

CURRICULUM VITA

Edward Ott

Distinguished University Professor of Electrical Engineering and of Physics

I. Personal Data:

Date and Place of Birth: Dec. 22, 1941, New York City, NY

Home Address: 12421 Borges Ave., Silver Spring, MD 20904

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II. Education:

B.S. (1963), Electrical Engineering, The Cooper Union.

M.S. (1965), Electrophysics, Polytechnic University.

Ph.D. (1967), Electrophysics, Polytechnic University.

III. Experience:

1967-1968 NSF Postdoctoral Fellow, Department of Applied Mathematics and Theoretical Physics, Cambridge University, Cambridge, U.K.

1968-1979 Faculty of the Department of Electrical Engineering, Cornell University, Ithaca, NY.

1976 and 1971-1972 Plasma Physics Division, Naval Research Laboratory, Washington, D.C.

1985 Institute for Theoretical Physics, University of California, Santa Barbara, CA.

1979-Present Department of Physics and Department of Electrical Engineering, University of Maryland, College Park, MD.

IV. Professional Activities:

Fellow, American Physical Society.

Fellow, IEEE.

Fellow, World Innovation Foundation.

Listed in the Highly Cited Researchers Database of the ISI.

Associate Editor, *Physics of Fluids* (1977–1979).

Correspondent, *Comments on Plasma Physics* (1983–1993).

Board of Editors, *Physical Review A* (1986–1988).

Divisional Associate Editor, *Physical Review Letters* (1989–1993).

Editor of Special Issue of *Chaos on Chaotic Scattering* (1993).

Advisory Board, *Chaos: An Interdisciplinary Journal of Nonlinear Science* (1991–2000).

Editorial Board, *Chaos: An Interdisciplinary Journal of Nonlinear Science* (2000–2003).

Editorial Board, *Dynamics and Stability of Systems* (1995–2000).

Editorial Board, *Central European Journal of Physics* (2002–present).

Editor, *Physica D: Nonlinear Phenomena* (1999–2002).

Editor of Special Issue of *Physica D on Dynamics on Networks* (2006).

Advisory Panel, *Encyclopedia of Nonlinear Science* (2001–present).

Chairman, Gordon Conference on Space Plasmas (1975). (Initiator of the series of Gordon Conferences on Space Plasmas which have continued since 1975.)

Vice chairman, Gordon Conference on Nonlinear Science (2003).

Chairman, Gordon Conference on Nonlinear Science (2005).

Organizing committee, International Conference on High Power Electron and Ion Beam Research, Ithaca, NY (1976).

Program committee, Annual Fusion Theory Conference (1978).

Organizing committee, D.O.E. Fusion Transport Workshop (1978).

Local arrangements, Annual Fusion Theory Conference, Arlington, VA (1983).

Organizing committee, Conference on “Chaos in Dynamical Systems,” College Park, MD (1983).

Organizer, International Conference on Stochasticity and Turbulence in Plasmas, Santa Barbara (1985).

Organizing Committee, Workshop on Chaos and Transport in Fluids and Plasmas, College Park, MD (1990).

Chairman, Organizing Committee, Dynamics Days 2001, College Park, MD (2001).

Organizing Committee, Dynamics Days 2006, College Park, MD (2006).

Consultant or Past Consultant: Naval Research Laboratory, Naval Surface Warfare Center, SAIC Corp., Berkeley Research Associates, GA Technologies, Southeast Center for Electrical Engineering Education.

Publications Committee of the Plasma Physics Division of the APS (Chairman: 1983–1986, member: 1986–1994).

Delegate to National Academy of Sciences — Soviet Academy of Sciences Conference on Earthquakes as a Nonlinear System (1988).

Organizer, Program on Stochasticity and Turbulence in Plasmas, Center for Theoretical Physics, Santa Barbara, CA (1/85–7/85).

ERDA Panel for the assessment of fusion in long electron-beam-heated solenoids (1976).

DOE Panel for the assessment of fusion by charged particle rings (1983).

Review panel for ONR physics program (1987).

Fellowship Committee, Plasma Division of APS (1992).

Human Rights Committee, IEEE Nuclear and Plasma Science Society (1993–1998).

Employment Committee, IEEE Nuclear and Plasma Science Society (1993–1996).

Selection Committee for the Dannie Heineman Prize for Mathematical Physics (committee member, 1997; chairman, 1998).

Advisory Board of the SIAM Dynamical Systems Activity Group (1999–2000, 2006–2007).

Committee Evaluating DOE Office of Fusion Energy's programs on Basic Plasma Physics and Innovative Confinement Concepts (2004–2005).

V. Publications:

A. Articles in Refereed Journals

1. 2N-Port Directional Couplers, IEEE Trans. on MTT MTT-14, 578 (1966).
2. Electromagnetic Pulse Propagation in Lossless Inhomogeneous, Dispersive, Dielectric Media, J. Appl. Phys. **38**, 4632 (1967).
3. Transient Radiation in a Plane Stratified Dispersive Medium I, Half-Space Configuration, Canadian J. Phys. **46**, 1059 (1968). (With J. Shmoys).
4. Transient Aspects of Transition Radiation, Quarterly of Appl. Math., **XXV**, 377 (1968). (With J. Shmoys).
5. Transition Radiation and the Cerenkov Effect, Quarterly of Appl. Math. **XXVI**, 187 (1968). (With J. Shmoys).
6. Reflection of Waves at an Interface in a Streaming Plasma, J. Plasma Phys. **2**, 381 (1968). (With P. C. Clemmow).
7. Transient Radiation in a Plane Stratified Medium II, Exponential Profile, Plasma Slab, and Plasma Gap, Canadian J. Phys. **47**, 1435 (1969). (With J. Shmoys).
8. Nonlinear Theory of Ion Acoustic Waves with Landau Damping, Phys. Fluids **12**, 2388 (1969). (With R. N. Sudan).
9. Damping of Solitary Waves, Phys. Fluids **13**, 1432 (1970). (With R. N. Sudan).
10. Relativistic Synchrotron Plasma Wave Echo, J. Plasma Phys. **4**, 471 (1970).
11. Theory of Triggered VLF Emissions, J. Geophys. Res. **6**, 4463 (1971). (With R. N. Sudan).
12. Nonlinear Landau Damping and Beat Wave Trapping, Phys. Fluids **14**, 959 (1971). (With C. T. Dum).
13. Damping of a Large Amplitude Ion Acoustic Solitary Wave, Phys. Fluids **14**, 748 (1971).
14. Three Wave Mode Coupling Theory of Nonresonantly Unstable Waves, Phys. Fluids **14**, 442 (1971).
15. Nonlinear Explosive Ion Beam Plasma Interaction, Plasma Phys. **13**, 177 (1971). (With C. T. Dum).
16. Turbulence Induced Electron-Ion Cross Field Streaming Instability, Phys. Fluids **14**, 1460 (1971).

17. Toroidal Equilibria of Electrically Unneutralized Intense Relativistic Electron Beams, *Plasma Phys.* **13**, 529 (1971).
18. Finite Beta Equilibria of Relativistic Electron Beams in Toroidal Geometry, *Phys. Fluids* **14**, 1226 (1971). (With R. N. Sudan).
19. Parametric Instability of a Plasma Driven by a High Frequency Finite Wavelength Wave, *Phys. Letters* **37A**, 281 (1971).
20. Turbulent Heating in Computer Simulations of the Modified Two-Stream Instability, *Phys. Review Letters* **28**, 88 (1972). (With J. B. McBride, J. H. Orens, and J. P. Boris).
21. Electromagnetic and Finite β Effects on the Modified Two-Stream Instability, *Phys. Letters* **39A**, 363 (1972). (With J. B. McBride).
22. Simulation of Whistler Instabilities in Anisotropic Plasmas, *Phys. Fluids* **15**, 1538 (1972). (With S. L. Ossakow and I. Haber).
23. Nonlinear Evolution of the Rayleigh-Taylor Instability of a Thin Layer, *Phys. Rev. Lett.* **29**, 1429 (1972).
24. Nonlinear Evolution of Whistler Instabilities, *Phys. Fluids* **15**, 2314 (1972). (With S. L. Ossakow and I. Haber).
25. Theory and Simulation of Turbulent Heating by the Modified Two-Stream Instability, *Phys. Fluids* **15**, 2367 (1972). (With J. B. McBride, J. Boris, and J. Orens).
26. Model Equations for Mode Coupling Saturation in Unstable Plasmas, *Phys. Fluids* **16**, 855 (1973). (With W. M. Manheimer, D. L. Book, and J. P. Boris).
27. Low Frequency Parametric Instabilities of Magnetized Plasmas with Two Ion Species, *Phys. Fluids* **16**, 270 (1973). (With J. B. McBride and J. H. Orens).
28. Theory of Turbulent Plasma Heating by Anomalous Absorption of Magnetosonic Waves, *Nuclear Fusion* **13**, 151 (1973). (With J. B. McBride and C. E. Wagner).
29. Theory and Simulation of Whistler Turbulence and Velocity Space Diffusion in the Magnetosphere Plasma, *J. Geophysical Research* **78**, 2945 (1973). (With S. L. Ossakow and I. Haber).
30. Simulation of Gyroresonant Electron-Whistler Interactions in the Outer Radiation Belts, *J. Geophysical Research* **78**, 3970 (1973). (With S. L. Ossakow and I. Haber).
31. Relativistic Electron Beam Trajectories, *Phys. Fluids* **16**, 2029 (1973). (With R. V. Lovelace).
32. The Effect of Side-Scatter Instabilities on the Propagation of an Intense Laser Beam in an Inhomogeneous Plasma, *Phys. Rev. Lett.* **31**, 1187 (1973). (With H. H. Klein and W. M. Manheimer).

33. Theory of Microwave Generation by an Intense Relativistic Electron Beam in a Rippled Magnetic Field, *Phys. Fluids* **17**, 463 (1974). (With W. M. Manheimer).
34. Straight and Toroidal Plasma Equilibria with an Intense Relativistic Electron Current Component, *Phys. Fluids* **17**, 1017 (1974). (With A. Mondelli).
35. The Application of Quasilinear Theory to Turbulent Heating Experiments, *Plasma Physics* **16**, 413 (1974). (With A. Mondelli).
36. Theory of Magnetic Insulation, *Phys. Fluids* **17**, 1263 (1974). (With R. V. Lovelace).
37. The k-Spectrum of Ionospheric Irregularities, *J. Geophys. Res.* **79**, 2469 (1974). (With D. T. Farley).
38. Rayleigh-Taylor Instability in the 'Shallow Water' Approximation, *Phys. Fluids* **17**, 676 (1974). (With D. L. Book and A. L. Sulton).
39. Parametric Instabilities Induced by the Coupling of High and Low Frequency Plasma Modes, *Phys. Fluids* **17**, 1413–1422 (1974). (With W. M. Manheimer).
40. Stimulated Compton Scattering and Self-Focusing in the Outer Regions of a Laser Fusion Plasma, *Phys. Fluids* **17**, 1754 (1974). (With H. H. Klein and W. M. Manheimer).
41. Magnetic Compression of Intense Ion Rings, *Phys. Rev. Lett.* **33**, 355 (1974). (With R. N. Sudan).
42. The Effect of Trapping on the Saturation of the Raman Backscatter Instability, *Phys. Fluids* **18**, 1031 (1975). (With H. H. Klein and W. M. Manheimer).
43. Parametric Decay of Intense Radiation into a Whistler Wave, *Phys. Fluids* **18**, 269 (1975). (With H. H. Klein and W. M. Manheimer).
44. Theory of Microwave Emission by Velocity-Space Instabilities of an Intense Relativistic Electron Beam, *IEEE Transactions on Plasma Science* **3**, 1 (1975). (With W. M. Manheimer).
45. Decay Instability of Lower Hybrid Waves, *Phys. Fluids* **18**, 566 (1975).
46. Velocity Shear Driven Instabilities of an Unneutralized Electron Beam, *Phys. Fluids* **18**, 1197 (1975). (With T. M. Antonsen).
47. Magnetic Insulation and Microwave Generation, *Appl. Phys. Lett.* **7**, 378 (1975). (With R. V. Lovelace).
48. Microinstabilities and the Production of Short Wavelength Irregularities in the Auroral F Region, *J. Geophys. Res.* **80**, 4599 (1975). (With D. T. Farley).
49. Theory of Intense Ion Beam Acceleration, *Phys. Fluids* **19**, 52 (1976). (With T. M. Antonsen).

50. Scaling of Plasma Turbulence Resulting from Parametric Instabilities, *Phys. Fluids* **19**, 341 (1976).
51. Foil Scattering in a Reflex Triode Ion Acceleration, *Appl. Phys. Lett.* **28**, 424 (1976). (With T. M. Antonsen).
52. On the Use of Intense Ion Beams for Heating Long θ Pinch Plasmas to Thermonuclear Temperatures, *Appl. Phys. Lett.* **29**, 5 (1976). (With R. N. Sudan).
53. Electrostatic Trapping and the Linear and Nonlinear Evolution of Dissipative Trapped Electron Instabilities, *Phys. Fluids* **19**, 1035 (1976). (With W. Manheimer).
54. Mode Coupling Stabilization of the Dissipative Trapped Electron Instability, *Nuclear Fusion* **16**, 203 (1976). (With W. Manheimer, K. R. Chu, J. P. Boris, and J. D. Callen).
55. Marginal Stability Calculation of Electron Temperature Profiles in Tokamaks, *Phys. Rev. Lett.* **37**, 286 (1976). (With W. Manheimer, K. R. Chu, and J. P. Boris).
56. Nonlinear Evolution of the Sausage Instability, *Phys. Fluids* **19**, 1982 (1976). (With D. L. Book and M. Lampe).
57. Anomalous Electron-Ion Energy Exchange from the Trapped Electron Mode, *Phys. Fluids* **20**, 806 (1977). (With W. M. Manheimer and W. Tang).
58. Cross-Field Injection, Propagation, and Energy Deposition of Intense Ion Beams with Application to Tokamak Plasma Heating, *Nucl. Fusion* **17**, 1057 (1977). (With W. M. Manheimer).
59. Theory of Foilless Diode Generation of Intense Relativistic Electron Beams, *Phys. Fluids* **20**, 1180 (1977). (With T. M. Antonsen and R. V. Lovelace).
60. Submillimeter Wave Production by Upshift Reflection from a Moving Ionization Front, *IEEE Trans. MIT-25*, 556 (1977). (With M. Lampe, W. Manheimer, and S. Kainer).
61. Interaction of Electromagnetic Waves with a Moving Ionization Front, *Phys. Fluids* **21**, 42 (1978). (With M. Lampe and J. Walker).
62. Theory of Rayleigh-Taylor Bubbles in the Equatorial Ionosphere, *J. Geophys. Res.* **83**, 2066 (1978).
63. Effects of Cross-Sectional Elongation on Trapped Electron Modes, *Phys. Fluids* **21**, 644 (1978). (With W. M. Manheimer and K. R. Chu).
64. Two-Dimensional Turbulence in Equatorial Spread F, *J. G. R.* **83**, 4369 (1978). (With M. C. Kelley).
65. Book Review: Introduction to Plasma Physics, B.M. Smirnov, *Physics Today* **31**, (9), 51 (1978).

66. Diffuse Boundary Rayleigh-Taylor Instability, *Phys. Rev. Lett.* **41**, 1048 (1978). (With D. A. Russell).
67. Theory of Plasma Heating by Magnetosonic Cavity Mode Absorption, *Phys. Fluids* **21**, 2306 (1978). (With J. M. Wersinger and P. T. Bonoli).
68. Ergodic Behavior of Lower Hybrid Decay Wave Ray Trajectories in Toroidal Geometry, *Phys. Fluids* **21**, 2263 (1978). (With J. M. Wersinger and J. M. Finn).
69. Wave Reflection at the Lower Hybrid Surface: A Toroidal Effect, *Phys. Fluids* **22**, 192 (1979). (With J. M. Wersinger and P. T. Bonoli).
70. Linear Theory of the Rayleigh-Taylor Instability in the Equatorial Ionosphere, *J.G.R.* **84**, 6573 (1979). (With D. A. Russell).
71. Lower Hybrid Wave Scattering by Density Fluctuations, *Phys. Fluids* **22**, 1732 (1979).
72. The Goodness of Ergodic Adiabatic Invariants, *Phys. Rev. Lett.* **42**, 1628 (1979).
73. Instability Condition for Confined Waves with Ergodic Ray Trajectories, *Phys. Fluids* **22**, 2246 (1979).
74. Theory of Second Harmonic Electron Cyclotron Resonance Heating of Tokamak Plasmas, *Phys. Fluids* **23**, 822 (1980). (With B. Hui, K. R. Chu, and T. Antonsen).
75. Bifurcations and Strange Behavior in Instability Saturation by Nonlinear Mode Coupling, *Phys. Rev. Lett.* **44**, 453 (1980). (With J. M. Wersinger and J. M. Finn).
76. Magnetic Shear Stabilization of the Diocotron Modes of a Relativistic Electron Beam, *Phys. Fluids* **23**, 324 (1980). (With J. M. Wersinger).
77. Theory of Electron Cyclotron Resonance Heating of Tokamak Plasmas, *Phys. Fluids* **23**, 1031 (1980). (With B. Hui and K. R. Chu).
78. Bifurcation and 'Strange' Behavior in Instability Saturation by Nonlinear Three Wave Mode Coupling, *Phys. Fluids* **23**, 1142 (1980). (With J. M. Wersinger and J. M. Finn).
79. Nonlinear Space Charge Waves on Electron Beams, *Phys. Fluids* **23**, 2265 (1980). (With T. P. Hughes).
80. The Dimension of Strange Attractors, *Phys. Rev. Lett.* **44**, 453 (1980). (With D. A. Russell and J. D. Hanson).
81. Accessibility and Energy Deposition of Lower Hybrid Waves in a Tokamak with Density Fluctuations, *Phys. Rev. Lett.* **46**, 424 (1981). (With P. T. Bonoli).
82. The Effect of Scattering by Density Fluctuations on Electron Cyclotron Heating of Tokamaks, *Nucl. Fusion* **21**, 339 (1981). (With B. Hui, P. Guzdar, and P. T. Bonoli).

83. Instability of the Brillouin Flow Equilibrium in Magnetically Insulated Structures, *Phys. Rev. Lett.* **46**, 929 (1981). (With J. Sweigle).
84. Equilibrium for Cylindrical, Magnetically Insulated Ion Diodes Assuming Adiabatic Turn-On, *Phys. Fluids* **24**, 158 (1981). (With J. Sweigle).
85. Strange Attractors and Chaotic Motions of Dynamical Systems, *Rev. Mod. Phys.* **53**, 655 (1981).
86. Theory of Strongly Turbulent Type I Irregularities in the Equatorial Electrojet, *J. Geophys. Res.* **86**, 6879 (1981). (With A. L. Newman).
87. Spheromak Tilting Instability in Cylindrical Geometry *Phys. Fluids* **24**, 1336 (1981). (With J. M. Finn and W. M. Manheimer).
88. Diffusion Coefficient for Ions in the Presence of a Coherent Lower Hybrid Wave, *Phys. Fluids* **24**, 1635 (1981). (With T. M. Antonsen, Jr.).
89. The Effect of Noise on the Structure of Strange Attractors, *Phys. Lett.* **85A**, 20 (1981). (With J. D. Hanson).
90. Chaotic (Strange) and Periodic Behavior in Instability Saturation by the Oscillating Two Stream Instability, *Phys. Fluids* **24**, 1976 (1981). (With D. A. Russell).
91. Nonlinear Development of the Resistive Filamentation Instability, *Phys. Rev. Lett.* **47**, 1529 (1981). (With T. P. Hughes and A. Drobot).
92. Linear Waves and Instabilities on Magnetically Insulated Gaps, *Phys. Fluids* **24**, 1821 (1981). (With J. Sweigle).
93. Toroidal and Scattering Effects on Lower Hybrid Wave Propagation in Tokamaks, *Phys. Fluids* **25**, 359 (1982). (With P. T. Bonoli).
94. The Cavity Q for Ergodic Eigenmodes, *Phys. Rev. A* **25**, 1808 (1982). (With W. M. Manheimer).
95. Long Wavelength Nonlinear Perturbations of the Brillouin Flow Equilibrium on Magnetically Insulated Lines, *IEEE Trans. on Plasma Science* **PS-10**, 33 (1982). (With J. Sweigle).
96. Chaotic Attractors in Crisis, *Phys. Rev. Lett.* **48**, 1507 (1982). (With C. Grebogi and J. A. Yorke).
97. Multimode Theory and Simulation of Quasioptically Gyrotrons and Gyroklystrons, *Int. J. Electronics* **53**, 547 (1982). (With A. Bondeson, B. Levush, and W. M. Manheimer).
98. Nonlinear Development of the Resistive Filamentation Instability, *Phys. Fluids* **26**, 1659 (1983). (With T. P. Hughes and A. Drobot).

99. Ion Trajectories in a Space Charge Wave on a Relativistic Electron Beam, *Phys. Fluids* **26**, 1909 (1983). (With D. A. Russell).
100. Multimode Time-Dependent Analysis of Quasioptical Gyrotrons and Gyroklystrons, *Phys. Fluids* **26**, 285 (1983). (With A. Bondeson and W. M. Manheimer).
101. The Dimension of Chaotic Attractors, *Physics* **7D**, 153 (1983). (With J. D. Farmer and J. A. Yorke).
102. Crises, Sudden Changes in Chaotic Attractors, and Chaotic Transients, *Physica* **7D**, 181 (1983). (With C. Grebogi and J. A. Yorke).
103. Final State Sensitivity: An Obstruction to Predictability, *Phys. Lett.* **A99**, 415 (1983). (With C. Grebogi, S. W. McDonald, and J. A. Yorke).
104. Fractal Basin Boundaries, Long-Lived Chaotic Transients, and Unstable-Unstable Pair Bifurcation, *Phys. Rev. Lett.* **50**, 935 (1983). (With C. Grebogi and J. A. Yorke).
105. Theory of Quasioptical Gyrotrons and Gyroklystrons Operating at Higher Harmonics of the Cyclotron Frequency, *Int. J. of Electronics* **54**, 749 (1983). (With B. Levush, A. Bondeson, and W. M. Manheimer).
106. Are Three-Frequency Quasiperiodic Orbits to be Expected in Typical Nonlinear Dynamical Systems?, *Phys. Rev. Lett.* **51**, 339 (1983). (With C. Grebogi and J. A. Yorke).
107. Resistive Wall Flute Stability of Magnetically Guided Electron Beams, *Phys. Fluids* **26**, 2689 (1983). (With R. Kleva and P. Sprangle).
108. Stability of Space-Charge Limited Electron Flow, *Phys. Fluids* **27**, 1257 (1984). (With T. M. Antonsen, W. H. Miner, and A. T. Drobot).
109. Low Amplitude, Wave Induced Particle Energy Diffusion in Inhomogeneous Magnetic Field, *Phys. Fluids* **27**, 184 (1984). (With S. Riyopoulos and T. M. Antonsen).
110. Instabilities in Magnetically Insulated Gaps with Resistive Electrode Plasmas, *Phys. Fluids* **27**, 2545 (1984). (With T. M. Antonsen, C. L. Chang, and A. T. Drobot).
111. An Alpha Particle Driven Alfvén Wave Instability in a Tandem Mirror, *Phys. Fluids* **27**, 150 (1984). (With J. D. Hanson).
112. Theory of the Rippled Field Magnetron, *Phys. Fluids* **27**, 2937 (1984). (With C. L. Chang, T. M. Antonsen, and A. T. Drobot).
113. Influence of Finite Wavelength on the Quantum Kicked Rotator in the Semiclassical Regime, *Phys. Rev.* **A29**, 819 (1984). (With J. D. Hanson and T. M. Antonsen).
114. Ray Ergodicity and the Calculation of Plasma Heating, Stability, and Emission, *Comments on Plasma Physics and Controlled Fusion* **8**, 109 (1984).

115. Three Dimensional Nonlinear Evolution of the Rayleigh-Taylor Instability of a Thin Layer, *Phys. Fluids* **27**, 2164 (1984). (With W. M. Manheimer and D. Colombant).
116. Negative Energy Waves and the Stability of Magnetic Insulation, *Comments on Plasma Phys.* **8**, 243 (1984). (With T. M. Antonsen, C. L. Chang, and A. T. Drobot).
117. Is the Dimension of Chaotic Attractors Invariant Under Coordinate Changes?, *J. Stat. Phys.* **36**, 659 (1984). (With W. D. Withers and J. A. Yorke).
118. The Effect of Noise on Time Dependent Quantum Chaos, *Phys. Rev. Lett.* **53**, 2187 (1984). (With J. D. Hanson and T. M. Antonsen). Also included in "The Physical Review the First Hundred Years, A Collection of Seminal Papers" (AIP Press, 1995).
119. Three Dimensional, Nonlinear Evolution of the Rayleigh-Taylor Instability of a Thin Layer, *Phys. Rev. Lett.* **53**, 446 (1984). (With D. Colombant and W. Manheimer).
120. Strange Attractors That Are Not Chaotic, *Physica* **13D**, 261 (1984). (With C. Grebogi, S. Pelikan, and J. A. Yorke).
121. A Scaling Law: How an Attractor's Volume Depends on Noise Level, *Physics* **16D**, 62 (1985). (With E. D. Yorke and J. A. Yorke).
122. Finite Larmor Radius Diocotron Instability, *Phys. Fluids* **28**, 941 (1985). (With R. G. Kleva and W. M. Manheimer).
123. Scaling Behavior of Windows, *Phys. Rev. Lett.* **54**, 1095 (1985). (With J. A. Yorke, C. Grebogi, and L. Tedeschini-Lalli).
124. Attractors on an N-Torus: Quasiperiodicity Versus Chaos, *Physica* **15D**, 354 (1985). (With C. Grebogi and J. A. Yorke).
125. Structure and Crises of Fractal Basin Boundaries, *Phys. Lett.* **107A**, 51 (1985). (With S. W. McDonald, C. Grebogi and J. A. Yorke).
126. Fractal Basin Boundaries, *Physica* **17D**, 125 (1985). (With S. W. McDonald, C. Grebogi, and J. A. Yorke).
127. Unstable-Unstable Pair Bifurcations and Super Long Chaotic Transients, *Ergodic Theory of Dynamical Systems* **5**, 341 (1985). (With C. Grebogi and J. A. Yorke).
128. Stability of Magnetically Insulated Ion Diodes, *Phys. Fluids* **28**, 1948 (1985). (With T. M. Antonsen, C. L. Chang, and A. T. Drobot).
129. Parametric Scaling of the Stability of Relativistic Laminar Flow Magnetic Insulation, *Phys. Fluids* **28**, 2878 (1985). (With T. M. Antonsen, C. L. Chang, and A. T. Drobot).
130. Exterior Dimension of Fat Fractals, *Phys. Lett.* **110A**, 1 (1985). (With C. Grebogi, S. W. McDonald, and J. A. Yorke).

131. Quasiperiodically Forced Damped Pendula and Schrödinger Equations with Quasiperiodic Potentials: Implications of Their Equivalence, *Phys. Rev. Lett.* **55**, 2103 (1985). (With A. Bondeson and T. M. Antonsen).
132. Markov Tree Model of Intrinsic Transport in Hamiltonian Systems, *Phys. Rev. Lett.* **55**, 2741 (1985). (With J. Meiss).
133. Electromagnetic Stability of High-Power Ion Diodes, *Phys. Fluids* **29**, 1258 (1986). (With C. L. Chang, D. P. Chernin, A. T. Drobot, and T. M. Antonsen).
134. Linear Stability of Obliquely Propagating Electromagnetic Waves in Magnetically Insulated Gaps, *Phys. Fluids* **29**, 3851 (1986). (With C. L. Chang and T. M. Antonsen).
135. Critical Exponent of Chaotic Transients in Nonlinear Dynamical Systems, *Phys. Rev. Lett.* **57**, 1284 (1986). (With C. Grebogi and J. A. Yorke).
136. Theory of the Orbitron Maser, *Phys. Rev. Lett.* **56**, 2625 (1986). (With W. M. Manheimer and J. M. Burke).
137. Metamorphoses of Basin Boundaries in Nonlinear Dynamical Systems, *Phys. Rev. Lett.* **56**, 1011 (1986). (With C. Grebogi and J. A. Yorke).
138. Multi-dimensioned Intertwined Basin Boundaries, *Phys. Lett. A* **118**, 448 (1986). (With E. Kostelich, C. Grebogi, and J. A. Yorke).
139. Markov Tree Model of Transport in Hamiltonian Systems, *Physica* **20D**, 387 (1986). (With J. D. Meiss).
140. Broadening of Spectral Peaks at the Merging of Chaotic Bands in Period Doubling Systems, *Phys. Rev. A* **34**, 2248 (1986). (With R. Brown and C. Grebogi).
141. Basin Boundary Metamorphoses: Changes in Accessible Boundary Orbits, *Physica* **24D**, 243–262 (1987). (With Celso Grebogi and James A. Yorke).
142. Quasiperiodically Forced Dynamical Systems with Strange Nonchaotic Attractors, *Physica* **26D**, 277 (1987). (With Filipe J. Romeiras, Anders Bondeson, Thomas M. Antonsen, Jr., and Celso Grebogi).
143. Multi-dimensioned Intertwined Basin Boundaries: Basin Structure of the Kicked Double Rotor, *Physica* **25D**, 347–360 (1987). (With Celso Grebogi, Eric Kostelich, and James A. Yorke).
144. Strange Nonchaotic Attractors of the Damped Pendulum with Quasiperiodic Forcing, *Phys. Rev. A* **35**, 4404–4413 (1987). (With Filipe J. Romeiras).
145. Self-Focusing of Short Intense Pulses in Plasmas, *Phys. Fluids* **30**, 526–538 (1987). (With Guo-Zheng Sun, Y. C. Lee, and Parvez Guzdar).

146. Unstable Periodic Orbits and the Dimension of Chaotic Attractors, *Phys. Rev. A* **36**, 3522 (1987). (With C. Grebogi and J. A. Yorke).
147. Fractal Basin Boundaries with Unique Dimension, *Ann. N. Y. Acad. Sci.* **497**, 117 (1987). (With C. Grebogi, H. Nusse, and J. A. Yorke).
148. Ergodic Adiabatic Invariants of Chaotic Systems, *Phys. Rev. Lett.* **59**, 1173 (1987). (With R. Brown and C. Grebogi).
149. Chaos, Strange Attractors, and Fractal Basin Boundaries in Nonlinear Dynamical Systems, *Science* **238**, 585 (1987). (With C. Grebogi and J. A. Yorke).
150. Critical Exponents for Crisis-Induced Intermittency, *Phys. Rev. A* **36**, 5365 (1987). (With C. Grebogi, P. Romeiras, and J. A. Yorke).
151. The Goodness of Ergodic Adiabatic Invariants, *J. Stat. Phys.* **49**, 511 (1987). (With R. Brown and C. Grebogi).
152. Strange Saddles and the Dimensions of Their Manifolds, *Phys. Lett. A* **127**, 199 (1988). (With G. -H. Hsu and C. Grebogi).
153. Unstable Periodic Orbits and the Dimensions of Multifractal Chaotic Attractors, *Phys. Rev. A* **37**, 1711 (1988). (With C. Grebogi and J. A. Yorke).
154. Chaotic Flows and Magnetic Dynamos, *Phys. Rev. Lett.* **60**, 760 (1988). (With J. M. Finn).
155. Chaotic Flows and Fast Magnetic Dynamos, *Phys. Fluids* **31**, 2992 (1988). (With J. M. Finn).
156. Critical Exponents for Power Spectra Scaling of Mergings of Chaotic Bands, *Phys. Rev. A* **38**, 463 (1988) (with F. Romeiras and C. Grebogi).
157. Fractal Basin Boundaries for Exit in Hamiltonian Dynamics, *Phys. Rev. A* **38**, 930 (1988). (With S. Bleher, C. Grebogi, and R. Brown).
158. Analysis of a Wide-Band Rotating-Beam Free Electron Laser, *Phys. Fluids* **31**, 1720 (1988). (With L. Schuetz and T. M. Antonsen).
159. Multiple Coexisting Attractors, Basin Boundaries, and Basic Sets, *Physica D* **32**, 296 (1988). (With P. Battelino, C. Grebogi and J. A. Yorke).
160. Chaotic Fluid Convection and the Fractal Nature of Passive Scalar Gradients, *Phys. Rev. Lett.* **61**, 2839 (1988). (With T. M. Antonsen).
161. Roundoff Induced Periodicity and the Correlation Dimension of Chaotic Attractors, *Phys. Rev. A* **38**, 366 (1988). (With C. Grebogi and J. A. Yorke).
162. Chaotic Attractors on a Three-Torus and Torus Break-Up, *Physica D* **39**, 299 (1989). (With P. Battelino, C. Grebogi and J. A. Yorke).

163. Lyapunov Partition Functions for the Dimensions of Chaotic Sets, *Phys. Rev. A* **38**, 4212 (1989). (With T. Sauer and J. A. Yorke).
164. Fractal Measures of Passively Convected Vector Fields and Scalar Gradients in Chaotic Fluid Flows, *Phys. Rev. A* **38**, 3660 (1989). (With T. M. Antonsen).
165. Do Steady Fast Magnetic Dynamos Exist?, *Phys. Rev. Lett.* **62**, 2965 (1989). (With J. M. Finn, J. D. Hanson, and I. Kan).
166. Theory of First Order Phase Transitions for Chaotic Attractors of Nonlinear Dynamical Systems, *Phys. Lett. A* **135**, 343 (1989). (With C. Grebogi and J. A. Yorke).
167. Spatio-Temporal Dynamics in a Dispersively Coupled Chain of Nonlinear Oscillators, *Phys. Rev. A* **39**, 4835 (1989). (With D. K. Umberger and C. Grebogi).
168. Quasiperiodic Forcing and the Observability of Strange Nonchaotic Attractors, *Physica Scripta* **40**, 442 (1989). (With F. Romeiras, A. Bondeson, T. M. Antonsen, Jr., and C. Grebogi).
169. Evolution of Attractors in Quasiperiodically Forced Systems: From Quasiperiodic to Strange Nonchaotic to Chaotic, *Phys. Rev. A* **39**, 2593 (1989). (With M. Ding and C. Grebogi).
170. The Dimension of Strange Nonchaotic Attractors, *Phys. Lett. A* **137**, 167 (1989). (With M. Ding and C. Grebogi).
171. Routes to Chaotic Scattering, *Phys. Rev. Lett.* **63**, 919 (1989). (With S. Bleher and C. Grebogi).
172. Experimental Observation of Crisis-Induced Intermittency and Its Critical Exponent, *Phys. Rev. Lett.* **63**, 924 (1989). (With W. Ditto et al.).
173. Scaling of Fractal Basin Boundaries Near Intermittency Transitions to Chaos, *Phys. Rev. A* **40**, 1576 (1990). (With B.-S. Park, C. Grebogi, and J. A. Yorke).
174. Multifractal Properties of Snapshot Attractors of Random Maps, *Phys. Rev. A* **41**, 784 (1990). (With F. J. Romeiras and C. Grebogi).
175. Chaotic Flows and Fast Magnetic Dynamos, *Comments on Plasma Physics* **13**, 113 (1990). (With J. M. Finn).
176. The Fast Kinematic Dynamo and the Dissipationless Limit, *Phys. Fluids B* **2**, 916 (1990). (With J. M. Finn).
177. Cross Sections of Chaotic Attractors, *Phys. Lett. A* **147**, 450 (1990). (With Q. Chen).
178. Bifurcation to Chaotic Scattering, *Physica D* **46**, 87 (1990). (With S. Bleher and C. Grebogi).

179. Controlling Chaos, *Phys. Rev. Lett.* **64**, 1196 (1990). (With C. Grebogi and J. A. Yorke).
180. Chaotic Scattering in Several Dimensions, *Phys. Lett. A* **145**, 93 (1990). (With Q. Chen and M. Ding).
181. Algebraic Escape in Higher-Dimensional Hamiltonian Systems, *Phys. Lett. A* **151**, 395 (1990). (With M. Ding and T. Bountis).
182. Using Chaos to Direct Trajectories to Targets, *Phys. Rev. Lett.* **65**, 3250 (1990). (With T. Shinbrot, C. Grebogi and J. A. Yorke).
183. Experimental Observation of a Strange Nonchaotic Attractor, *Phys. Rev. Lett.* **65**, 533 (1990). (With W. Ditto et al.)
184. The Transition to Chaos for Random Dynamical Systems, *Phys. Rev. Lett.* **65**, 2935 (1990). (With L. Yu and Q. Chen).
185. Transition to Chaotic Scattering, *Phys. Rev. A* **42**, 7025 (1990). (With M. Ding, C. Grebogi and J. A. Yorke).
186. Multifractal Power Spectra of Passive Scalars Convected by Chaotic Fluid Flows, *Phys. Rev. A* **44**, 851 (1991). (With T. M. Antonsen, Jr.).
187. Fractal Distribution of Floaters on a Fluid Surface and the Transition to Chaos for Random Maps, *Physica D* **53**, 102 (1991). (With L. Yu and Q. Chen).
188. Experimental Confirmation of the Theory for Critical Exponents of Crises, *Phys. Lett. A* **153**, 105 (1991). (With J. C. Sommerer, W. L. Ditto, C. Grebogi and M. L. Spano).
189. The Fractal Dimension in Nonhyperbolic Chaotic Scattering, *Phys. Rev. Lett.* **66**, 978 (1991). (With Y. -T. Lau and J. M. Finn).
190. Experimental Confirmation of the Scaling Theory for Noise Induced Crises, *Phys. Rev. Lett.* **66**, 1947 (1991). (With J. C. Sommerer, W. L. Ditto, C. Grebogi and M. L. Spano).
191. Calculating Topological Entropy of Chaotic Dynamical Systems, *Phys. Lett. A* **156**, 48 (1991). (With Q. Chen and L. P. Herd).
192. Steady Fast Dynamo Flows, *Phys. Fluids B* **3**, 1250 (1991). (With J. M. Finn, J. D. Hanson and I. Kan).
193. Scaling Law for Characteristic Times of Noise Induced Crises, *Phys. Rev. A* **43**, 1754 (1991). (With J. C. Sommerer and C. Grebogi).
194. Massive Bifurcation of Chaotic Scattering, *Phys. Lett. A* **153**, 21 (1991). (With M. Ding, C. Grebogi and J. A. Yorke).

195. The Spectrum of Fractal Dimensions of Passively Convected Scalar Gradients in Chaotic Fluid Flows, *Phys. Fluids A* **3**, 1017 (1991). (With F. Varosi and T. M. Antonsen).
196. Time-Dependent Multimode Simulation of Gyrotron Oscillators, *Phys. Rev. A* **43**, 6166 (1991). (With A. Fliflet, R. C. Lee, S. H. Gold and W. M. Manheimer).
197. Using Chaos to Direct Orbits to Targets in Systems Describable by a One Dimensional Map, *Phys. Rev. A* **45**, 4165 (1992). (With T. Shinbrot, C. Grebogi and J. A. Yorke).
198. Using the Butterfly Effect to Direct Orbits to Targets in an Experimental Chaotic System, *Phys. Rev. Lett.* **68**, 2863 (1992). (With T. Shinbrot, W. Ditto, C. Grebogi, M. Spano and J. A. Yorke).
199. Quantum Manifestations of Chaotic Scattering, *Phys. Rev. Lett.* **68**, 3491 (1992). (With Y. C. Lai, R. Blumel and C. Grebogi).
200. Controlling Chaotic Dynamical Systems, *Physica D* **58**, 165 (1992). (With F. J. Romeiras, C. Grebogi and W. P. Dayawansa).
201. Sign-Singular Measures: Fast Magnetic Dynamos and High Reynolds Number Fluid Turbulence, *Phys. Rev. Lett.* **69**, 2654 (1992). (With Y. Du, K. R. Sreenivasan, A. Juneja, and A. K. Suri).
202. Controlling Chaos in High Dimensional Systems, *Phys. Rev. Lett.* **69**, 3479 (1992). (With D. Auerbach, C. Grebogi, and J. A. Yorke).
203. Using Chaos to Target Stationary States of Flows, *Phys. Lett. A* **169**, 349 (1992). (With T. Shinbrot, C. Grebogi, E. Ott, and J. A. Yorke).
204. Quantum Chaos in Systems with Ray Splitting, *Phys. Rev. A* **46**, 6193 (1992). (With L. Couchman and T. M. Antonsen, Jr.).
205. Higher Dimensional Targeting, *Phys. Rev. E* **47**, 305 (1993). (With E. J. Kostelich, C. Grebogi, and J. A. Yorke).
206. Temporal Crossover from Classical to Quantum Behavior: A Markov Chain Approach, *Phys. Lett. A* **173**, 148 (1993). (With Y. -C. Lai and C. Grebogi).
207. Observing Chaos: Deducing and Tracking the State of a Chaotic System from Limited Data, *Phys. Lett. A* **176**, 421 (1993). (With P. So and W. P. Dayawansa).
208. Particles Floating on a Moving Fluid: A Dynamically Comprehensible Physical Fractal, *Science* **259**, 335 (1993). (With J. C. Sommerer).
209. Fractal Dimensions of Fast Dynamo Magnetic Fields, *Physica D* **67**, 387 (1993). (With Y. Du).
210. Growth Rates for Fast Kinematic Dynamo Instabilities of Chaotic Fluid Flows, *J. Fluid Mech.* **257**, 265 (1993). (With Y. Du).

211. Communicating with Chaos, *Phys. Rev. Lett.* **70**, 3031 (1993). (With S. Hayes and C. Grebogi).
212. Plateau Onset for Correlation Dimension: When Does it Occur?, *Phys. Rev. Lett.* **70**, 3872 (1993). (With M. Ding, C. Grebogi, T. Sauer and J. A. Yorke).
213. Chaotic Scattering: An Introduction, *Chaos* **3**, 417 (1993). (With T. Tél).
214. Using Small Perturbations to Control Chaos, *Nature* **363**, 411 (1993). (With T. Shinbrot, C. Grebogi, and J. A. Yorke).
215. Estimating Correlation Dimension from a Chaotic Time Series: When Does Plateau Onset Occur?, *Physica D* **69**, 404 (1993). (With M. Ding, C. Grebogi, T. Sauer, and J. A. Yorke).
216. A Qualitatively Nondeterministic Physical System, *Nature* **365**, 138 (1993). (With J. C. Sommerer).
217. Scaling Behavior of Chaotic Systems with Riddled Basins, *Phys. Rev. Lett.* **71**, 4134 (1993). (With J. C. Sommerer, I. Kan, J. C. Alexander, and J. A. Yorke).
218. Conditions for the Abrupt Bifurcation to Chaotic Scattering, *Chaos* **3**, 495 (1993). (With T. Tél and C. Grebogi).
219. Enhancing Synchronism of Chaotic Systems, *Phys. Rev. E* **49**, 945 (1994). (With M. Ding).
220. Recent Developments in Chaotic Dynamics, invited paper in *IEEE Trans. on Plasma Science* **22**, 43 (1994).
221. Border-Collision Bifurcations: A Possible Explanation for Observed Bifurcation Phenomena, *Phys. Rev. E* **49**, 1073 (1994). (With H. E. Nusse and J. A. Yorke).
222. The Transition to Chaotic Attractors with Riddled Basins, *Physica D* **76**, 384 (1994). (With J. C. Alexander, I. Kan, J. C. Sommerer, and J. A. Yorke).
223. Characterization of Sign Singular Measures, *Physica D* **76**, 168 (1994). (With T. Tél and Y. Du).
224. Blowout Bifurcations: The Occurrence of Riddled Basins and On-Off Intermittency, *Phys. Lett. A* **188**, 39 (1994). (With J. C. Sommerer).
225. Observing Chaos: Deducing and Tracking the State of a Chaotic System from Limited Observations, *Phys. Rev. E* **49**, 2650 (1994). (With P. So and W. P. Dayawansa).
226. Controlling Chaos in a Temporally Irregular Environment, *Physica D* **74**, 386 (1994). (With M. Ding and C. Grebogi).
227. Experimental Control of Chaos for Communication, *Phys. Rev. Lett.* **73**, 1781 (1994). (With S. Hayes, C. Grebogi, and A. Mark).

228. Grazing Bifurcations in Forced Impact Oscillators, *Phys. Rev. E* **6**, 4427 (1994). (With W. Chin, L. Nusse, and C. Grebogi).
229. Crisis Control: Preventing Chaos-Induced Capsizing of a Ship, *Phys. Rev. E* **50**, 4228 (1994). (With M. Ding and C. Grebogi).
230. Keeping Chaos Alive: Control Strategies to Preserve Complex Dynamics with Potential Relevance to Biological Disorders, *Phys. Rev. E* **51**, 102 (1995). (With W. Yang, M. Ding, and A. J. Mandell).
231. Wave Chaos Experiments With and Without Time Reversal Symmetry: GUE and GOE Statistics, *Phys. Rev. Lett.* **74**, 2662 (1995). (With P. So and S. Anlage).
232. Controlling Chaos Using Time Delay Coordinates via Stabilization of Unstable Periodic Orbits, *Phys. Rev. E* **51**, 2955 (1995). (With P. So).
233. Universal Behavior of Impact Oscillators Near Grazing Incidence, *Phys. Lett. A* **201**, 197 (1995). (With W. Chin, L. Nusse, and C. Grebogi).
234. Efficient Switching Between Controlled Unstable Periodic Orbits in Higher Dimensional Chaotic Systems, *Phys. Rev. E* **51**, 4169 (1995). (With E. Barreto, E. J. Kostelich, C. Grebogi, and J. A. Yorke).
235. Statistics of Scars on Wave Functions, *Phys. Rev. E* **51**, 111 (1995). (With T. M. Antonsen, Q. Chen, and R. Oerter).
236. Book Review: "Stability, Instability and Chaos: An Introduction to the Theory of Nonlinear Differential Equations," by Paul Glendinning, *Nature* **374**, 420 (1995).
237. Controlling Chaos, *Physics Today* (May 1995) p. 34. (With M. Spano). Republished in Japanese in the journal *Parity* (March 1996).
238. Chaotic Scattering in Systems with More than Two Degrees of Freedom, *Ann. NY Acad. Sci.* **751**, 182 (1995). (With M. Ding).
239. Saddle-Node Bifurcations on Fractal Basin Boundaries, *Phys. Rev. Lett.* **75**, 2482 (1995). (With H. E. Nusse and J. A. Yorke).
240. The k -Spectrum of Passive Scalars in Chaotic Fluid Flows, *Phys. Rev. Lett.* **75**, 1751 (1995). (With T. M. Antonsen and Z. F. Fan).
241. Power Law Wavenumber Spectra of Scum on the Surface of a Flowing Fluid, *Phys. Rev. Lett.* **75**, 3438 (1995). (With T. M. Antonsen, A. Namenson, and J. C. Sommerer).
242. Self Organization and Chaos in a Fluidized Bed, *Phys. Rev. Lett.* **75**, 2308 (1995). (With C. S. Daw et al.).
243. Characterization of On-Off Intermittency, *Phys. Lett. A* **207**, 173 (1995). (With S. Venkataramani, T. M. Antonsen, and J. C. Sommerer).

244. Universal Grazing Bifurcations in Impact Oscillators, *Phys. Rev. E* **53**, 134 (1996). (With F. Casas, W. Chin, C. Grebogi, and E. Ott).
245. The Structure of Spiral Domain Patterns, *Europhys. Lett.* **33**, 589 (1996). (With T. Bohr and G. Huber).
246. Fractal Dimension Fluctuations for Snapshot Attractors of Random Maps, *Phys. Rev. E* **53**, 2287 (1996). (With A. Namenson and T. M. Antonsen).
247. Smoothed Density of States for Problems with Ray Splitting, *Phys. Rev. E* **53**, 207 (1996). (With R. E. Prange, T. M. Antonsen, B. Georgeot, and R. Blümel).
248. Spectral Statistics for Quantum Chaos with Ray Splitting, *Phys. Lett. A* **216**, 59 (1996). (With R. Oerter, T. M. Antonsen, and P. So).
249. On-off Intermittency: Power Spectrum and Fractal Properties of Time Series, *Physica D* **96**, 66 (1996). (With S. Venkataramani, T. M. Antonsen, and J. C. Sommerer).
250. Ray Splitting and Quantum Chaos, *Phys. Rev. E* **53**, 3284 (1996). (With R. Blümel, T. M. Antonsen, R. E. Prange, and B. Georgeot).
251. Intermingled Basins of Attraction: Uncomputability in a Simple Physical System, *Phys. Lett. A* **214**, 243 (1996). (With J. C. Sommerer).
252. Power Law Wavenumber Spectra of Fractal Particle Distributions Advectioned by Flowing Fluids, *Physics of Fluids* **8**, 2426 (1996). (With A. Namenson and T. M. Antonsen).
253. The Role of Chaotic Orbits in the Determination of Power Spectra of Passive Scalars, *Phys. Fluids* **8**, 3094 (1996). (With T. M. Antonsen, Z. Fan, and E. Garcia-Lopez).
254. Ray Splitting and Quantum Chaos, *Phys. Rev. Lett.* **76**, 2476 (1996). (With R. Blümel, T. M. Antonsen, B. Georgeot, and R. E. Prange).
255. Optimal Periodic Orbits of Chaotic Systems, *Phys. Rev. Lett.* **76**, 2254 (1996). (With Brian R. Hunt).
256. Wada Basin Boundaries in Chaotic Scattering, *Intn. J. Bif. and Chaos* **6**, 251 (1996). (With L. Poon, J. Campos, and C. Grebogi).
257. The Nature of Magnetic Dynamo Growth in the High Magnetic Reynolds Number Limit, *Phys. Rev. Lett.* **76**, 2270 (1996). (With C. Reyl and T. M. Antonsen).
258. Quasi-Two-Dimensional Fast Kinematic Dynamo Instabilities of Chaotic Two-Dimensional Fluid Flows, *Phys. Plasmas* **3**, 2564 (1996). (With C. Reyl and T. M. Antonsen, Jr.).
259. Detecting Unstable Periodic Orbits in Chaotic Experimental Data, *Phys. Rev. Lett.* **76**, 4705 (1996). (With P. So et al.).

260. Fractal Dimensions of Chaotic Saddles of Dynamical Systems, *Phys. Rev. E* **54**, 4819 (1996). (With B. R. Hunt and J. A. Yorke).
261. Optimal Periodic Orbits of Chaotic Systems Occur at Low Period, *Phys. Rev. E* **54**, 328 (1996). (With B. R. Hunt).
262. The Bubbling Transition, *Phys. Rev. E* **54**, 1346 (1996). (With S. C. Venkataramani and B. R. Hunt).
263. Book review of “Stretch, Twist, Fold: The Fast Dynamo” by S. Childress and A. D. Gilbert, *Physics Today* **49** (7), 61 (1996).
264. Book review of “Chaotic Behavior of Deterministic Dissipative Systems” by M. Marek and I. Schreiber, *SIAM Review* **38**, 695 (1996).
265. Transitions to Bubbling of Chaotic Systems, *Phys. Rev. Lett.* **77**, 5361 (1996). (With S. C. Venkataramani, B. R. Hunt, D. J. Gauthier and J. Bienfang).
266. Phase Locking in Quasiperiodically Forced Systems, *Phys. Rpts.* **290**, 11 (1997). (With U. Feudel and C. Grebogi).
267. The Structure of Spiral-Domain Patterns and Shocks in the 2D Complex Ginzburg-Landau Equation, *Physica D* **106**, 95 (1997). (With T. Bohr and G. Huber).
268. Indecomposable Continua and the Characterization of Strange Sets in Nonlinear Dynamics, *Phys. Rev. Lett.* **78**, 1892 (1997). (With M. A. F. Sanjuán, J. Kennedy, and J. A. Yorke).
269. Structure in the Parameter Dependence of Order and Chaos for the Quadratic Map, *J. Phys. A* **30**, 7067 (1997). (With B. R. Hunt).
270. Differential Generalized Synchronism, *Phys. Rev. E* **55**, 4029 (1997). (With B. R. Hunt and J. A. Yorke).
271. Computing the Measure of Nonattracting Chaotic Sets, *Physica D* **108**, 1 (1997). (With J. Jacobs and C. Grebogi).
272. Unstable Dimension Variability: A Source of Nonhyperbolicity in Chaotic Systems, *Physica D* **109**, 81 (1997). (With E. J. Kostelich, I. Kan, C. Grebogi, and J. A. Yorke).
273. Targeting in Hamiltonian Systems with Mixed KAM/Chaotic Phase Spaces, *Chaos* **7**, 512 (1997). (With C. Schroer).
274. Nature of the Vorticity Field Generated by Instabilities of Chaotic Fluid Flows, *Phys. Rev. Lett.* **78**, 2559 (1997). (With C. Reyl and T. M. Antonsen).
275. Scaling of the Durations of Chaotic Transients in Windows of Attracting Periodicity, *Phys. Rev. E* **56**, 6508 (1997). (with J. Jacobs and B. R. Hunt).

276. Modeling Fractal Entrainment Sets of Tracers Advected by Chaotic Temporally Irregular Fluid Flows, *Physica D* **110**, 1 (1997). (With J. Jacobs, T. M. Antonsen, and J. A. Yorke).
277. Extracting Unstable Periodic Orbits from Chaotic Time Series, *Phys. Rev. E* **55**, 5398 (1997). (With P. So et al.).
278. Lévy Flights in Fluid Flows with no KAM Surfaces, *Phys. Rev. Lett.* **78**, 3864 (1997). (With S. C. Venkataramani and T. M. Antonsen).
279. Motion of Scroll Wave Filaments in the Complex Ginzburg-Landau Equation, *Phys. Rev. Lett.* **78**, 2012 (1997). (With M. Gabbay and P. N. Guzdar).
280. Fractal Patterns of Tracers Advected by Smooth Temporally Irregular Fluid Flows and Their Analysis by Use of Random Maps, *Fractals* **5**, 119 (1997). (With T. M. Antonsen and J. Jacobs).
281. Reconnection of Vortex Filaments in the Complex Ginzburg-Landau Equation, *Phys. Rev. E* **58**, 2576 (1998). (With M. Gabbay and P. N. Guzdar).
282. Border-Collision Bifurcation in the Buck Converter, *IEEE Trans. on Circuits and Systems* **45**, 707 (1998). (With G. Yuan, J. A. Yorke, and S. Banerjee).
283. The Effect of Noise on Nonhyperbolic Chaotic Attractors, *Phys. Rev. Lett.* **81**, 1397 (1998). (With C. Schroer and J. A. Yorke).
284. The Dynamics of Scroll Wave Filaments in the Complex Ginzburg-Landau Equation, *Physica D* **118**, 371 (1998). (With M. Gabbay and P. N. Guzdar).
285. Spiral Wave Dynamics in the Complex Ginzburg-Landau Equation with Broken Chiral Symmetry, *Physica D* **118**, 69 (1998). (With K. Nam, M. Gabbay, and P. N. Guzdar.)
286. Scaling Properties of Magnetic Dynamo Wavenumber Power Spectra Generated by Lagrangian Chaotic Flows, *Phys. Plasmas* **5**, 151 (1998). (With C. Reyl and T. M. Antonsen).
287. Vorticity Generation by Instabilities of Chaotic Fluid Flows, *Physica D* **111**, 202 (1998). (With C. Reyl and T. M. Antonsen).
288. Spatio-Temporal Bifurcation Phenomena with Temporal Period Doubling: Patterns in Vibrated Sand, *Phys. Rev. Lett.* **80**, 3495 (1998). (With S. C. Venkataramani).
289. Predicting Chaos Most of the Time from an Embedding with Self-Intersections, *Phys. Rev. Lett.* **80**, 1410 (1998). (With C. Schroer, T. Sauer, and J. A. Yorke).
290. Transition to Phase Synchronization of Chaos, *Phys. Rev. Lett.* **80**, 1642 (1998). (With E. Rosa).

291. Chaotic Flows and Kinematic Magnetic Dynamos: A Tutorial Review, *Phys. Plasmas* **5**, 1636 (1998).
292. Synchronization Based Noise Reduction Method for Communication with Chaotic Systems, *Phys. Rev. E* **58**, 8005 (1998). (With N. Sharma).
293. Anomalous Diffusion in Bounded Temporally Irregular Flows, *Physica D* **112**, 412 (1998). (With S. C. Venkataramani and T. M. Antonsen).
294. Calculating Topological Entropy for Transient Chaos with an Application to Communicating with Chaos, *Phys. Rev. E* **57**, 6577 (1998). (With J. Jacobs and B. R. Hunt).
295. Outer Tangency Bifurcations of Chaotic Sets, *Phys. Rev. Lett.* **80**, 4867 (1998). (With C. Robert, K. Alligood, and J. A. Yorke).
296. Stability of Spiral Wave Vortex Filaments with Phase Twist, *Phys. Rev. E* **58**, 2580 (1998). (With K. Nam, P. N. Guzdar, and M. Gabbay).
297. Combatting Channel Distortions in Communication with Chaotic Systems, *Phys. Lett. A* **248**, 347 (1998). (With N. Sharma).
298. The Effect of Inhomogeneity on Spiral Wave Dynamics, *Phys. Rev. Lett.* **82**, 859 (1999). (With M. Hendrey and T. M. Antonsen).
299. Mixed Basin Boundary Structures of Chaotic Systems, *Phys. Rev. E* **59**, 343 (1999). (With E. Rosa).
300. Spiral Waves in Oscillatory Media with an Applied Electric Field, *Phys. Rev. E* **59**, 2443 (1999). (With M. Gabbay and P. N. Guzdar).
301. Sporadically Fractal Basin Boundaries of Chaotic Systems, *Phys. Rev. Lett.* **82**, 3597 (1999). (With B. R. Hunt and E. Rosa).
302. Complex Topology in Chaotic Scattering: A Laboratory Observation, *Nature* **399**, 315 (1999). (with D. Sweet and J. A. Yorke).
303. Multiple Attractor Bifurcations: A Source of Unpredictability in Piecewise Smooth Systems, *Phys. Rev. Lett.* **83**, 4281 (1999). (With M. Dutta, H. E. Nusse, and J. A. Yorke).
304. The k Spectrum of Finite Lifetime Passive Scalars in Lagrangian Chaotic Fluid Flows, *Phys. Rev. Lett.* **83**, 3426 (1999). (With K. Nam, T. M. Antonsen, and P. N. Guzdar.)
305. Exploiting Synchronization to Combat Channel Distortions in Communicating with Chaotic Systems, *J. Bif. and Chaos* **10**, 777 (2000). (With N. Sharma).
306. Explosions of Chaotic Sets, *Physica D* **144**, 44 (2000). (With C. Robert, K. T. Alligood, and J. A. Yorke).

307. Spiral Wave Dynamics in Oscillatory Inhomogeneous Media, *Phys. Rev. E* **61**, 4943 (2000). (With M. Hendrey and T. M. Antonsen).
308. Fractal Basin Boundaries in Higher-Dimensional Chaotic Scattering, *Phys. Lett. A* **266**, 134 (2000). (With D. Sweet).
309. Optimal Periodic Orbits of Continuous Time Chaotic Systems, *Phys. Rev. E* **62**, 1950 (2000). (With T. -H. Yang and B. R. Hunt).
310. Fractal Dimension of Higher Dimensional Chaotic Repellers, *Physica D* **139**, 1 (2000). (With D. Sweet).
311. Power Spectrum of Passive Scalars in Two-Dimensional Chaotic Flows, *Chaos* **10**, 39 (2000). (With G. -C. Yuan, K. Nam, T. M. Antonsen, and P. N. Guzdar).
312. The Effect of Finite Lifetime of Passive Scalars and Vorticity on Their Power Spectra, *Physica A* **288**, 265 (2000). (With K. Nam et al.).
313. The Effect of Drag on the Enstrophy Cascade of Two-Dimensional Turbulence, *Phys. Rev. Lett.* **84**, 5134 (2000). (With K. Nam et al.)
314. Stalactite Basin Structure of Dynamical Systems with Transient Chaos in an Invariant Submanifold, *Chaos* **10**, 291 (2000). (With V. Dronov).
315. Testing Whether Two Chaotic One Dimensional Processes are Dynamically Identical, *Phys. Rev. Lett.* **85**, 4265 (2000). (With G. -C. Yuan, J. A. Yorke, T. L. Carroll, and L. M. Pecora).
316. Wave Chaotic Eigenfunctions in the Time-Reversal Symmetry Breaking Crossover Regime, *Phys. Rev. Lett.* **85**, 2482 (2000). (With S. -H. Chung, A. Gokirmak, D. -H. Wu, J. S. A. Bridgewater, T. M. Antonsen and S. M. Anlage).
317. Target Waves in the Complex Ginzburg-Landau Model, *Phys. Rev. E* **62**, 7627 (2000). (With M. Hendrey, P. Guzdar and K. Nam).
318. Pattern Selection in Extended Periodically Forced Systems: A Continuum Coupled Map Approach, *Phys. Rev. E* **63**, 046202 (2001). (With S. C. Venkataramani).
319. Blowout Bifurcations and the Onset of Magnetic Activity in Turbulent Dynamos, *Phys. Rev. E* **63**, 066211 (2001). (With D. Sweet, J. M. Finn, T. M. Antonsen and D. P. Lathrop).
320. Blowout Bifurcations and the Onset of Magnetic Dynamo Action, *Phys. of Plasmas* **8**, 1944 (2001). (With D. Sweet, T. M. Antonsen and J. M. Finn).
321. Three Dimensional Optical Billiard Chaotic Scattering, *Physica D* **154**, 207 (2001). (With D. Sweet, B. Zeff and D. P. Lathrop).
322. Fractal Properties of Strange Nonchaotic Attractors, *Phys. Rev. Lett.* **87**, 254101 (2001). (With B. R. Hunt).

323. Detecting Phase Synchronization in a Coupled Laser Array, *Phys. Rev. Lett.* **87**, 044101 (2001). (With D. DeShazer, R. Breban, and R. Roy).
324. Local Low Dimensionality of Atmospheric Dynamics, *Phys. Rev. Lett.* **86**, 5878 (2001). (With D. J. Patil, B. R. Hunt, E. Kalnay, and J. A. Yorke).
325. Front Propagation of Spatio-temporal Chaos, *Phys. Rev. E* **64**, 016215 (2001). (With J. W. Kim, J. Y. Vaishnav, S. C. Venkataramani, and W. Losert).
326. Phase Synchronization of Chaotic Attractors in the Presence of Two Competing Periodic Signals, *Phys. Rev. E* **65**, 05621 (2002) (with R. Breban).
327. Evolving Networks with Multispecies Nodes and Spread in the Initial Number of Links, *Phys. Rev. E* **66**, 046115 (2002) and electronic publication arXiv:physics/0205002v1 1 May 2002 (with J. -W. Kim and B. Hunt).
328. The Onset of Synchronism in Systems of Globally Coupled Chaotic and Periodic Oscillators, *Physica D* **173**, 29 (2002) and electronic publication arXiv.org/abs/nlin.CD/020518 (with P. So, E. Barreto and T. Antonsen).
329. Long-time Algebraic Relaxation in Chaotic Billiards, *Phys. Rev. Lett.* **89**, 284101 (2002) (with D. N. Armstead and B. R. Hunt).
330. Statistics and Characteristics of Spatio-Temporally Rare Intense Events in Complex Ginzburg-Landau Models, *Phys. Rev. E* **67**, 026203 (2003) and electronic publication arXiv.nlin. PS/0205041 v1 16 May 2002 (with J. -W. Kim).
331. Bifurcation Scenarios for the Bubbling Transition, *Phys. Rev. E* **67**, 016204 (2003) (with A. Zimin and B. R. Hunt).
332. Anomalous Diffusion in Infinite Horizon Billiards, *Phys. Rev. E* **67**, 021110 (2003) (with D. N. Armstead and B. R. Hunt).
333. Extracting Envelopes of Rossby Wave Packets, *Monthly Weather Review* **131**, 847 (2003) (with A. V. Zimin, I. Szunyogh, D. J. Patil and B. R. Hunt).
334. Fractal Properties of Robust Strange Nonchaotic Attractors in Maps of Two or More Dimensions, *Phys. Rev. E* **67**, 036211 (2003) (with J. -W. Kim, S. -Y. Kim, and B. R. Hunt).
335. Mechanism for the Intermittent Route to Strange Nonchaotic Attractors, *Phys. Rev. E* **67**, 056203 (2003) (with S. -Y. Kim and W. Lim).
336. Dynamical Origin for the Occurrence of Asynchronous Hyperchaos and Chaos Via Blowout Bifurcations, *Phys. Rev. E* **68**, 066203 (2003) (with S. Y. Kim, W. Lim and B. Hunt).
337. Lack of Predictability in Dynamical Systems with Drift: Scaling of Indeterminate Saddle-Node Bifurcations, *Phys. Lett. A* **319**, 79 (2003) (with R. Breban and H. E. Nusse).

338. Scaling Properties of Indeterminate Saddle-Node Bifurcations, *Phys. Rev. E* **68**, 066213 (2003) (with R. Breban and H. E. Nusse).
339. Observation and a Model for Resonances in One-dimensional Unshunted Josephson Junction Arrays with Ground Planes, *Phys. Rev. B* **68**, 024521 (2003) (with B. Vasilic, T. M. Antonsen, P. Barbara, and C. J. Lobb).
340. Pattern Formation in a Monolayer of Magnetic Spheres, *Phys. Rev. E* **68**, 026207 (2003) (with J. Stambaugh, D. P. Lathrop, and W. Losert).
341. Power Law Decay and Self-Similar Distributions in Stadium-Type Billiards, *Physica D* **193**, 96 (2004) (with D. N. Armstead and B. R. Hunt).
342. Segregation in a Monolayer of Magnetic Spheres, *Phys. Rev. E* **70**, 031304 (2004) (with J. Stambaugh, Z. Smith and W. Losert).
343. Phase Synchronization and Entrainment in a Chaotic Laser Array, *Int. J. Bifurcations and Chaos* **14**, 3205 (2004) (with D. DeShazer, R. Breban and R. Roy).
344. Communication with a Chaotic Traveling Wave Tube Microwave Generator, *Chaos* **14**, 30 (2004) (with V. Dronov, M. Hendrey, and T. M. Antonsen).
345. Growing Networks with Geographical Attachment Preference: Emergence of Small Worlds, *Phys. Rev. E* **69**, 026108 (2004) (with J. Ozik and B. R. Hunt).
346. Estimating the State of Large Spatio-Temporally Chaotic Systems, *Phys. Lett. A* **330**, 365 (2004) (E. Ott et al.).
347. Four Dimensional Ensemble Kalman Filtering, *Tellus* **56A**, 273 (2004) (with B. Hunt, et al.).
348. The Onset of Synchronism in Systems of Globally Coupled Maps, *Phys. Rev. E* **69**, 066201 (2004) (with S. -J. Baek).
349. Spatial Patterns of Desynchronization Bursts in Networks, *Phys. Rev. E* **69**, 066215 (2004) (with J. G. Restrepo and B. Hunt).
350. Simple Model for Reverse Buoyancy in a Vibrated Granular System, *Europhys. Lett.* **67**, 369 (2004) (with G. Gutierrez, O. Pozo, L. I. Reyes, R. Paredes, and J. F. Drake).
351. Desynchronization Waves and Localized Instabilities in Oscillator Arrays, *Phys. Rev. Lett.* **93**, 114101 (2004) (with J. G. Restrepo and B. R. Hunt).
352. Band-in-band Segregation of Multidisperse Granular Mixtures, *Europhys. Lett.* **66**, 205 (2004) (with M. Newey, J. Ozik, S. M. van der Meer, and W. Losert).
353. Localized Error Bursts in Estimating the State of Spatio-Temporal Chaos, *Chaos* **14**, 1042 (2004) (with S. -J. Baek, B. R. Hunt, I. Szunyogh, and A. V. Zimin).

354. A Local Ensemble Kalman Filter for Atmospheric Data Assimilation, *Tellus A* **56**, 415 (2004) (E. Ott et al.).
355. Report of the Second Fusion Energy Sciences Committee of Visitors, *J. Fusion Energy* **23**, 237 (2004) (with J. P. Freidberg et al.).
356. Universal Impedance Fluctuations in Wave Chaotic Systems, *Phys. Rev. Lett.* **94**, 014102 (2005) (with S. Hemmady, X. Zheng, T. M. Antonsen and S. M. Anlage).
357. Assessing a Local Ensemble Kalman Filter: Perfect Model Experiments with the NCEP Global Model, *Tellus A* **57**, 528 (2005)(with I. Szunyogh et al.).
358. Intermittency in Two-Dimensional Turbulence with Drag, *Phys. Rev. E* **71**, 066313 (2005) (with Y. -K. Tsang, T. M. Antonsen and P. N. Guzdar).
359. Onset of Synchronization in Large Networks of Coupled Oscillators, *Phys. Rev. E* **71**, 036151 (2005) (with J. G. Restrepo and B. R. Hunt).
360. Formation of Multifractal Population Patterns from Reproductive Growth and Local Resettlement, *Phys. Rev. E* **72**, 046213 Part 2 (2005) (with J. Ozik and B. R. Hunt).
361. Exponential Decay of Chaotically Advected Passive Scalars in the Zero Diffusivity Limit, *Phys. Rev. E* **71**, 066301 (2005) (with Y. -K. Tsang and T. M. Antonsen).
362. Universal Statistics of the Scattering Coefficient in Wave Chaotic Systems, *Phys. Rev. E* **71**, 056215 (2005) (with S. Hemmady, X. Zheng, T. M. Antonsen and S. M. Anlage).
363. Crowd Synchrony on the Millennium Bridge, *Nature* **438** (7046), 43 (2005) (with S. H. Strogatz, D. Abrams, A. McRobie, and B. Eckhardt).
364. Statistics of Impedance and Scattering Matrices in Chaotic Microwave Cavities: Single Channel Case, *Electromagnetics* **26**, 3 (2006) (with X. Zheng and T. M. Antonsen).
365. Statistics of Impedance and Scattering Matrices of Chaotic Microwave Cavities with Multiple Ports, *Electromagnetics* **26**, 37 (2006) (with X. Zheng and T. M. Antonsen).
366. Scale Dependence of Branching in Arterial and Bronchial Trees, *Phys. Rev. Lett.* **96**, 128101 (2006) (with J. G. Restrepo and B. R. Hunt).
367. Characterization of Fluctuations of Impedance and Scattering Matrices in Wave Chaotic Scattering, *Phys. Rev. E* **73**, 046208 (2006) (with X. Zheng, S. Hemmady, T. M. Antonsen and S. M. Anlage).
368. The Emergence of Coherence in Complex Networks of Heterogeneous Dynamical Systems, *Phys. Rev. Lett.* (accepted) (with J. G. Restrepo and B. R. Hunt).
369. Local Ensemble Kalman Filtering in the Presence of Model Bias, *Tellus A* **58**, 263 (2006) (with S. -J. Baek et al.).

370. Assessing Predictability with a Local Ensemble Kalman Filter, *Tellus A* (accepted) (with D. Kuhl et al.).
371. Aspects of the Scattering and Impedance Properties of Chaotic Microwave Cavities, *Acta Physica Polonica A* **109**, 65 (2006) (with S. Hemmady, X. Zheng, T. M. Antonsen and S. M. Anlage).
372. Extracting Envelopes of Non-Zonally Propagating Rossby Wave Envelopes, *Monthly Weather Review* **134**, 1329 (2006) (with A. Zimin and I. Szunyogh).
373. Universal Properties of Two-Port Scattering Impedance and Admittance Matrices of Wave-Chaotic Systems, *Phys. Rev. E* (accepted) (with S. Hemmady, X. Zheng, T. M. Antonsen and S. M. Anlage).
374. Synchronization in Large Directed Networks of Coupled Phase Oscillators (with J. G. Restrepo and B. R. Hunt) *Chaos* **16**, 015107 (2006).

B. Articles in Books

1. Spheromak Tilting Instability: Experiment and Theory, in Proceedings of the 8th International Conference on Plasma Physics and Controlled Thermonuclear Fusion Research. (IAEA, Vienna, 1981). (With Z. An et al.).
2. Ray Ergodicity and Its Consequences for Plasma Heating, Stability, and Emission, in Long-Time Prediction in Dynamics, edited by L. Reichl, W. Horton, and V. Szebehely (Wiley, New York, 1982).
3. Multimode Analysis of Quasi-Optical Gyrotrons and Gyrokystrons, in Infrared and Millimeter Waves, edited by K. J. Button (Academic Press, Orlando, 1983). (With A. Bondeson and W. M. Manheimer).
4. Fractal Basin Boundaries in Nonlinear Dynamical Systems, in Statistical Physics and Chaos in Fusion Plasmas (Wiley, 1984, p. 127). (With C. Grebogi, S. W. McDonald, and J. A. Yorke).
5. Quasiperiodicity and Chaos, in Group Theoretical Methods in Physics, edited by W. W. Zachary (World Scientific, Singapore, 1984). (With C. Grebogi and J. A. Yorke).
6. An Obstacle to Predictability, in Group Theoretical Methods in Physics, (World Scientific, Singapore, 1984). (With S. W. McDonald, C. Grebogi, and J. A. Yorke).
7. Fractal Basin Boundaries, in The Physics of Phase Space, edited by Y. S. Kim and W. W. Zachary (Springer-Verlag, 1986). (With C. Grebogi and J. A. Yorke).
8. Ergodic Adiabatic Invariants, in Quantum Measurement and Chaos, edited by E. R. Pike and S. Sarkar (Plenum Publishing Corp., 1987).

9. Basic Sets: Sets that Determine the Dimensions of Basin Boundaries, in Lecture Notes in Mathematics, Vol. 1342, Dynamical Systems, Ed. J. C. Alexander (Springer-Verlag, New York, 1988). (With H. E. Nusse, C. Grebogi, and J. A. Yorke).
10. Chaos, in Encyclopedia of Statistics, edited by S. Kotz (1989).
11. Controlling Chaotic Dynamical Systems, in Chaos: Proceedings of a Soviet-American Conference (American Institute of Physics, 1990). (With C. Grebogi and J. A. Yorke).
12. Fractal Structure in Physical Space in the Dispersal of Particles in Fluids, in Nonlinear Structure in Physical Systems, edited by L. Lam and H. C. Morris (Springer-Verlag, 1990). (With L. Yu and C. Grebogi).
13. Chaos, in Encyclopedia of Physics, edited by R. G. Lerner and G. L. Trigg (VCH Publishers, 1990).
14. Controlling Chaotic Dynamical Systems, in Proceedings of the 1991 American Control Conference (1991). (With F. J. Romeiras, C. Grebogi, and W. P. Dayansa).
15. Pointwise Dimension and Unstable Periodic Orbits, in Essays on Classical and Quantum Dynamics, edited by H. Uberall (Gordon and Breach, 1991). (With C. Grebogi and J. A. Yorke).
16. Feedback Control of Chaotic Systems, in Chaotic Dynamics: Theory and Practice, edited by T. Bountis (Plenum, 1992). (With F. Romeiras, C. Grebogi and W. P. Dayawansa).
17. On the Tendency Toward Ergodicity with Increasing Number of Degrees of Freedom in Hamiltonian Systems, in Hamiltonian Mechanics: Integrability and Chaotic Behavior (Plenum, London, 1994). (With L. Herd and C. Grebogi).
18. Characterization of Sign Singular Measures, in Chaotic Advection, Tracer Dynamics and Turbulent Dispersion, (North-Holland, 1994). (With Y. Du and T. Tél).
19. Controlling Symbolic Dynamics for Communication, Proc. 2nd Experimental Chaos Conference (World Scientific, Singapore, 1995). (With S. Hayes, C. Grebogi, and A. Mark).
20. Experiments on Quantum Chaos With and Without Time Reversibility, Proc. 2nd Experimental Chaos Conference (World Scientific, Singapore, 1995). (With P. So and S. Anlage).
21. Blowout Bifurcations: Symmetry Breaking of Spatially Symmetric Chaotic States in Lévy Flights and Related Topics in Physics, edited by M. F. Shlesinger et al. (Springer, 1995). (With J. Sommerer, S. Venkataramani and T. M. Antonsen).
22. On-Off Intermittency: Power Spectrum and Fractal Properties of Time Series, in Measures of Spatio-Temporal Dynamics (North Holland, 1995). (With S. C. Venkataramani, T. M. Antonsen, and J. C. Sommerer).

23. The Statistics of Scars on Wave Functions in Proc. of the 4th Drexel Symposium on Quantum Nonintegrability (International Press, Cambridge, MA, 1996). (With T. M. Antonsen, Q. Chen, and R. Oerter).
24. Controlling Chaos in Chaotic, Fractal, and Nonlinear Signal Processing (AIP, Woodbury, NY, 1996). (With M. L. Spano).
25. Control of Chaos by Means of Embedded Unstable Periodic Orbits in Control and Chaos (Birkhäuser, Boston, 1997). (With B. R. Hunt).
26. Fractal Patterns of Scalars Advected by Temporally Irregular Fluid Flows in Fractal Frontiers (World Scientific Publishers, Singapore, 1997). (With T. M. Antonsen).
27. Chaos in McGraw-Hill 1998 Yearbook of Science and Technology.
28. Lagrangian Chaos and the Fast Kinematic Dynamo Problem, in Chaos, Kinetics, and Nonlinear Dynamics in Fluids and Plasmas (Springer, 1998).
29. Synchrony in Globally Coupled Chaotic, Periodic and Mixed Ensembles of Dynamical Units in Synchronization: Theory and Application (Kluwer Academic Publishers, 2003). (With P. So, E. Barreto and T. M. Antonsen).

C. Books

1. Chaos in Dynamical Systems by E. Ott (Cambridge University Press, 1993).
2. Coping with Chaos edited by E. Ott, T. Sauer and J. A. Yorke (John Wiley & Sons, 1994).
3. Chaos w Układach Dynamicznych (Wydawnictwa Naukowo-Techniczne, Warsaw, 1997). (This is a translation into Polish of the book, Chaos in Dynamical Systems, item 1 on this list).

D. Patents

1. Plasma Heating with Intense Pulsed Ion Beams, United States Patent 4, 115, 191 (Sept. 19, 1978) (with W. M. Manheimer).
2. Quasioptical Gyroklystron, United States Patent 4, 491, 765 (Jan. 1, 1985) (with W. M. Manheimer and A. Bondeson).

E. Other

1. The Beauty of Order and Chaos, exhibit at Fine Arts Museum of Long Island, April 1 – June 24, 1990.

2. A chaos art show, "Radical Science Stuff", assembled by The Museum of Discovery and Science, Ft. Lauderdale, Florida, has circulated through about 18 art museums and science museums nationally. This show includes some Grebogi-Ott-Yorke computer generated pictures. Similar exhibits appeared with Grebogi-Ott-Yorke pictures at the Baltimore Science Museum and at the Science Museum in San Francisco.
3. A chaos exhibition, "A Chaos of Delight: Artists and Scientists Seek an Understanding of Their World" at The Delaware Center for the Contemporary Arts, Feb. 2 – March 17, 1996.

VI. Ph.D. Theses Directed:

1. Thomas M. Antonsen, Ph.D. (Cornell University) 1977, "Theoretical Problems in Plasma Heating."
2. Alice L. Newman, Ph.D. (Cornell University) 1979, "Nonlinear Simulation of Type I Irregularities in the Equatorial Electrojet."
3. Paul T. Bonoli, Ph.D. (Cornell University) 1980, "Toroidal and Scattering Effects on Lower Hybrid Wave Propagation in Tokamaks."
4. John A. Swegle, Ph.D. (Cornell University) 1980, "An Investigation of $\mathbf{E} \times \mathbf{B}$ -Type Equilibria in Magnetically Insulated Structures."
5. Thomas P. Hughes, Ph.D. (Cornell University) 1981, "Nonlinear Waves on Charged Particle Beams."
6. David A. Russell, Ph.D. (Cornell University) 1981, "Problems in Deterministic Chaotic Behavior in Plasma Physics."
7. James D. Hanson, Ph.D. (University of Maryland) 1982, "An Alpha Particle Driven Alfvén Wave Instability in a Tandem Mirror Reactor."
8. Spilios Riyopoulos, Ph.D. (University of Maryland) 1983, "Waves and Turbulence in Plasmas."
9. Reggie Brown, Ph.D. (University of Maryland) 1985, "Dynamics in the Chaotic Regime: Ergodic Adiabatic Invariants and Power Spectra of Period Doubling Cascades."
10. Peter M. Battelino, Ph.D. (University of Maryland) 1987, "Three-Frequency Quasiperiodicity, Torus Break-up, and Multiple Coexisting Attractors in a Higher Dimensional Dissipative System."
11. Bai-Sig Park, Ph.D. (University of Maryland) 1988, "Dimension of Fractal Basin Boundaries."
12. Siegfried Bleher, Ph.D. (University of Maryland) 1989, "Chaotic Dynamics of Open Hamiltonian Systems: Fractal Boundaries and Chaotic Scattering."
13. Mingzhou Ding, Ph.D. (University of Maryland) 1990, "Strange Sets in Quasiperiodically Forced Systems and in Chaotic Scattering."
14. Luise S. Shuetz, Ph.D. (University of Maryland) 1991, "Quantum Chaos in Systems with Ray Splitting."
15. John C. Sommerer, Ph.D. (University of Maryland) 1991, "The Effect of Noise on Nonlinear Systems Near Crisis."

16. Lei Yu, Ph.D. (University of Maryland) 1991, "Fractal Distribution of Convected Particles and the Transition to Chaos for Random Maps."
17. Troy Shinbrot, Ph.D. (University of Maryland) 1992, "Controlling Chaos: Using the Butterfly Effect to Direct Trajectories to Targets in Chaotic Systems."
18. Yunson Du, Ph.D. (University of Maryland) 1993, "Chaotic Flows and Magnetic Dynamos."
19. Paul So, Ph.D. (University of Maryland) 1995, "Observing and Controlling Chaotic Systems, and Wave Chaos Statistics."
20. Shankar C. Venkataramani (University of Maryland) 1996, "Random Walks in Chaos."
21. Charles D. Reyl (University of Maryland) 1996, "Scaling and Fractal Properties of Magnetic Fields and Fluid Vorticity in Chaotic Fluid Flows."
22. Guo Hui Yuan (University of Maryland) 1997, "Shipboard Crane Control, Simulated Data Generation, and Border-Collision Bifurcations."
23. Michael Gabbay (University of Chicago) 1997, "Dynamics of Vortex Filaments in the Complex Ginzburg-Landau Equation."
24. Joeri Jacobs (University of Maryland) 1997, "Transient Chaos."
25. Keeyeol Nam (University of Maryland) 1999, "Vortex and Vorticity Dynamics in the Complex Ginzburg-Landau Equation and in the Two-Dimensional Navier Stokes Equation."
26. Matthew R. Hendrey (University of Maryland) 2000, "Effects of Inhomogeneities in the Complex Ginzburg-Landau Equation."
27. Mitrajit Dutta (University of Maryland) 2000, "Chaotic Systems: Predictable Unpredictabilities and Synchronization."
28. David Sweet (University of Maryland) 2000, "Higher Dimensional Nonlinear Systems: Bursting and Scattering."
29. Jong-Won Kim (University of Maryland) 2002, "Dynamics of Extended Systems."
30. Douglas N. Armstead (University of Maryland) 2002, "Power Law Decay and Self-Similar Distributions in Stadium Billiards."
31. Romulus Breban (University of Maryland) 2003, "Low Dimensional Chaos: Phase Synchronization and Indeterminate Bifurcations."
32. Michael Oczkowski (University of Maryland) 2003, "Scenarios for the Development of Locally Low Dimensional Atmospheric Dynamics."
33. Yue-Kin Tsang (University of Maryland) 2003, "Two-Dimensional Turbulence with Drag."

34. Vasily Dronov (University of Maryland) 2005, “Application of Chaotic Synchronism and Controlling Chaos to Communications.”
35. Jonathan Ozik (University of Maryland) 2005, “Evolution of Discrete Dynamical Systems.”
36. Xing Zheng (University of Maryland) 2005, “Statistics of Impedance and Scattering Matrices in Chaotic Microwave Cavities.”
37. Juan G. Restrepo (University of Maryland) 2005, “Synchronization in Networks of Coupled Oscillators.”