Measure, Topology, and Fractal Geometry*. By G. Edgar. *SIAM Review*. **33** (1991), 668-669.
6. *Fractals: An Animated Discussion with Edward Lorenz and Benoit Mandelbrot*. A Film by H.O. Peitgen, et.al. *SIAM Review*. **34** (1992), 333-335.
7. *The Geometer's Sketchpad*. Software by N. Jackiw, et.al. *UME Trends*. **4** No. 2, 1992.
8. *Iteration of Rational Functions*. By A. Beardon. *American Mathematical Monthly*. **100** (1993), 90-93.
9. *Chaos, Dynamics and Fractals: An Algorithmic Approach to Deterministic Chaos*. By J. L. McCauley. *Foundations of Physics*.
10. *The General Problem of the Stability of Motion*. By A. M. Lyapunov, and *Nonlinearities in Action*. By A. V. Gaponov-Grekhov and M. I. Rabinovich. *Science*. **260** (1993), 1173.
11. *Complex Dynamics*. By L. Carleson and T. W. Gamelin, and *Rational Iteration*. By N. Steinmetz. *SIAM Review* **36** (1994), 504-505.
12. *Celestial Encounters*. By F. Diacu and P. Holmes. *Science* **274** (1996), 2032-33.
13. *Interactive Differential Equations*. By H. Hohn, et. al. *Nonlinear Science*, August, 1997.
14. *An Introduction to the Modern Theory of Dynamical Systems*. By A. Katok and B. Hasselblatt. *The Mathematical Intelligencer* **20** (1998), 77-78.
15. *Interactive Differential Equations*. By H. Hohn, et. al. *American Mathematical Monthly* **105** (1998), 687-90.
16. *Chaos in Discrete Dynamical Systems: A Visual Introduction in Two Dimensions*. By R. Abraham, et. al. *SIAM Review*, **40** (1998), 1002-1004.

Invited Lectures:

- | | |
|------------------|---|
| 1. May 1973 | University of California, Berkeley |
| 2. April 1974 | Northwestern University |
| 3. November 1975 | University of Illinois, Chicago Circle |
| 4. January 1976 | San Antonio, AMS Special Session on Global Analysis |

5. April 1976 Tufts University
6. August 1976 Toronto, AMS Special Session on Dynamical Systems
7. March 1977 University of Wisconsin, Madison
8. October 1977 New York Academy of Sciences, Conference on Applications of Bifurcation Theory in the Sciences
9. March 1978 New York City, AMS Special Session on Ergodic Theory
10. November 1978 Holy Cross College
11. February 1979 MIT
12. March 1979 SUNY, Albany NY
13. April 1979 University of Iowa, AMS Special Session on Celestial Mechanics
25. January- University of Maryland, Twelve Lectures on Singularities in Classical
March 1980 Mechanical Systems
26. March 1980 MIT
27. March 1980 University of Pennsylvania
28. April 1980 Boston University
29. April 1980 University of Maryland
30. November 1980 Northwestern University
31. November 1980 Boston State College
32. March 1981 Bates College
33. April 1981 Oberwolfach, West Germany, Conference on Dynamical Systems
34. May 1981 Pittsburgh, AMS Special Session on Bifurcation Theory
35. May 1981 Brandeis University
36. June 1981 Holy Cross College
37. July 1981 University of Calgary
38. August 1981 Oberwolfach, West Germany, Conference on Celestial Mechanics
39. October 1981 University of Illinois, Urbana
40. November 1981 Brown University
47. March 1982 University of Calgary, Seven Lectures on Singularities in Classical
Mechanical Systems
48. March 1982 SUNY, Albany
50. May 1982 University of Minnesota, Two Lectures
51. October 1982 University of Maryland
52. November 1982 Institute for Mathematics and its Applications, University of Minnesota
53. February 1983 Brandeis University
54. March 1983 CUNY Graduate Center
55. April 1983 Harvard University
56. April 1983 CUNY Graduate Center
59. May 1983 Autonomous University of Barcelona, Three Lectures
60. May 1983 University of Barcelona
61. June 1983 Oberwolfach, West Germany, Conference on Dynamical Systems
62. July 1983 Worcester MA, Clavius Conference on Geometry and Topology
63. July 1983 University of Minnesota, Duluth, NSF-CBMS Regional Conference
64. August 1983 Beijing, People's Republic of China, Conference on Differential
Geometry and Dynamical Systems
65. September 1983 Cornell University
66. October 1983 Wellesley College
67. October 1983 Harvard University
68. October 1983 Northwestern University
69. November 1983 University of Rhode Island

- 70. November 1983 Holy Cross College
- 71. February 1984 Cambridge, Rowland Institute for Science
- 72. February 1984 CUNY Graduate Center
- 73. March 1984 Mathematical Sciences Research Institute, University of California, Berkeley
- 74. November 1984 University of Massachusetts
- 75. November 1984 Amherst College
- 76. December 1984 University of Maryland
- 77. March 1985 Northwestern University
- 78. March 1985 Georgia Institute of Technology
- 79. April 1985 Worcester MA, AMS Special Session on Fractal Geometry
- 80. April 1985 University of Hartford
- 81. April 1985 GTE Laboratories, Waltham MA
- 82. May 1985 Harvard University, Philomorphs' Society
- 85. May 1985 University of Warsaw, Series of Three Lectures
- 86. June 1985 Oberwolfach, West Germany, Conference on Dynamical Systems
- 87. June 1985 Twente University, Enschede, Holland Dynamics Days Conference
- 89. June 1985 University of Groningen, Holland, Two Lectures
- 90. June 1985 University of Utrecht, Holland
- 91. June 1985 University of Bremen, West Germany
- 92. October 1985 NIMMP Symposium, New York City
- 93. October 1985 CUNY Graduate Center
- 94. November 1985 Phillips Exeter Academy
- 95. January 1986 National Science Foundation
- 96. February 1986 Cornell University
- 97. March 1986 University of California, Berkeley
- 98. March 1986 University of California, Santa Cruz
- 99. April 1986 The Computer Museum, Boston
- 100. April 1986 NSWC, Silver Spring, Maryland
- 101. May 1986 Phillips Academy, Andover MA
- 102. June 1986 Engineering Foundation Conference, Henniker NH
- 103. June 1986 University of Warwick, Coventry, England
- 104. June 1986 King's College, University of Cambridge
- 105. July 1986 Workshop for Talented High School Students, Mt. Empire College, Big Stone Gap VA
- 106. August 1986 ISFE, University of Massachusetts
- 108. September 1986 Dynamical Systems Conference, Pennsylvania State University
- 109. October 1986 ACMP Conference, Boston University
- 110. October 1986 Stefan Banach Mathematics Center, Warsaw, Poland
- 111. October 1986 SUNY Buffalo
- 113. November 1986 University of New Hampshire, Two Lectures
- 114. November 1986 Boston University College of Engineering, Advanced Technologies Seminar
- 115. January 1987 Oberwolfach, West Germany, Conference on Fractal Geometry
- 117. February 1987 University of Colorado, Two Lectures
- 118. February 1987 University of Rhode Island
- 119. February 1987 Boston University Physics Department
- 120. February 1987 University of Massachusetts
- 121. February 1987 Mount Holyoke College
- 122. February 1987 AAAS Annual Meeting, Chicago
- 123. March 1987 Bolt, Beranek, and Newman, Inc.

124. March 1987 University of Alabama, Birmingham, Topology Conference
125. March 1987 Bates College
126. April 1987 Rhode Island College
128. April 1987 Taft Lectures, University of Cincinnati, Two Lectures
129. April 1987 MIT, Symposium on the Beauty of Fractals
130. April 1987 Boston College
131. April 1987 Bolt, Beranek, and Newman, Inc.
132. April 1987 Mt. Empire College, Big Stone Gap VA
133. May 1987 Western Maryland University
134. May 1987 National Science Foundation
135. June 1987 Conference on Computer Experimentation in Nonlinear Analysis,
University of Missouri
136. June 1987 MAA Regional Meeting, Connecticut College
138. June 1987 University of Minnesota, Two Lectures
139. June 1987 University of Maryland, NSF Project Directors Meeting
140. July 1987 Gregynog Symposium on Differential Equations, Aberystwyth, Wales
141. July 1987 Mt. Empire College, Big Stone Gap VA
142. July 1987 SIGGRAPH Annual Meeting, Anaheim CA
144. August 1987 AMS Summer Conference on Complex Dynamics, Cornell University,
Two Lectures
148. September 1987 University of Alabama, Birmingham, Four Lectures
149. September 1987 NSF – CBMS Conference on Fractal Geometry, University of Cincinnati
150. September 1987 Boston College Physics Department
151. October 1987 ACMP Meeting, Washington DC
155. October 1987 DePaul University, Four Lectures
157. October 1987 Oklahoma State University, Two Lectures
159. November 1987 Phillips Academy, Two Lectures
160. November 1987 Université de Montréal
161. November 1987 École Polytechnique, Montréal
162. November 1987 Franklin Institute (Museum of Science), Philadelphia
163. November 1987 MAA Regional Meeting, Eastern Pennsylvania – Delaware Region,
Franklin & Marshall College
164. December 1987 IBM, Yorktown Heights NY
165. December 1987 University of Houston
168. January 1988 University of Florida, Three Lectures
169. January 1988 Ohio University
170. January 1988 University of Minnesota
172. February 1988 University of Texas, Two Lectures
174. February 1988 Plymouth State College, Two Lectures
175. February 1988 University of Waterloo
176. February 1988 Ontario Mathematics Society Meeting
178. February 1988 University of Warwick, Two Lectures
179. February 1988 Singularity Days Conference, University of Warwick
180. February 1988 Royal Institution of Mathematics Masterclass at Warwick
181. February 1988 King's College, Cambridge University
182. March 1988 Université de Paris-Sud
183. March 1988 Ecole Normale Supérieure, Paris
184. March 1988 Institut Henri Poincaré, Paris
185. April 1988 Max-Planck-Institut, Bonn

186. April 1988 University of Bonn
187. April 1988 Felix Hausdorff Seminar on Fractals, Bonn, West Germany
188. May 1988 University of Tübingen
189. May 1988 Conference on Fractals in Nature and Mathematics, Rome
190. June 1988 National Science Foundation
191. July 1988 London Math Society Symposium on Dynamical Systems,
University of Durham, England
192. July 1988 University of Minnesota
193. July 1988 SIAM Annual Meeting, Minneapolis
194. July 1988 Pennsylvania Summer Science Academy
195. August 1988 AMS Centennial Meeting Short Course on Chaos and Fractals:
The Mathematics Behind the Computer Graphics, Providence
196. August 1988 United Technologies, Inc., Hartford
197. September 1988 Summer School in Dynamics, International Center for Theoretical Physics,
Trieste, Italy
198. September 1988 Symposium on Current Issues in Mathematics Education, University of Maryland
199. September 1988 University of Maryland
200. October 1988 Wellesley College
201. October 1988 Joint Policy Board on Mathematics, Washington DC
202. October 1988 NCTM Northeastern Regional Meeting, Pittsburgh
203. October 1988 Vassar College
204. November 1988 Boston College
205. November 1988 Bryn Mawr College, Class of 1902 Lecture
206. November 1988 Tulane University
207. November 1988 NCTM Southwestern Regional Meeting, Baton Rouge
208. December 1988 NCTM Northeastern Regional Meeting, Boston
209. December 1988 University of Massachusetts
210. December 1988 Worcester Polytechnic Institute
211. January 1989 AAAS Annual Meeting, San Francisco
212. January 1989 University of California, Berkeley
213. February 1989 Yale University
216. February 1989 University of Oklahoma, Karcher Lectures, Three Lectures
217. February 1989 Langston College, Langston, OK
218. February 1989 US Naval Academy
219. March 1989 Weymouth South HS, Weymouth MA
220. March 1989 Bridgewater State College
222. March 1989 University of Nebraska, Two Lectures
223. March 1989 NCTM North Central Regional Meeting, Omaha
225. March 1989 California State University, Fresno, Two Lectures
231. April 1989 Southeastern Louisiana University, Six Lectures
232. April 1989 Suffolk University, Boston, MA
233. April 1989 Southern Connecticut University
234. April 1989 Groton School, Groton MA
235. April 1989 Purdue University
236. April 1989 Conference on Statistics and Computing, Orlando
238. April 1989 Belmont HS, Belmont MA, Two Lectures
239. April 1989 The Analytic Sciences Corporation (TASC), Reading MA
240. April 1989 Harvard University
241. May 1989 National Science Foundation

243. May 1989 University of Minnesota, Two Lectures
244. May 1989 Johnson County Community College, Overland KS
245. May 1989 George Washington University
246. May 1989 California Polytechnic State University
258. June 1989 MAA Short Course on Chaotic Dynamics, University of Maine, Twelve Lectures
259. June 1989 National Science Foundation Teacher Enhancement Meeting, Washington DC
260. June 1989 Phillips Exeter Academy
261. July 1989 Mathematics Education Reform Network Meeting, University of Minnesota
262. July 1989 Fermilab
263. July 1989 York College, CUNY
264. July 1989 Mt. Empire Community College, Big Stone Gap VA
270. August 1989 MAA Mini-course on Chaotic Dynamics, AMS-MAA Summer Meeting, University of Colorado, Six Lectures
277. August 1989 Short Course on Chaos and Fractals, Groton School, Groton MA, Seven Lectures
278. August 1989 Coast Guard Academy
279. September 1989 Trinity College, Hartford CT
280. September 1989 University of South Carolina
281. September 1989 American Statistical Association Meeting, Simmons College
282. September 1989 Bowdoin College
283. October 1989 MIT
285. October 1989 Georgetown University, Two Lectures
286. October 1989 Hewlett-Packard Inc.
287. November 1989 MAA Regional Meeting Hour Lecture, Holy Cross College
288. November 1989 Loyola College, Baltimore MD
289. November 1989 MAA Mid-Atlantic Regional Meeting Hour Lecture, Washington DC
290. November 1989 George Washington University
296. November 1989 North Carolina Center for Advancement of Teaching, Six Lectures
297. December 1989 Boston Public School Mathematics Teachers
298. December 1989 Mitre Corp., Burlington MA
299. January 1990 CUNY Graduate Center
300. January 1990 Choate School
301. January 1990 Conference on Chaos in the Classroom, Milton Academy, Keynote Address
302. January 1990 Smithsonian Institution, Washington DC
303. January 1990 National Institute of Health
305. January 1990 Northeastern Louisiana University, Two Lectures
306. January 1990 Oberlin College
307. January 1990 Conference on Computers in Education, Haverford College, Keynote Address
308. January 1990 University of North Carolina, Wilmington
309. February 1990 Union College
310. February 1990 AAAS Short Course, New Orleans
311. February 1990 University of New Orleans
312. February 1990 University of Missouri, St. Louis
314. February 1990 University of Colorado, Two Lectures
315. March 1990 Belmont HS
316. March 1990 University of Washington
319. March 1990 Lakeside School, Seattle, Three Lectures
320. March 1990 Pennsylvania State System of Higher Education Meeting, Kutztown PA, Keynote Address
321. March 1990 Harvard University, Philomorphs' Society

324. March 1990 Baltimore County Schools, Three Lectures
326. March 1990 Northern Kentucky University, Two Lectures
328. April 1990 University of South Carolina, Spartanburg, Two Lectures
329. April 1990 Tufts University
330. April 1990 Johns Hopkins University
331. April 1990 Emory University
332. April 1990 Agnes Scott College, Atlanta GA
333. April 1990 Connecticut Association of Independent Schools
334. May 1990 Phillips Academy
335. May 1990 Boston Technical HS
336. June 1990 Roger Williams College, MAA Workshop for Undergraduates
348. June 1990 MAA Short Course on Chaotic Dynamics, Fort Lewis College, Durango CO, Twelve Lectures
349. June 1990 Faculty Advancement Workshop, Northeastern University
350. June 1990 Cornell University Supercomputer Center
357. July 1990 Regional Institute in Dynamical Systems, Boston University, Seven Lectures
358. August 1990 Phillips Academy, Mathematics for Minority Students Program
359. September 1990 SUNY Fashion Institute of Technology, New York City
360. September 1990 Walla Walla College, Walla Walla WA
361. September 1990 Whitman College, Walla Walla WA
362. October 1990 Converse College, Spartanburg SC
363. October 1990 NCTM Regional Meeting, Parsippany NJ
364. October 1990 National Academy of Sciences, Address to Presidential Award Recipients
365. October 1990 University of Massachusetts
366. October 1990 NCTM Regional Meeting, Madison WI, Keynote Address and Workshop
367. October 1990 Workshop on Dynamical Systems, Stockholm, Sweden
368. November 1990 NCTM Regional Meeting, Memphis TN
369. November 1990 Groton School
370. November 1990 Conference on Technology in Collegiate Mathematics, Ohio State University, Keynote Address
371. November 1990 National Academy of Sciences Frontiers of Science Symposium, Irvine CA
372. November 1990 Tufts University
373. November 1990 University of Southern Maine
374. November 1990 NETC Meeting, Springfield MA
376. November 1990 Williams College, Two Lectures
377. January 1991 University of Nevada, Las Vegas
383. January 1991 MAA Mini-course on Chaotic Dynamics, AMS-MAA Annual Meeting, San Francisco, Six Lectures
384. January 1991 Kimberly-Clark Co., Appleton WI
385. January 1991 Marquette University
387. January 1991 Chaos and Fractals in the Secondary Schools Conference, Boston University, Two Lectures
388. February 1991 San Antonio Secondary School Teachers Association
390. February 1991 Oak Park and River Forest HS, Oak Park IL, Two Lectures
391. February 1991 West Suburban Teachers Association, Lyons Township IL
392. February 1991 Oberwolfach, Germany, Conference on Computer Graphics in Mathematics
394. March 1991 Consortium of Secondary Schools of Mathematics and Science, Columbus MS, Two Lectures
395. March 1991 Montclair State College

403. March 1991 Chautauqua Short Course, Memphis TN, Eight Lectures
404. March 1991 International Dynamical Systems Conference, Northwestern University
405. April 1991 NCTM National Meeting, New Orleans
406. April 1991 Illinois State University, Normal IL
407. April 1991 Lake Forest College, Volweiler Lecture
408. April 1991 University of North Carolina
409. April 1991 MAA Regional Meeting, Charleston WV
410. April 1991 University of Texas
411. April 1991 Colby College
413. April 1991 Queen's University, Kingston, Ontario, Two Lectures
414. April 1991 Holy Cross College
416. May 1991 Swarthmore College, Two Lectures
417. May 1991 Groton School
418. May 1991 SUNY Stony Brook
419. May 1991 University of Southwestern Louisiana
420. May 1991 ARO Chaos Conference, Duke University
423. May 1991 Conference on Technology in Education, North Carolina School for Science and Mathematics, Keynote Address and Two Workshops
432. June 1991 Conference on Chaos and Bifurcations, Singapore, Nine Lectures
433. July 1991 Dynamical Systems Institute, Boston University
444. August 1991 MAA Short Course, University of Minnesota, Duluth, Eleven Lectures
445. August 1991 AMS Special Session on Continua Theory, University of Maine
449. August 1991 MAA Mini-course, University of Maine, Four Lectures
451. October 1991 Carolinas Mathematics Conference, Charlotte NC, Two Lectures
452. October 1991 Arizona Mathematics Consortium Meeting, Prescott AZ
453. October 1991 Arizona State University
455. October 1991 Technical University Delft, Holland, Two Lectures
456. November 1991 Rimes Lecture, Spring Hill College
457. November 1991 University of South Alabama
458. November 1991 Metropolitan Mathematics Association, Chicago
459. November 1991 Conference on Technology in Collegiate Mathematics, Portland State University, Keynote Address
462. November 1991 NCTM Regional Meeting, Nashua NH, Three Lectures
463. November 1991 NCTM Regional Meeting, San Juan PR
464. December 1991 NCTM Regional Meeting, Long Island NY
465. December 1991 Conference on Experimentation in the Classroom, Union College
466. December 1991 Apple Computer Corp., Newton MA
468. December 1991 Metropolitan State College, Denver CO, Two Lectures
469. December 1991 Workshop for Wyoming Teachers, Casper WY
471. January 1992 University of Michigan, Keeler Lectures, Two Lectures
472. January 1992 AMS Special Session on Iteration, Baltimore
473. January 1992 AMS Special Session on Regional Geometry Institutes, Baltimore
474. January 1992 NCTM Regional Meeting, Des Moines IA
475. February 1992 British Computer Society Meeting, London, Keynote Address
476. February 1992 Columbia University
477. February 1992 Apple Computer Expo, Boston University
479. February 1992 AAAS Annual Meeting, Chicago, Two Lectures
480. February 1992 East Carolina University
483. February 1992 Western Michigan University, Three Lectures

484. February 1992 Michigan Mathematics Prize Competition Awards Day, Detroit
 485. March 1992 University of Minnesota, UMTYUMP Program
 486. April 1992 NCTM Annual Meeting, Nashville
 488. April 1992 Belmont HS, Two Lectures
 489. April 1992 New England Statistics Association, Bentley College
 490. April 1992 Complex Dynamics Conference, Luminy, France
 491. May 1992 Conference on Complex Dynamics, Nankai University, Tianjin, China
 492. May 1992 Hong Kong University of Science and Technology
 500. May 1992 Chautauqua Short Course, University of Pittsburgh, Eight Lectures
 501. June 1992 San Jose Educational Consortium, San Jose CA
 509. June 1992 MAA Ohio Section Short Course, Bowling Green University, Eight Lectures
 510. June 1992 University of New Hampshire
 511. August 1992 Algebra Conference, Groton School
 512. September 1992 Oberlin College
 513. September 1992 University of Connecticut
 514. October 1992 US Military Academy, West Point NY
 515. October 1992 St. Andrew's College, Laurinburg NC
 518. October 1992 University of Bremen, Germany, Three Lectures
 520. October 1992 Northwest Mathematics Conference, Spokane WA, Two Lectures
 521. October 1992 NCTM Regional Meeting, Hartford CT
 523. October 1992 Math Field Day, Boston University, Two Lectures
 524. November 1992 NCTM Regional Meeting, Minneapolis MN
 525. November 1992 NCTM Regional Meeting, Little Rock AR
 526. November 1992 University of Tennessee, Knoxville TN
 528. November 1992 Kutztown University, Two Lectures
 530. January 1993 Rhodes College, Memphis, Two Lectures
 531. January 1993 Groton School
 532. January 1993 AMS Special Session on Low Dimensional Dynamics, San Antonio
 533. March 1993 Address to Presidential Awardees in Math and Science Education, Washington DC
 534. March 1993 Three hour IEEE television lecture, California State University, Long Beach CA
 535. March 1993 University of Arizona
 536. March 1993 St. John's University, St. Cloud MN
 537. March 1993 University of Minnesota, Duluth
 538. April 1993 Bemidji State University
 539. April 1993 University of Minnesota, Morris
 540. April 1993 University of Minnesota, Minneapolis
 541. April 1993 Rochester Community College, Rochester MN
 542. April 1993 Quinipiac College
 543. April 1993 Aachen Universität, Aachen, Germany
 544. April 1993 Oberwolfach, Germany, Conference on Low Dimensional Dynamics
 545. April 1993 University of South Carolina
 546. April 1993 Collegiate School, New York City
 547. April 1993 Thayer Academy, Braintree MA
 548. May 1993 NCTM Regional Meeting, New York
 549. May 1993 New Jersey Science Teachers Association, Nutley NJ
 550. May 1993 Mountain Empire Community College, Big Stone Gap VA
 551. May 1993 NCTM Regional Meeting, Winnipeg, Canada
 552. May 1993 Ontario CTM Meeting, Windsor, Ontario
 562. June 1993 Chautauqua Short Course, Boston University, Ten Lectures

563. July 1993 Durham Symposium on Complex Dynamics, Durham UK
566. July 1993 Princeton University, Three Lectures at the Woodrow Wilson Institute
567. August 1993 AMS Special Session on Complex Dynamics, Vancouver, BC
576. August 1993 Wyoming Teachers Association, Nine Lectures, Casper WY
577. September 1993 Boston College
578. October 1993 DeKalb College, Stone Mountain GA, The Lyceum Lecture
580. October 1993 Math Field Day, Boston University, Two Lectures
582. October 1993 Lenoir-Rhyne College, Hickory NC, Steelman Lectures, Two Lectures
583. October 1993 Educational Development Corp., Newton MA
584. November 1993 International Conference on Technology in College Mathematics
585. November 1993 ATMNE Conference, Springfield MA
586. November 1993 US Military Academy, West Point NY
588. December 1993 Montana State University, Two Lectures
590. January 1994 AMS Short Course on Complex Dynamics, Cincinnati OH, Two Lectures
591. January 1994 Technion, Haifa, Israel
592. February 1994 Ben Gurion University, Beer'sheva, Israel
593. February 1994 Three Hour Television Lecture, NTU Satellite Network
594. February 1994 NCTM Regional Meeting, Richmond VA
596. February 1994 University of North Texas, Milliken Lectures, Two Lectures
597. February 1994 Southern California Modern Physics Institute
598. February 1994 California State Polytechnic University, Pomona CA
599. February 1994 Belmont HS
600. March 1994 Boston University College of Engineering
601. March 1994 University of Sydney, Australia
602. March 1994 Australian National University, Canberra, Australia
603. March 1994 LaTrobe University, Melbourne, Australia
604. March 1994 Concord-Carlisle Regional HS
606. March 1994 Fort Lewis College, Durango CO, Two Lectures
607. April 1994 University of Hartford, Sigma Xi Lecture
609. April 1994 Lynnfield HS, Two Lectures
610. April 1994 Holy Cross College, Leonard Sulski Memorial Lecture
611. April 1994 Baruch College, CUNY
612. May 1994 Groton School
616. May 1994 University of Manchester, J. Frank Adams Memorial Lectures, Four Lectures, Manchester, England
618. May 1994 New Jersey State Science and Mathematics Teachers Association
Raritan Valley Community College, Two Lectures
621. July 1994 Regional Geometry Institute, Park City UT, Three Lectures
622. July 1994 Phillips Academy, Andover MA, Lecture for High School Teachers Meeting
630. August 1994 University of the Western Cape, Bellville, South Africa, Eight Lectures
633. August 1994 University of the Western Cape, College of Education, Three Lectures
634. August 1994 Bellville Teachers' College, Bellville, South Africa
635. August 1994 University of Cape Town
636. August 1994 Livingstone HS, Claremont, South Africa
637. August 1994 Dryden Primary School, Cape Town, South Africa
638. August 1994 Leaf College, Rondebosch, South Africa
639. August 1994 Association of Math Educators of South Africa, Rondebosch, South Africa
640. August 1994 University of Stellenbosch, Stellenbosch, South Africa
641. August 1994 University of Pretoria

642. August 1994 Witswatersrand University, Johannesburg, South Africa
643. September 1994 Davidson College
644. September 1994 Duke University
646. September 1994 North Carolina School of Science and Technology, Two Lectures
647. October 1994 ATMNE Meeting, Burlington VT, Luncheon Talk
648. October 1994 NCTM Regional Meeting, Omaha NE
649. October 1994 University of Nebraska, Omaha
650. October 1994 Idaho National Engineering Lab, Idaho Falls ID, National Computing Symposium
654. October 1994 Math Field Day, Boston University, Four Lectures
655. October 1994 NCTM Regional Meeting, Boise ID
656. November 1994 Nashua HS, Nashua NH
657. November 1994 US Military Academy, West Point NY
658. November 1994 New York Academy of Sciences, New York City
659. November 1994 NCTM Regional Meeting, Somerset NJ
660. November 1994 International Conference on Technology in College Mathematics, Orlando FL,
661. November 1994 MAA Regional Meeting, University of Hartford
662. December 1994 University of Delaware
663. January 1995 Special Session on Chaotic Dynamical Systems, AMS-MAA Annual Meeting, San Francisco
664. January 1995 Special Session on Teaching, AMS-MAA Annual Meeting, San Francisco
665. February 1995 Symposium on Fractal Geometry and Self-Similar Phenomena, Curaçao, Netherlands Antilles
666. February 1995 Iowa State University, Sigma Xi Lecture
667. March 1995 Macalester College, St. Paul MN, All Campus Lecture
668. March 1995 Washington DC, Address to Presidential Awardees
669. March 1995 Mathematical Sciences Research Institute, Berkeley CA
672. April 1995 Hotchkiss School, Lakeville CT, Three Lectures
675. April 1995 Stephen F. Austin University, Nacogdoches TX, Yeagy Lectures, Three Lectures
676. April 1995 UMass Dartmouth, Sigma Xi Lecture
677. April 1995 Quinnipiac College, Sigma Xi Lecture
678. April 1995 Princeton Plasma Physics Laboratory
679. April 1995 Montgomery Co. Comm. College, Blue Bell PA
681. April 1995 Baruch College, CUNY, Two Lectures
685. April 1995 Texas Woman's University, Denton TX, Harlan C. Miller Lectures, Four Lectures
686. April 1995 MCTM Meeting, Brainerd MN
688. May 1995 Auburn University, Franklin Lectures, Two Lectures
689. May 1995 New England Consortium of Colleges and Universities Meeting, Keynote Address
690. May 1995 Ontario Association of Mathematics Educators Meeting, Guelph ONT, Fields Lecture
692. May 1995 SIAM Meeting, Short Course, Snowbird UT, Two Lectures
693. June 1995 Boston University, Teaching Differential Equations Meeting
694. June 1995 University College, Cork, Ireland, Boole Symposium
695. June 1995 Corning, Inc., Corning NY, Sigma Xi Lecture
696. June 1995 New England Society of Actuaries, Sturbridge MA
699. July 1995 Wesleyan University, Three Lectures
700. July 1995 White House Conference on Science and Mathematics Education
701. September 1995 Boston University Academy
703. September 1995 Rose-Hulman Institute of Technology, Two Lectures

704. September 1995 Marsh Chapel, Food for Thought Seminar
706. October 1995 NCTM Regional Meeting, St. John's, Newfoundland, Two Lectures
710. October 1995 Math Field Day, Boston University, Four Lectures
711. November 1995 US Military Academy, West Point NY
714. November 1995 ICTCM, Houston, Two Lectures and Workshop
715. November 1995 ATMNE Meeting, Portland ME
716. December 1995 Dynamical Systems Conference, Groningen, Holland
717. January 1996 Dynamics Days Conference, Houston TX
718. January 1996 AMS-MAA Annual Meeting, Orlando, ODEs 2000 Panel
719. January 1996 AMS-MAA Annual Meeting, Orlando, You're the Author Panel
720. January 1996 AMS-MAA Annual Meeting, Orlando, Workshop on Differential Equations
721. January 1996 The Geometry Center, University of Minnesota
723. February 1996 James Madison University, Harrisonburg VA, Two Lectures
724. February 1996 NCTM Regional Meeting, Rapid City SD
725. March 1996 Syracuse University
728. March 1996 Florida Atlantic University, Three Lectures
729. March 1996 Cape Cod Community College, Hyannis MA
730. April 1996 University of Missouri
731. April 1996 MCTM Meeting, Brainerd MN
732. May 1996 Kenesaw State College, Marietta GA
738. May 1996 North Metro Mathematics Collaborative, Marietta GA, Six Lectures
739. May 1996 MAA Metro New York Regional Meeting, CW Post College
740. May 1966 Göttingen University, Germany
741. May 1996 Limburgs Universitair Centrum, Belgium
751. June 1996 Chautauqua Short Course, Boston University, Ten Lectures
754. June 1996 Differential Equations Workshop, Boston University, Three Lectures
755. June 1996 Geometry Center, University of Minnesota
757. June 1996 Differential Equations Workshop, Oberlin College, Two Lectures
758. June 1996 Johns Hopkins Awards Ceremony, Boston University
764. July 1996 University of California, Berkeley, Workshop on Chaos, Fractals, and More, Six Lectures
765. July 1996 Boston University Research Internship Program
766. July 1996 Geometry Center, University of Minnesota
767. August 1996 Huntington Theater, Boston, Workshop on dynamics for actors and technical staff of the play *Arcadia*
768. September 1996 Framingham State College
769. September 1996 US Military Academy, West Point
770. September 1996 Boston University Trustees' Scholars Program
771. September 1996 Humanities Forum, Huntington Theater, Boston
772. October 1996 Central Pennsylvania Consortium, Gettysburg College
773. October 1996 Illinois State University, Normal IL
774. October 1996 Bifurcation Theory Conference, University of Minnesota
778. October 1996 Math Field Day, Boston University, Four Lectures
780. November 1996 ICTCM, Reno NV, Two Lectures
781. November 1996 ATMNE Meeting, Providence RI
782. November 1996 Philips Exeter Academy, All-School Lecture
783. November 1996 NCTM Regional Meeting, Albuquerque NM
784. January 1997 MAA Mini-course, AMS-MAA Annual Meeting, San Diego
785. January 1997 NCTM Regional Meeting, New Orleans

786. February 1997 NCTM Regional Meeting, Atlanta
788. February 1997 University of South Florida, Nagle Lectures, Two Lectures
789. March 1997 NCTM Regional Meeting, San Jose
792. March 1997 City University of Hong Kong, Three Lectures
794. March 1997 Chinese University of Hong Kong, Two Lectures
795. March 1997 Hong Kong University of Science and Technology
796. April 1997 Southeast Topology Conference, University of Southwestern Louisiana
798. April 1997 Math Field Day, Portland High School, Portland ME, Two Lectures
799. April 1997 University of Southern Maine
800. April 1997 Simmons College
801. April 1997 NCTM Annual Meeting, Minneapolis
802. May 1997 University of Colorado, Denver
803. May 1997 NCTM Regional Meeting, Rochester NY
805. May 1997 SUNY Oswego, Two Lectures
806. May 1997 SIAM Conference on Dynamical Systems, Snowbird UT
809. May 1997 University College, Cork, Ireland, Three Lectures
810. May 1997 Trinity College, Dublin, Ireland
818. June 1997 MAA Short Course, Salve Regina University, Eight Lectures
821. June 1997 Differential Equations Workshop, Davidson College, Three Lectures
824. June 1997 Differential Equations Workshop, DePaul University, Three Lectures
830. July 1997 University of California, Berkeley, Workshop on Chaos, Fractals, and More, Six Lectures
831. July 1997 Dartmouth College
832. September 1997 West Point
833. September 1997 University of Connecticut
837. October 1997 Math Field Day, Boston University, Four Lectures
838. October 1997 NCTM Regional Meeting, Anchorage AK
840. October 1997 Kansas City Regional Mathematics EXPO, Two Lectures
841. October 1997 NCTM Regional Meeting, Milwaukee
842. October 1997 NCTM Regional Meeting, Memphis
844. October 1997 Westminster School, Simsbury CT, Two Lectures
846. November 1997 ICTCM Annual Meeting, Chicago, Two Lectures
847. November 1997 NCTM Regional Meeting, Cleveland
848. November 1997 ATMNE Meeting, Nashua NH
849. December 1997 California Mathematics Council, Asilomar CA
850. December 1997 NCTM Regional Meeting, Uniondale NY
851. December 1997 Yale University
852. January 1998 AMS Annual Meeting, Baltimore, Special Session on Topology & Dynamics
853. January 1998 AMS Annual Meeting, Baltimore, Special Session on Math Instruction and the Worldwide Web
854. January 1998 MAA mini-course, AMS-MAA Annual Meeting, Baltimore
855. January 1998 Groton School
856. February 1998 NCTM Regional Meeting, Dallas
857. February 1998 University of Texas, Austin
858. February 1998 NCTM Regional Meeting, Denver
859. February 1998 University of Colorado, Boulder
862. February 1998 Virginia Tech, Three Lectures
863. March 1998 UMass Dartmouth
865. March 1998 Mathematics Field Day, Greenville/Spartanburg SC, Two Lectures

874. March 1998 Saginaw Valley State, Dow Lectures, Nine Lectures
 877. April 1998 NCTM Annual Meeting, Washington DC, Three Lectures
 879. April 1998 Fort Lewis College, Durango CO, Two Lectures
 881. April 1998 Math Field Day, UC Berkeley, Two Lectures
 884. April 1998 Jacksonville University, Three Lectures
 887. April 1998 Humboldt State University, Humboldt CA, Kieval Lectures, Three Lectures
 888. April 1998 College of the Redwoods, Eureka CA
 890. April 1998 Westminster School, Atlanta GA, Two Lectures
 891. April 1998 Holy Cross College
 892. June 1998 East Bridgewater Middle School
 893. June 1998 NCTM Standards 2000 Technology Conference, Washington DC
 901. June 1998 MAA Short Course, Messiah College, Grantham PA, Eight Lectures
 909. September 1998 Autonomous University of Barcelona, Eight Lectures
 910. September 1998 Midwest Dynamical Systems Meeting, Northwestern University
 911. October 1998 NCTM Regional Meeting, Louisville KY
 915. October 1998 Math Field Day, Boston University, Four Lectures
 916. November 1998 NCTM Regional Meeting, Reno NV
 917. November 1998 Amherst College
 919. November 1998 ICTCM Meeting, New Orleans, Two Lectures
 924. December 1998 Harvard University, TAS Lectures, Five Lectures
 925. January 1999 Rutgers University
 926. February 1999 Boston University Trustee Scholars Program
 927. February 1999 Wayne State University, Detroit
 929. March 1999 NCTM Regional Meeting, Great Falls MT, Two Lectures
 931. April 1999 Pi Mu Epsilon Meeting, St. John's University, Colleagueville MN, Two Lectures
 933. April 1999 Universidad Tecnológica Nacional, Buenos Aires, Argentina, Two Lectures
 934. April 1999 Universidad Javeriana, Bogotá, Colombia
 935. April 1999 Universidad Antonio Nariño, Bogotá, Colombia
 936. April 1999 Universidad de los Andes, Bogotá, Colombia
 937. April 1999 ITESM, Mexico City
 938. April 1999 NCTM Annual Meeting, San Francisco
 939. April 1999 Math Forum on Technology, San Francisco
 940. April 1999 St. Louis University, Case Lecture
 942. May 1999 Colby College, Two Lectures
 945. May 1999 Belmont Hill School, Nalebuff All-School Lecture, Three Lectures
 946. May 1999 Massachusetts Olympiad Banquet
 948. May 1999 Mathematics Field Day, Portland ME, Two Lectures
 949. May 1999 Math Awareness Week Lecture, Lexington HS
 957. June 1999 MAA Short Course, Allegheny College, Grantham PA, Eight Lectures
 958. June 1999 MAA Regional Meeting, Colby College
 966. June 1999 Chautauqua Short Course, Boston University, Eight Lectures
 967. July 1999 NCTM Regional Meeting, Honolulu HI
 968. July 1999 MAA Mathfest, Providence RI
 969. July 1999 MAA Mathfest, Student Session
 972. August 1999 Summer Conference on General Topology and Applications, Long Island University, Three Lectures
 973. September 1999 Salve Regina University
 976. September 1999 West Point, Three Lectures
 977. October 1999 North Carolina CTM Meeting, Greensboro NC

978. October 1999 North Carolina State University
 979. October 1999 ATMNE Meeting, Killington VT
 980. October 1999 AAPT Meeting, Milton Academy, Milton MA
 981. October 1999 NCTM Regional Meeting, Boise ID
 985. October 1999 Math Field Day, Boston University, Four Lectures
 986. November 1999 ICTCM Meeting, San Francisco
 988. November 1999 University of Rochester, Two Lectures
 989. November 1999 San Francisco State University
 990. November 1999 Wellesley College
 991. November 1999 NCTM Regional Meeting, Topeka KS
 992. December 1999 NCTM Regional Meeting, Phoenix
 997. December 1999 Teachers as Scholars Course, Harvard University, Five Lectures
 998. January 2000 International Conference on Difference Equations, Temuco, Chile
 999. February 2000 University of Southern Colorado
 1001. February 2000 Rocky Mountain Teachers Education Collaborative, Pueblo CO, Two Lectures
 1002. February 2000 Brigham Young University
 1004. March 2000 Maine Science and Mathematics Academy, Two Lectures
 1005. March 2000 NCTM Regional Meeting, Mobile AL
 1006. March 2000 Minnesota CTM Meeting, Duluth MN
 1007. April 2000 NCTM Annual Meeting, Chicago
 1009. April 2000 VMATYC Meeting, Big Stone Gap VA, Two Lectures
 1011. April 2000 University of Akron, Two Lectures
 1012. April 2000 Cheshire Academy
 1013. May 2000 CUNY Graduate Center
 1015. May 2000 University of Minnesota, Two Lectures
 1017. May 2000 University of California, Berkeley, Two Lectures
 1019. May 2000 Gunn HS, Palo Alto CA, Two Lectures
 1021. August 2000 AMS Summer Meeting, UCLA, Student Outreach Program, Two Lectures
 1022. August 2000 International Conference on Complex Analysis and Applications, Shen-Zhen
 University, Shen-Zhen City, China
 1025. September 2000 West Point, Three Lectures
 1026. October 2000 SCCTM Meeting, Myrtle Beach SC
 1028. October 2000 Arkansas School of Science and Mathematics, Two Lectures
 1032. October 2000 Math Field Day, Boston University, Four Lectures
 1040. October 2000 A2PMT Short Course, Wayland HS, Eight Lectures
 1041. October 2000 NCTM Regional Meeting, Omaha NE
 1042. October 2000 Northwest Mathematics Meeting, University of Victoria
 1043. October 2000 Pacific Institute of Mathematical Sciences, Victoria, BC
 1045. October 2000 MAA Regional Meeting, Wittenberg College, Springfield OH, Two Lectures
 1049. November 2000 European Council of Int'l Schools Conference, Nice, France, Four Lectures
 1051. December 2000 Greater Hartford Academy of Mathematics and Science, Two Lectures
 1053. December 2000 University of North Carolina, Two Lectures
 1054. January 2001 AMS Special Session on Chaotic Dynamics, New Orleans
 1055. January 2001 Autonomous University of Barcelona
 1056. January 2001 University of Barcelona
 1057. February 2001 NCTM Regional Meeting, Yakima WA
 1059. March 2001 Marist College, Poughkeepsie NY, Two Lectures
 1060. March 2001 Spring Topology and Dynamics Meeting, Morelia, Mexico
 1062. March 2001 Universidad Nacional Autónoma de México, Mexico City, Two Lectures

1065. March 2001 University of St. Thomas, St. Paul MN, Three Lectures
1066. March 2001 University of Minnesota
1067. April 2001 NEMATYC Meeting, Lowell MA
1068. April 2001 NCTM Annual Meeting, Orlando
1069. May 2001 Educational Development Corp., Newton MA
1070. June 2001 Teaching and Learning with Technology Roundtable, Boston University
1071. July 2001 International Conference on Difference Equations, Augsburg, Germany
1072. September 2001 NCTM Regional Meeting, Columbus OH
1078. October 2001 American School, Mexico City, Six Lectures
1079. October 2001 DeAnza College, Cupertino CA
1080. October 2001 NCTM Regional Meeting, Somerset NJ
1084. October 2001 Math Field Day, Boston University, Four Lectures
1085. November 2001 Choate-Rosemary Hall, Wallingford CT
1086. November 2001 ICTCM, Baltimore
1087. November 2001 SCCTM Meeting, Greenville SC
1088. November 2001 Topology and Dynamics Meeting, University of Florida
1090. January 2002 AMS-MAA Meeting, San Diego, MAA Mini-course, Two Lectures
1091. January 2002 AMS-MAA Meeting, San Diego, Short Course on Symbolic Dynamics
1092. January 2002 AMS-MAA Meeting, San Diego, Jubilee Session for Benoit Mandelbrot
1093. January 2002 AMS-MAA Meeting, San Diego, Special Session on Symbolic Dynamics
1097. January 2002 UCLA, Four Lectures
1099. February 2002 UC Berkeley, Two Lectures
1101. February 2002 Gunn HS, Palo Alto CA, Two Lectures
1102. February 2002 Teachers' Workshop, Union Township NJ
1103. March 2002 Columbia University
1104. March 2002 Teachers' Workshop, Hillsborough HS, Hillsborough NJ
1105. March 2002 MathCounts Meeting, University of Hartford
1106. March 2002 MCTM Meeting, Duluth MN
1107. March 2002 University of North Dakota
1108. March 2002 Western Washington University
1109. April 2002 Parsons Lecture, UNC Asheville
1110. April 2002 Midwest Dynamics Meeting, UNC Asheville
1112. April 2002 Kalamazoo College, Kitchen Lectures, Two Lectures
1113. April 2002 Battle Creek Area Math and Science Center, Battle Creek MI
1114. April 2002 Kalamazoo Area Math and Science Center, Kalamazoo MI
1115. April 2002 NCTM Annual Meeting, Las Vegas
1116. April 2002 Hudson River Undergraduate Mathematics Conference, Keynote Address, Hamilton College, Clinton NY
1117. May 2002 Concordia University, Montréal
1118. June 2002 Conference on Complex Systems, Nashua NH
1122. June 2002 Chautauqua Short Course on Differential Equations, Boston University, Four Lectures
1123. July 2002 Topology Meeting, Auckland, New Zealand
1125. July 2002 Project NExT Workshop, Burlington VT, Two Lectures
1126. August 2002 Boston University Academy
1127. September 2002 Metropolitan Mathematics Club, Chicago
1129. September 2002 Bard College, Two Lectures
1130. October 2002 NCTM Regional Meeting, Paducah KY
1131. October 2002 NCTM Regional Meeting, Regina, Saskatchewan

1135. October 2002 Math Field Days, Boston University, Four Lectures
1136. November 2002 ICTCM, Orlando FL
1137. November 2002 NCTM Regional Meeting, Boston
1138. December 2002 Dover-Sherborn HS
1139. January 2003 Technische Universität München
1140. January 2003 TUM & Ludwig Maximilians Universität München
1142. January 2003 Texas Christian University, Two Lectures
1144. January 2003 Greater Hartford Academy of Mathematics and Science, Two Lectures
1146. January 2003 Hamden Hall School, Hamden CT, Two Lectures
1147. February 2003 University of Houston
1149. February 2003 AP Teachers Workshop, Houston, Two Lectures
1150. February 2003 Jacksonville University
1151. February 2003 MAA Florida Chapter Annual Meeting, Jacksonville FL
1152. March 2003 Michigan Mathematics Prize Banquet, Delta College
1153. March 2003 Clay Mathematics Institute, Cambridge MA
1154. March 2003 Spring Topology Meeting, Texas Tech
1155. March 2003 Tamalpais HS, Mill Valley CA
1156. April 2003 NCSSM Meeting, San Antonio TX
1159. April 2003 Knox College, Three Lectures
1160. April 2003 Boston College
1161. June 2003 Dynamics in the Complex Plane Conference, Søminestationen, Holbæk, Denmark
1162. July 2003 GK12 Meeting, Physics Dept., Boston University
1163. July 2003 J. Sutherland Frame Lecture, MAA MathFest, University of Colorado
1167. July 2003 MAA MathFest Mini-course, University of Colorado, Boulder, Four Lectures.
1169. July 2003 Project NExT Workshop, University of Colorado, Boulder, Two Lectures
1171. September 2003 Institut Henri Poincaré, Paris, Two Lectures
1174. October 2003 National Summit on the Education of Teachers, Arlington VA, Three Lectures
1175. October 2003 Connecticut College
1176. October 2003 NCTM Regional Meeting, Salt Lake City UT
1180. October 2003 Math Field Days, Boston University, Four Lectures
1181. October 2003 ICTCM, Chicago
1182. November 2003 Tulane University
1183. November 2003 NCTM Regional Meeting, Charleston SC
1184. November 2003 Charleston College
1186. November 2003 NCTM Regional Meeting, Edmonton AB, Canada, Two Lectures
1187. December 2003 MSP Colloquium, Boston University
1189. January 2004 AMS/MAA Annual Meeting, Phoenix AZ, Two Lectures
1190. January 2004 Florida State University
1192. February 2004 University of Alabama, Birmingham, Two Lectures
1193. February 2004 Amherst College
1194. February 2004 UMass Dartmouth
1195. February 2004 Moravian College, Bethlehem PA
1197. March 2004 City University of Hong Kong, Two Lectures
1198. March 2004 Arlington High School, Arlington MA
1199. March 2004 University of Massachusetts, Lowell MA
1200. March 2004 Spring Topology Meeting, University of Alabama, Birmingham
1201. March 2004 Clay Mathematics Institute
1203. April 2004 Math Field Day, University of California, Berkeley, Two Lectures
1205. April 2004 Math Field Day, Gunn HS, Palo Alto, CA, Two Lectures

1206. April 2004 Watertown High School, Watertown MA
 1207. April 2004 Holy Cross College
 1208. April 2004 Metcalf Award Presentation, Boston University
 1212. May 2004 Keio University, Yokohama, Japan, Four Lectures
 1213. May 2004 Kyoto University, Kyoto, Japan
 1217. July 2004 Chautauqua Short Course, Boston University, Four Lectures
 1218. August 2004 International Conference on Difference Equations and Applications,
 University of Southern California
 1219. October 2004 Teachers' Workshop, Lawrence HS, Lawrence MA
 1220. October 2004 Boston University Dynamics Seminar
 1221. October 2004 ICTCM, New Orleans
 1222. October 2004 Midwest Dynamical Systems Meeting, University of Cincinnati
 1226. October 2004 Math Field Days, Boston University, Four Lectures
 1227. November 2004 University of Minnesota
 1228. November 2004 NCTM Regional Meeting, New Orleans
 1229. November 2004 NCTM Regional Meeting, Minneapolis
 1230. December 2004 CUNY Graduate Center
 1231. December 2004 Holomorphic Dynamics Meeting, University of Warwick
 1232. January 2005 AMS/MAA Annual Meeting, Atlanta. Special Session on Contemporary Topics
 1233. February 2005 Colby College
 1235. February 2005 Portland State University, Portland OR, Two Lectures
 1236. February 2005 Wentworth Institute of Technology, Boston, MA
 1237. March 2005 Ossining HS, Ossining NY
 1239. March 2005 University of Florida, Two Lectures
 1240. March 2005 California State University, Fresno CA
 1241. April 2005 Hendrix College, Conway AR
 1243. April 2005 Ingram Lectures, University of Missouri, Rolla, Two Lectures
 1244. April 2005 Cisler Lecture, Lawrence Technological University, Southfield, MI
 1245. April 2005 Preskenis Lecture, Framingham State College
 1246. May 2005 Washington State Two Year College Mathematics Conference,
 Ocean Shores WA
 1248. May 2005 Math Field Day, Berkeley CA, Two Lectures
 1256. June 2005 Focus on Math Workshop, Waltham MA, Eight Lectures
 1257. June 2005 Banach Center, Warsaw, Poland
 1258. June 2005 American School of Warsaw, Warsaw, Poland
 1259. July 2005 International Conference on Difference Equations, Munich, Germany
 1260. August 2005 MAA Mathfest, Plenary Lecture, Albuquerque NM
 1262. August 2005 MAA Mathfest, Albuquerque NM, Project NExT Workshop, Two Lectures
 1263. August 2005 MAA Mathfest, Special Session on Dynamical Systems,
 Albuquerque NM
 1264. August 2005 Young Mathematicians Conference, Ohio State University
 1272. August 2005 Focus on Math Workshop, Waltham MA, Eight Lectures
 1273. September 2005 Oliver Lecture, Williams College, Williamstown MA
 1274. September 2005 Medgar Evers College, Brooklyn NY
 1275. October 2005 University of Michigan, Ann Arbor MI
 1276. October 2005 NCTM Regional Meeting, Hartford CT
 1277. October 2005 Cornell University, Ithaca NY
 1278. October 2005 NCTM Regional Meeting, Birmingham AL
 1280. October 2005 Rhodes College, Memphis TN, Two Lectures

1281. November 2005 NCTM Regional Meeting, Denver CO
1282. November 2005 Boston University College of Engineering
1283. November 2005 Boston University Dynamics Seminar
1284. December 2005 Holy Cross College, Worcester MA
1285. January 2006 AMS-MAA Joint Meetings, San Antonio TX. Special Session on Attracting Students to Mathematics
1286. January 2006 University of Barcelona, Barcelona, Spain
1288. January 2006 University of Warwick, Coventry, UK, Two Lectures
1289. January 2006 University of Liverpool, Liverpool, UK
1291. January 2006 University of Manchester, Manchester, UK, Two Lectures
1292. February 2006 The Open University, Milton Keynes, UK
1294. February 2006 Queen Mary University, London, UK, Two Lectures
1295. February 2006 King's College, London, UK
1296. February 2006 University of Surrey, Guildford, UK
1297. February 2006 Imperial College, London, UK
1298. February 2006 College of Charleston, Charleston SC
- 1300.. February 2006 College of Charleston, Math Meet 2006, Two Lectures
1302. March 2006 Fields Institute, Toronto, CN, Two Lectures
1303. March 2006 Rutgers University
1304. March 2006 Spring Topology and Dynamics Conference, UNC Greensboro
1305. March 2006 Tulane University, New Orleans
1306. April 2006 Brown University
1307. April 2006 MAA Regional Meeting, New Jersey Section
1308. May 2006 Academia Sinica, Taipei, Taiwan
1309. May 2006 Tam Kang University, Taiwan
1311. May 2006 National Chiao Tung University, Hsin-Chu, Taiwan, Two Lectures
1312. June 2006 Stefan Banach Institute, Warsaw, Poland
1313. July 2006 Summer Conference on Topology and Applications, Georgia Southern University, Statesboro GA
1314. September 2006 NCTM Regional Meeting, Chicago
1315. September 2006 Walter Payton College Prep HS, Chicago
1316. October 2006 Grand Valley State University, Allendale MI
1317. October 2006 Hope College, Holland MI
1321. October 2006 Math Field Days, Boston University, Four Lectures
1324. November 2006 ECIS Meeting, Nice, France, Three Lectures
1327. November 2006 Berkshire School, Sheffield MA, Three Lectures
1331. January 2007 TAS Lectures, Tufts University, Four Lectures
1332. February 2007 MathCounts, University of Hartford, Hartford CT
1333. February 2007 ICTCM, Boston MA
1339. March 2007 Texas Christian University, Fort Worth TX, Green Honors Lectures, Six Lectures
1341. March 2007 Norman Johnson Lecture, Wheaton College, Norton MA, Two Lectures
1342. March 2007 University of Virginia
1343. March 2007 Phillips Academy, Andover MA
1345. March 2007 Owens Lectures, Wayne State University, Detroit Two Lectures
1346. March 2007 Spring Topology Meeting, University of Missouri, Rolla
1347. April 2007 Simmons College, Boston MA
1349. May 2007 Math Field Day, University of California, Berkeley, Two Lectures
1350. May 2007 Sigma Xi Lecture, UMass Lowell MA

1351. May 2007 AMS-Mexican Math society Meeting, Zacatecas, Mexico
1352. June 2007 Dynamical Systems Conference, Bolu, Turkey
1353. June 2007 Symbolic Dynamics Workshop, Boston University
1354. July 2007 Int'l Conference on Difference Equations, Lisbon, Portugal
1355. August 2007 AMS-PTM Meeting, Warsaw, Poland
1356. September 2007 Conference on Chaos and Nonlinear Dynamics, Aberdeen, Scotland
1357. October 2007 NCTM Regional Meeting, Kansas City MO
1358. October 2007 Undergraduate Student Conference, Bentley College, Waltham MA
1362. October 2007 Math Field Days, Boston University, Four Lectures
1363. November 2007 MAA Northeastern Section Meeting, Framingham State College, Framingham MA
1364. November 2007 ATMNE, Springfield MA
1366. November 2007 Arlington HS, Two Lectures
1367. November 2007 NCTM Regional Meeting, Houston TX
1368. November 2007 University of Houston, Houston TX
1369. December 2007 Boston University Dynamics Seminar
1370. January 2008 Kochi University, Kochi, Japan
1371. January 2008 Keio University, Yokohama, Japan
1372. January 2008 Kyoto University, Kyoto, Japan
1373. January 2008 Kyushu University, Fukuoka, Japan
1374. February 2008 Allegheny College, Meadville PA
1375. February 2008 Wellesley College, Wellesley MA
1378. February 2008 University of North Carolina, Charlotte, NC, Three Lectures
1379. March 2008 Brigham Young University, Provo UT
1381. March 2008 Three Rivers Community College, Norwich CT, Two Lectures
1382. April 2008 University of Barcelona
1383. April 2008 CosmoCaixa (Cultural Center), Tarragona, Spain
1384. April 2008 CosmoCaixa (Science Museum), Barcelona, Spain
1387. May 2008 Workshop on Topological Methods in Algebra, Analysis, & Dynamical Systems, Nipissing University, North Bay, Ontario, Canada, Three Lectures
1388. May 2008 Workshop on Low Complexity Dynamics, Banff International Research Station, Canada
1389. June 2008 Joint Canadian-French Mathematical Society Meeting, Montreal, Canada
1390. June 2008 Conference on Research and Teaching in the Mathematical Sciences, Montclair State University, Montclair NJ
1391. June 2008 Conference on Fractal Geometry, Richmond VA
1392. June 2008 International Conference on Dynamical Systems, Bedlewo, Poland
1393. September 2008 Denham Quantitative Management, Boston MA
1395. September 2008 Summer School in Complex Systems, Ambleside, UK, Two Lectures
1399. October 2008 Math Field Days, Boston University, Four Lectures
1400. November 2008 MAA Regional Meeting, Hood College, Frederick MD
1401. November 2008 Project NExT Workshop, Hood College, Frederick MD
1403. December 2008 Pennsylvania State University, State College PA
1404. December 2008 Choate Rosemary Hall, Wallingford CT
1405. December 2008 West Chester University, West Chester PA
1406. January 2009 AMS-MAA Annual Meeting, Special Session on Difference Equations, Washington, DC
1407. February 2009 Bielefeld University, Bielefeld, Germany
1408. February 2009 Netherlands Math Teachers Meeting, Noordwijkerhout, Holland
1409. February 2009 UMass Dartmouth

1410. February 2009 Harvey Mudd College, Claremont CA
1411. February 2009 University of California, Riverside CA
1412. February 2009 University of Southern California, Los Angeles CA
1413. March 2009 SUMS Undergraduate Conference, Brown University
1414. March 2009 Conference on Mathematics and Culture, Venice, Italy
1415. March 2009 Connecticut MathCounts, Hartford CT
1416. March 2009 Harvard University
1418. April 2009 MATYCONN, Bridgeport CT, Two Lectures
1419. April 2009 Long Island Mathematics Conference, SUNY Old Westbury NY
1420. June 2009 Conference on Advances in Low Dimensional Dynamics, Stony Brook University
1421. June 2009 Conference on Complex Dynamics, Toulouse, France, Two Lectures
1423. June 2009 Workshop on Complex Dynamics, Boston University
1424. July 2009 The Teaching Company, Chantilly VA
1426. August 2009 CIMAT, Guanajuato, Mexico, Two Lectures
1430. October 2009 Math Field Days, Boston University, Four Lectures
1431. October 2009 NCTM Regional Meeting, Boston MA
1432. October 2009 Central Connecticut State University, New Britain CT
1433. November 2009 NCTM Regional Meeting, Minneapolis MN
1434. November 2009 Manhattan College, Riverdale NY
1436. November 2009 Center for Talented Youth, Boston University, Two Lectures
1438. November 2009 Arlington HS, Arlington MA, Two Lectures
1441. December 2009 University of Barcelona, Barcelona, Spain, Three Lectures
1442. February 2010 UNAM, Cuernavaca, Mexico
1443. March 2010 Lehman College, CUNY, New York City
1444. March 2010 CUNY Graduate Center, New York City
1445. March 2010 Brigham Young University, Provo UT
1447. March 2010 Weston HS, Weston MA, Two Lectures
1448. March 2010 Holy Cross College, Worcester MA
1449. April 2010 AMS Regional Meeting, Minneapolis MN
1450. April 2010 Boston University CAS Advisory Board
1451. April 2010 NCTM Annual Meeting, San Diego CA
1452. July 2010 International Conference on Difference Equations, Riga, Latvia
1455. August 2010 Hedrick Lectures, MAA MathFest, Pittsburgh PA, Three Lectures
1456. September 2010 University of Notre Dame, South Bend IN
1457. October 2010 Oxtoby Conference, Bryn Mawr College, Bryn Mawr PA
1461. October 2010 Math Field Days, Boston University, Four Lectures
1462. October 2010 Bowdoin College, Brunswick ME
1463. November 2010 IMPAN, Warsaw, Poland
1479. December 2010 The Teaching Company, Chantilly VA. Sixteen Recorded Lectures
1487. December 2010 The Teaching Company, Chantilly VA. Eight Recorded Lectures
1488. February 2011 Connecticut MathCounts, University of Hartford
1489. February 2011 University of Connecticut
1491. March 2011 Weston HS, Weston MA, Two Lectures
1492. March 2011 Spring Topology and Dynamical Systems Conference, University of Texas, Tyler TX
1493. March 2011 ICTCM, Denver CO
1495. March 2011 Acalanes HS, Lafayette CA, Two Lectures
1496. April 2011 St. Joseph's University, Philadelphia PA
1497. April 2011 IUPUI, Indianapolis IN

1498. April 2011 Fitchburg State College, Fitchburg MA
1501. May 2011 Universidade de São Paulo, São Paulo, Brazil, Three Lectures
1502. June 2011 IMPA, Rio de Janeiro, Brazil
1503. June 2011 Universidade Estadual de Campinas, Campinas, Brazil
1504. August 2011 MAA MathFest, Lexington KY, Special Session on Complex Dynamics
1506. August 2011 MAA MathFest, Lexington KY, Project NExT Workshop on Differential Equations, Two Lectures
1507. September 2011 Conference on Complexity, University of Vienna, Austria
1508. September 2011 Harvey Mudd College, Claremont CA
1509. September 2011 US Military Academy, West Point NY
1510. October 2011 Simmons College, Boston MA
1511. November 2011 Carleton College, Northfield MN
1512. November 2011 St. Olaf College, Northfield MN
1514. January 2012 MAA Mini-course, AMS-MAA Joint Meeting, Boston MA, Two Lectures
1515. January 2012 AMS-MAA Joint Meeting, Special Session on Fractal Geometry, Boston MA
1516. January 2012 AMS-MAA Joint Meeting, Special Session on Dynamical Systems, Boston MA
1517. January 2012 Providence College, Providence RI
1518. February 2012 Madison College, Madison WI
1519. March 2012 ICERM, Brown University, Providence RI
1520. March 2012 Weston HS, Weston MA, Two Lectures
1521. March 2012 Fudan University, Shanghai, China
1522. March 2012 Sacred Heart University, Fairfield CT
1523. March 2012 MAA Regional Meeting, Bellarmine University, Louisville KY
1524. April 2012 Conference on Ergodic Methods in Dynamics, Bedlewo, Poland
1526. May 2012 Cankaya University, Ankara, Turkey, Two Lectures
1527. June 2012 MAA Distinguished Lecture, Washington DC
1528. July 2012 ICDEA, Barcelona, Spain
1532. October 2009 Math Field Days, Boston University, Four Lectures
1534. October 2012 Bartlett Lecture, University of Arizona, Tucson AZ, Two Lectures
1536. November 2012 Center for Talented Youth Workshop, Boston University, Two Lectures
1538. November 2012 US Military Academy, West Point NY
1539. December 2012 Florida Center for Research, St. Petersburg FL
1540. January 2013 Purdue University, West Lafayette IN
1541. January 2013 Class of '42 Lecture, Bridgewater State University, Bridgewater MA
1542. February 2013 MathCounts, University of Hartford, Hartford CT
1543. February 2013 James Madison University, Harrisonburg VA
1544. February 2013 Ulam Lecture, University of Florida, Gainesville FL
1545. February 2013 MAA Golden Section Regional Meeting, Stockton CA
1546. February 2013 MAA LA-MS Section Regional Meeting, University of Southern Mississippi, Hattiesburg MS, Two Lectures
1547. March 2013 University of Rome Tor Vergata, Rome, Italy
1548. March 2013 Spring Topology and Dynamics Meeting, CCSU, New Britain CT
1550. April 2013 Weston HS, Weston MA, Two Lectures
1551. April 2013 MAA Southwest Section Regional Meeting, New Mexico Institute of Mining and Technology, Socorro NM
1552. April 2013 MAA Wisconsin Section Regional Meeting, University of Wisconsin, Marshfield WI
1553. April 2013 MAA Missouri Section Regional Meeting, Northwest Missouri State University, Maryville MO

1554. April 2013	NCTM Annual Meeting, Denver CO
1555. August 2013	Irish Math Society Meeting, National University of Ireland Maynooth, Ireland
1556. September 2013	International Symposium on Complex Systems, Prague, Czech Republic
1557. September 2013	Antler Lecture, IEEE Meeting, Newport RI
1558. September 2013	Karen Ames Memorial Lecture, University of Alabama, Huntsville, AL
1559. November 2013	AMATYC Meeting, Anaheim CA
1562. November 2013	Conference on Fractals, Cochin, India, Three Lectures
January 2014	University of California, Irvine
February 2014	Weston HS, Two Lectures
February 2014	MAA Florida Section Regional Meeting, Edison College, Fort Meyers FL
March 2014	MAA Southeastern Section Regional Meeting, Tennessee Tech, Cookeville TN
April 2014	NCTM Annual Meeting, New Orleans LA
April 2014	MAA Texas Section Regional Meeting, Texas A&M International University, Laredo, TX
May 2014	Ibero-American Conference on Geometry, CUNY Graduate Center
June 2014	MAA Pacific Northwest Section Regional Meeting, University of Montana, Missoula, MT, Two Lectures
October 2014	MAA Ohio Section Meeting, Wittenberg University, Springfield, OH
November 2014	AMATYC Annual Meeting, Nashville TN
January 2015	Retiring Presidential Address, JMM San Antonio, TX

Other Professional Activities:

August 1979	Tufts University, Co-organizer of Conference on Recent Developments in Celestial Mechanics
October 1984	Boston University, Organizer of Conference on Chaos and Applications of Nonlinear Dynamics in the Sciences
April 1985	University of Cincinnati, Film Presentation
October 1985	Lamont Art Gallery, Phillips Exeter Academy, Exhibit of mathematical pictures
March 1986	Boston University Gallery, Exhibit
April 1986	The Computer Museum, Boston, Exhibit
June 1986	Engineering Foundation Conference, Henniker NH Film Presentation
August 1986	International Congress of Mathematicians, Berkeley, Film Presentation
January 1987	Panelist, "What makes news in mathematics," AMS Meeting, San Antonio
February 1987	Exhibit and Gallery Presentation Mount Holyoke, College Art Gallery
February 1987	AAAS Annual Meeting, Organizer, Symposium on Computer Graphics and Dynamical Systems
March–April 1987	Film Exhibit, Science Museum, Boston
April 1987	Boston Area Coordinator, Mathematics Awareness Week

June 1988	Address to winners of USA Mathematical Olympiad, National Science Foundation, Washington DC
August 1988	Co-organizer, AMS Short Course on Chaos and Fractals, AMS Centennial Meeting, Providence, RI
September 1988-89 May 1989	Organizing committee, Special Year in Symplectic Geometry MSRI, University of California, Berkeley
October 1989	Calculus Reform Meeting Panelist: "Research Topics in Calculus Courses," University of Minnesota
August 1989	Summer AMS-MAA Meeting Panelist: "The Role of the Computer in Calculus Courses"
November 1989	Three Day Workshop for Teachers, North Carolina Center for Advancement of Teaching, Co-organized with E. Lorenz
November 1989	Consultant for Development of Dynamics Program, Oberlin College
February 1990	Organizer, Short Course on Chaos, AAAS Annual Meeting, New Orleans
January 1991	Organizer, Conference on Chaos and Fractals in the Secondary Schools, Boston University
February 1992	NSF Site Review Team, Statewide Systemic Initiative
September 1992	NSF Panel for Teachers' Collaboratives Initiative
January 1993-97	Member, PBS Advisory Board for Mathematics
January 1994-97	Sigma Xi National Lecturer
January 1994-98	Advisory Board, FIPSE Project, Baruch College
January 1994	Organizer, AMS Short Course on Complex Analytic Dynamics, AMS Annual Meeting, Cincinnati, OH
November 1994	Computer workshop and panel discussion, ICTCM, Orlando
March 1995	Address to Presidential Awardees, Langley Theater, National Air and Space Museum, Washington DC
July 1995	Invited presenter/participant, White House Conference on Science and Mathematics Education, National Academy of Sciences
January 1996	Panelist "You're the Author—What Next?" AMS-MAA Annual Meeting, Orlando
January, 1996	NCTM Algebra Convocation Committee
August 1996	"Chaos" consultant at Huntington Theater for <i>Arcadia</i>
September 1996	Presentation at Arts and Humanities Forum, Huntington Theater, Following performance of <i>Arcadia</i>
February 1997-03	Chair, AMS Student Mathematics Library Committee
July 1997	Consultant for Dartmouth College presentation of <i>Arcadia</i>
March 1998	Departmental Review Committee, University of Minnesota, Duluth, Chair
February 2000-04	Chair, AMS Arnold Ross Lecture Series Committee
February 2000-04	AMS Committee on Education
June 2000	Departmental Review Committee, University of Houston
August 2000	Principal Lecturer at AMS World Mathematics Year

	2000 Outreach Program, UCLA
March 2002	Departmental Review Committee, Brooklyn College
March 2002	Departmental Review Committee, UMass Dartmouth
January 2003-09	MAA Dolciani Series Committee
January 2003-07	MAA Haimo Award Committee
October 2003	Chair, Committee of Visitors for CETP and STEMTP Programs, National Science Foundation
May 2003-06	NSF-EHR Advisory Board
June 2004	Organizer, AMS-IMS-SIAM Summer Research Conference on Complex Dynamics, Snowbird, UT
June 2005	Chair, Committee of Visitors for MSP Partnership Programs, National Science Foundation
January 2006	London Math Society Scheme Two Distinguished Visitor
February 2007-10	Council of the AMS
February 2007	Mathematical Consultant for the film Twenty-One
July 2007	Co-organizer, Special Session on Complex Dynamics, AMS-PTM Meeting, Warsaw, Poland
September 2007-10	AMS Committee on Publications
May 2008	AMS representative to the annual meeting of the Canadian Math Society, Montréal
October 2008	Chair, SIAM Moser Prize Committee
January 2009-10	Chair, AMS Committee on Publications
April 2009	Departmental Review Committee, UMass Lowell
May 2009	Departmental Review Committee, UMass Dartmouth
November 2009-12	Chair, Carus Monograph Series Committee, MAA
January 2010-	MAA Committee on Books
June 2010	Co-organizer, Special Session on Complex Dynamical Systems, AIMS Meeting, Dresden, Germany
June 2010-12	MAA Program Committee for Joint Math Meetings in Boston, 2012
October 2010	Co-organizer, Conference for Linda Keen's 70 th Birthday, CUNY, New York City
January 2011	Judge for Art and Math Exhibit, Joint Math Meetings, New Orleans
May 2011	Co-organizer, Workshop on Holomorphic Dynamics, Clay Math Institute, Cambridge, MA
January 2011-12	Member, MAA Carriage House Lecture Committee
February 2012-13	President-Elect, MAA
February 2012-2015	Member, MAA Executive Committee
February 2012-2015	Member, MAA Committee on Councils and Committees
February 2012-2015	Member, MAA Personnel Committee
February 2012-2015	Member, MAA Committee on Compensation
February 2012-2015	Member, MAA Council on Meetings and Professional Development
July 2012	Co-organizer, Special Session on Complex Dynamics, Int'l Conference On Difference Equations and Applications, Barcelona, Spain
February 2013-14	MAA Representative to the AAAS

February 2013-15	President, MAA
May 2013-15	Member, CBMS Executive Committee
May 2014-15	Co-chair, CBMS 2014 Forum on the First Two Years of Undergraduate Mathematics Education
May 2013-14	Member, JPBM Communication Award Selection Committee
August 2013-16	Steering Committee, Mathematical Congress of the Americas
February 2015-16	Past-President, MAA

Editorial Positions:

1991-2011	Associate Editor, International Journal of Bifurcation and Chaos
1992-96	Associate Editor, Experimental Mathematics
1997-2012	Associate Editor, Journal of Difference Equations and Applications
2000-10	Associate Editor, Qualitative Theory of Dynamical Systems
2001	Guest Editor, Special Issue of the Journal of Difference Equations and Applications dedicated to A. Sharkovsky
2002-	Editorial Board, Topology Proceedings
2002-	Associate Editor, Southeast Asian Bulletin of Mathematics
2003-2012	Book Reviews Editor, Bulletin of the American Mathematical Society
2004-07	Associate Editor, Discrete and Continuous Dynamical Systems
2007-	Associate Editor, Topology and its Applications
2013-	Associate Editor, Journal of Fractal Geometry