CURRICULUM VITAE

Thomas Marbory Antonsen Jr.

I. Education:

B.S. Cornell University (Electrical Engineering) June 1973

M.S. Cornell University (Electrical Engineering) August 1976

Ph.D. Cornell University (Electrical Engineering) January 1977

II. Experience in Higher Education:

7/89 -- Present	Professor, Departments of Electrical and Computer Engineering and Physics, University of Maryland
1/92 -- 6/92	Invited Professor, Ecole Polytechnique Federale de Lausanne, Lausanne, Suisse
9/91 -- 19/91	Visiting Research Scientist, Institute de Physique Theorique, Ecole Polytechnique, Palaiseau, France
9/84 -- 6/89	Associate Professor, Departments of Electrical Engineering and Physics and Astronomy, University of Maryland
1/85 -- 5/85	Visitor, Institute for Theoretical Physics, University of California, Santa Barbara
9/80 -- 9/84	Research Associate, Laboratory for Plasma and Fusion Energy Studies, University of Maryland
l/80 -- 8/80	Assistant Professor, Physics Department, Massachusetts Institute of Technology
9/77 -- 12/79	Research Scientist, Research Laboratory of Electronics, Massachusetts Institute of Technology
l0/76 -- 9/77	National Research Council, Post-doctoral Fellow at Naval Research Laboratory

III. Experience Other Than in Higher Education:

Professional Services:

FESAC (fusion energy sciences advisory committee) Panel Reviewing the DoE Fusion Theory and Computing Program, 2001
Department of Energy review panel for High Energy Physics Program at Lawrence Berkeley National Lab, 2000
Board of Visitors: MIT Plasma and Fusion Science Center, 2000
Executive Committee, IEEE-Plasma Science Society, 1998-2000.
Divisional Associate Editor, Physical Review Letters, 1994-1997.
Associate Editor, The Physics of Fluids, 1984--1986, 1988--1991.
Executive Committee, DPP-APS, 1990-1993.
Correspondent, Comments on Plasma Physics and Controlled Fusion.
Member, Panel IV, International Science Foundation 1993-1994.
Member, APS - Simon Ramo Award Committee 1994-1995.
Member, Institute of Fusion Studies Advisory Board, 1985--1988.
Member, Program Committee, 1987 APS-DPP Meeting.
Member of Selection Committee for Invited Papers for the 1986 Sherwood Theory Meeting.
Member of Selection Committee for Invited Papers for the 1983 Sherwood Theory Meeting.
Consultant to the Department of Energy MFTF-B Magnet System Design Physics Review Panel.
Referee for Physical Review Letters, Nuclear Fusion, Physics of Fluids, Plasma Physics, IEEE Transactions on Plasma Science.

Consulting Activities:

Naval Research Laboratory, Washington, D.C.
Huff and Hanson (patent attorneys)
Science Applications International Corporation
Sachs Freeman Associates
Lawrence Livermore National Laboratory

IV. Affiliations/Honors:

Fellow, American Physical Society, Division of Plasma Physics.
Senior Member, IEEE
1999 Robert L. Woods Award for Excellence in Vacuum Electronics Research
2003 IEEE Plasma Science and Applications Award

V. Theses Directed:

Type of Degree	Recipient	Date
Ph.D. (MIT)	Barton Lane	December 1980
Ph.D. (U. MD)	Grant Burkhardt	December 1988
Ph.D. (U. MD)	Hai Li	January 1993
Ph.D. (U. MD)	Edward Stanford	December 1993
Ph.D. (U. MD)	Girish Saraph	May 1995
Ph.D. (U. MD)	Susanne Miller	December 1995
Ph.D. (U.MD)	Chunbo Liu	May 1998
Ph.D. (U. MD)	David Gershon	May 1999
Ph.D. (U. MD)	Satoru Kobayashi	December 1999

VI. Contracts and Grants:

Maryland Controlled Fusion Research Program, (1984--Present), with 7 others, Department of Energy, present funding $400,000/year.

Free Electron Lasers with Small Period Wigglers, (1987--1989), Granatstein, Antonsen, Destler, Mayergoyz, Ott, Department of Energy, $250,000/year.

Mode Competition in Gyrotrons (1988), Antonsen, Levush, Department of Energy, $80,000

Enhanced Harmonic Emission in Ubitrons (1988--1989), Booske, Antonsen, Granatstein, Office of Naval Research, $120,000/year.

Enhanced Harmonic Emission in Ubitrons (1990), Bidwell, Antonsen, Granatstein, Office of Naval Research, 60K/year.

Studies in High Power Microwave Generation (1988--1989), Antonsen, Destler, Granatstein, Levush, and E. Ott, Harry Diamond Lab, 80K/year.

Microwave Generation for Magnetic Fusion Energy Applications (1989--1997), Antonsen, Destler, Granatstein, Levush, Department of Energy, $315K/year.

Experimental and Theoretical Studies of High-Power Microwave Radiation from a Multiwave Cerenkov Generator (1990), Antonsen, Carmel, Destler, Granatstein, Levush, Harry Diamond Lab, $280,000/year.

Harmonic Gyrotron Amplifiers and Phased Locked Oscillators (1991-present), (Antonsen, Granatstein, Levush), AFOSR $200,000/year.
Experimental and Theoretical Studies of High-Power Plasma-Filled Backward-Wave Oscillators, (1989-1991), Antonsen, Carmel, Destler, Granatstein, Levush, ONR, $200,000/year.

Plasma Microwave Electronics: Studies of High-Power Plasma-Filled Backward-Wave Oscillators (1992-1993),(Antonsen, Carmel, Destler, Granatstein, Levush), AFOSR $200,000/year.

Experimental and Theoretical Studies of High Power Microwave generation, (Antonsen, Carmel, Destler, Granatstein, Levush), ARL, $320,000/year.

US/USSR Joint Proposal on Nonlinear Dynamics and Transport, (1990--1996), Liu, Sagdeev, Antonsen, Drake, Hassam, Finn, Guzdar, Department of Energy, $100,000/year.

Tri-service: Experimental & Theoretical Research in Advanced Vacuum Electronic Microwave Devices, (Co PI's: Destler, Antonsen, Calame, Carmel, Granatstein, Guo, Lawson, Nusinovich, Singh), AFOSR, 9/30/94-9/30/96 $264,939

MURI Research on Compact, High Energy, Microwave Sources, (Co PI's: Granatstein, Destler, Antonsen, Carmel, Guo, Levush, Nusinovich), AFOSR, $1,000,000/year 1996-present

Application of plasma waveguides to advanced high energy accelerators, (Co PI's, H. Milchberg and T. M. Antonsen Jr.) USDOE 3/97 - 3/00, ($200,000/year).

Ultra-Intense Laser Pulse Propagation in Gas and Plasma, (Co PI's, T. M. Antonsen Jr. and H. Milchberg) NSF 9/97 - 9/00 ($70,000/year)

Microwaves for Fusion Energy, (Co PI's,Granatstein, Antonsen Nusinovich, Singh) DOE 12/98 - 12/01 ($100,00/year)

Basic Studies of High Power Millimeter Wave Amplifiers and Associated Technology, (Co-Pi's Granatstein, Antonsen, Lawson, Lloyd, Nusinovich, Singh,Walter, Wilson) ONR ($350k/year)

Investigation of Basic Physics Processes in the Pasotron HPM Source (co-Pi's Carmel, Nusinovich, Antonsen, Granatstein) AFOSR ($335,365/year)

AFOSR MURI, 5/1/01-11/30/01, Microwave effects and chaos in 21st century electronics, $410,000
PIs Granatstein, Ott, Antonsen, Anlage, Ramahi, O'Shea, Goldsman, Jacob, Carmel, Iliadis, Melngailis and J Rodgers

VII. University Service:

Departmental Committees:

Priorities Committee (Physics) F95-S98
Facilities Services and Computers Commitee (EE) F96-S99
Undergraduate Education Committee (Phyisics) F97-S98
Recruiting Committee (EE) S96, F97, S98
Department Council (EE) F94-S96, F98-S00
Promotion and Tenure (EE) S93-F95
Salary (Physics) F93-S94
GE Forgivable Loan Committee S90-F91
Academic Affairs (EE) F89-S91
APT (Physics) F85-S87, F02 S03
Graduate Studies and Research (EE) F87-S88
Ph.D. Qualifying Exam Committee (EE) F86, F97-S98
Teaching Evaluation Committee (EE) S87
Ad Hoc Budget Committee (Physics) F85

Other Department Service:

Undergraduate Advising (EE)
Ph.D. Qualifying Exam Grading (EE and Physics)

Other University Service:

Acting Director: Institute for Plasma Research 1998-2000
Merit Pay Plan Review Committee F98-S99
Mentor for Center for Excellence in Education 1989-1990
IPR Executive Committee 1994-1995, 1997-1998, 2001
IPR Review Committee F97-S98
IPR Strategic Planning S98
Campus Senate 1992-94

LPF Unit Review Committee 1987, 1997-1998
LPF Director Search Committee 1987
LPF Executive Committee 1987-1988
Chairman LPF Faculty Assembly 1986
Mentor for Center for Excellence in Education 1988-1990

VIII. Courses Taught:

Course No.	Title	Credit Hours	Semester
PHYS 141	Introduction to Physics	4	F94 F95 F96 F97
ENEE 204	Systems and Circuits	3	F85
ENEE 380	Electromagnetic Theory	3	F86 F87 S98 S99 S02
ENEE 381	Electromagnetic Wave Propagation	3	F84 S93 S94 S95 S96 S97
ENEE 381H	Electromagnetic Wave Propagation	3	S03
ENEE 488G	Microwave Engineering	3	F88 F89
PHYS 798b	Magnetohydrodynamic Stability	3	S86
	Topics in Chaotic Dynamics	3	S90
PHYS 762	Plasma Physics	3	S87 S88 S89
ENEE 608	Electrophysics Seminar	1	F86 S96
PHYS 601	Classical Mechanics	3	F90 F99
ENEE 302	Electronic Circuit Design	3	S91
PHYS 606	Electrodynamics	3	F92 F93

IX. Invited Papers and Lectures (First Author Only):

1. "On the Stability of Bound Eigenmode Solutions for the Collisionless Universal Instability," Annual Controlled Fusion Theory Conference, Gatlinburg, Tenn., April (1978), Paper 0C3.

2. "Electron Cyclotron Resonance Heating of High Terature Plasmas," International School of Plasma Physics, Varenna, Italy (1979).

3. "Variational Principle for Low Frequency Stability of Collisionless Plasmas," Annual Controlled Fusion Theory Conference, Tucson, Arizona (1980), paper 2A4.

4. "Variational Principle for Low Frequency Stability of Collisionless Plasmas," Annual Meeting of the Division of Plasma Physics of the American Physical Society, New York, N.Y. (1981).

5. "Energy Principles Based on Guiding Center Motion," Conference on Stability of Plasmas with Energetic Particles, Ithaca, N.Y. (1982).

6. "Ballooning Modes in Hot Electron Plasmas," U.S. Japan Workshop on Hot Electron Physics, Austin, Texas (1983).

7. "Nonlinear Reduced Fluid Equations for Toroidal Plasmas," Annual Controlled Fusion Theory Conference, Arlington, Virginia (1983), paper 3B3.

8. "Unified Theory of RF Current Drive Mechanisms," IEEE Course on RF Heating and Current Drive in Magnetic Fusion Plasmas, San Diego, California, May (1983).

9. "Nonlinear Reduced Braginskii Equations," Gordon Research Conference on Plasma Physics, New London, New Hampshire (1983).

10. "RF Current Generation in Toroidal Geometry," Annual Meeting of the Division of Plasma Physics of the American Physical Society, Los Angeles, California (1983).

11. "How to Calculate Magnetic Helicity," U.S. Japan Workshop on Stochasticity and Turbulence in Plasmas, Santa Barbara, California (1985).

12. "RF Induced Transport in Plasmas," Summer School on Plasma Physics, International Centre for Theoretical Physics, Trieste, Italy (1985).

13. "Self Field Effects in Gyrotrons," Annual Meeting of the Division of Plasma Physics of the American Physical Society, Baltimore, Maryland (1986).

14. "Kinetic Energy Principles," International School of Plasma Physics, Varenna, Italy, Aug.~(1987).

15. "Density and Deceleration Limits in Tapered Free Electron Lasers," International Laser Science Conference, Atlantic City, N.J., Nov.~(1987).

16. "Nonlinear Mode Competition and Coherence in Low Gain FEL Oscillators," IEEE Int. Conf. on Plasma Sc., May, 1989.

17. "Mode Competition in Gyrotrons and Free Electron Lasers," 14th International Conference on Infrared and Millimeter Waves, Würzburg FRG, Oct. 4 (1989).

18. "Fractal Measures for Passively Convected Scalar Fields," MSI Workshop on Chaos and Transport in Hamiltonian Systems, Ithaca, NY, Nov.~22 (1989).

19. "Chaotic Dynamics of Passively Convected Scalars," Workshop on Chaos and Transport on Fluids and Plasmas, U. of Md., April (1990).

20. "Multifractal Properties of Passively Convected Scalars," SIAM Conference on Dynamical Systems, Orlando, Fla., May (1990).

21. "Multifractal Properties of Passive Scalars Convected by Chaotic Fluid Flows," (contributed paper selected for oral presentation) IUTAM symposium on Fluid Mechanics of Stirring and Mixing, San Diego, CA, Aug.~(1990).

22. "The Effect of Dispersion on Mode Competition in Free Electron Lasers," (contributed paper selected for oral presentation), 12th International Conference on Free Electron Lasers, Paris, Sept.~(1990).

23. "Nonlinear Dynamics of Radiation in a Free Electron Laser," US-Japan Workshop on Nonlinear Dynamics and Accelerators, Tsukuba, Japan, Oct. (1990).

24. "Nonlinear Dynamics of Radiation in Free Electron Lasers," International Topical Conference on Research Trends in Coherent Radiation Generation and Particle Accelerators," La Jolla, CA, Feb. (1991).

25. "Nonlinear Theory of a Relativistic Backward-Wave Oscillator," International Topical Conference on Research Trends in Coherent Radiation and Particle Accelerators, La Jolla, CA, Feb. (1991).

26. "Studies of Self-Consistent Field Structure in Quasi-Optical Gyrotrons] (invited Keynote) Seventeenth International Conference on Infrared and Millimeter Waves, Dec. 14-18, 1992 Pasadena, CA.

27. "Chaotic Orbits and the Power Spectra of Passive Scalars" International Symposium in Honor Of Bruno Coppi, Jan. 20, 1995 Cambridge MA.

28. "Models for Magnetized Plasmas" Series of three invited lectures , Ecole d'été, Aussois, France, 18-22 septembre 1995

29. "Space Charge Induced Velocity Spread in a Gyrotron MIG" Invited Talk, 1996 IEEE Conference on Plasma Science, Boston MA, June 1996.

30."Kinetic Modeling of Intense, Short Laser Pulses in Tenuous Plasmas" ICAP98, Sept. 17, 1998.

31. "Numerical Simulation of Backward Wave Excitation in Travelling Wave Amplifiers" 1999 IEEE International Conference on Plasma Science, Monterey CA, June 1999.

32. "Advances in Modeling and Simulation of High Power Sources of Coherent Radiation", Invited review, Annual Meeting of the Division of Plasma Physics of the American Physical Society, Seattle Washington (1999).

33. "Simulation Algorithms for Laser Plasma Interactions", Invited review, Advanced Accelerator Workshop, Santa Fe, NM, June 13, 2000.

34. "Theory and Modeling of Gyro-Devices at the University of Maryland", JIFT Workshop on RF Technology, Princeton NJ, Oct. 30 (2000).

35. "Generation of Axially Modulated Plasma Channels"' Lasers-2000, Albuquerque NM, Dec. 5, 2000.

36. "University Vacuum Electronics Theoretical Programs", Vacuum Electronics Technology for RF Applications OSD - Special Technology Area Review, Arlington VA, Dec. 11, (2000)

37. “Laser Wakefield Acceleration”, Snowmass2001 session T8, Snowmass CO, July (2001)

38. “Quasistatic PIC modeling of Wake field Accelerators”, Snowmass CO, July (2001)

Publications:

A. Articles in Refereed Journals

1. "Velocity Shear Driven Instabilities of an Unneutralized Electron Beam," T. M. Antonsen, Jr. and E. Ott, Phys. Fluids **18**, 1197 (1975).

2. "Theory of Intense Ion Beam Acceleration," T. M. Antonsen, Jr. and E. Ott, Phys. Fluids 19, **52** (1976).

3. "Foil Scattering in a Reflex Triode Intense Ion Beam Accelerator," T. M. Antonsen, Jr. and E. Ott, Appl. Phys. Lett. **28**, 424 (1976).

4. "Theory of Foil-Less Diode Generation of Intense Relativistic Electron Beams," E. Ott, T. M. Antonsen, Jr., and R. V. Lovelace, Phys. Fluids **20**, 1180 (1977).

5. "The Stability of Bound Eigenmode Solutions for the Collisionless Universal Instability," T. Antonsen, Jr., Phys. Rev. Lett. **41**, 33 (1978).

6. "Inward Particle Transport by Plasma Collective Modes," T. Antonsen, Jr., B. Coppi, and R. Englade, Nucl. Fusion **19**, 641 (1979).

7. "Stability Properties of Collisionless Universal Drift Modes," T. Antonsen, Jr. and S. Mahajan, Phys. Fluids **22**, 1836 (1979).

8. "Electromagnetic Wave Propagation in Inhomogeneous Plasmas," Thomas M. Antonsen, Jr. and Wallace M. Manheimer, Phys. Fluids **21**, 2295 (1978).

9. "Theory of Electron Energy Confinement in Tokamaks," W. Manheimer and T. M. Antonsen, Jr., Phys. Fluids **22**, 957 (1979).

10. "Kinetic Equations for Low Frequency Instabilities in Inhomogeneous Plasmas," T. Antonsen, Jr. and B. Lane, Phys. Fluids **23**, 1205 (1980).

11. "Theory of Second Harmonic Electron Cyclotron Resonance Heating of Tokamak Plasma," B. Hui, E. Ott, K. R. Chu, and T. Antonsen, Jr., Phys. Fluids **29**, 822 (1980).

12. "Non Asymptotic Theory of Collisionless Reconnecting Modes," T. M. Antonsen, Jr. and B. Coppi, Phys. Lett. **81A**, 335 (1981).

13. "Variational Principle for Low Frequency Stability of Collisionless Plasmas," T. M. Antonsen, Jr., B. Lane, and J. J. Ramos, Phys. Fluids **24**, 1465 (1981).

14. "Diffusion Coefficient for Ions in the Presence of a Coherent Lower Hybrid Wave," Thomas M. Antonsen, Jr. and Edward Ott, Phys. Fluids **24**, 1635 (1981).

15. "Perturbative Study of the Spectrum of Large Toroidal Mode Number Ideal MHD Instabilities," T. M. Antonsen, Jr., A. Ferreira, and J. J. Ramos, Plasma Phys. **24**, 197 (1982).

16. "Integral Formulation of Collisionless Reconnecting Modes," G. B. Crew, T. M. Antonsen, Jr. and B. Coppi, Nucl. Fusion **22**, 41 (1982).

17. "Electrostatic Modification of Variational Principles for Anisotropic Plasmas," T. M. Antonsen, Jr. and Y. C. Lee, Phys. Fluids **25**, 132 (1982).

18. "On the Stability of Drift Waves with the Integral Eigenmode Equation," Liu Chen, F.-J. Ke, M.-J. Xu, S.-T. Tsai, Y. C. Lee, and T. M. Antonsen, Jr., Plasma Phys. **24**, 743 (1982).

19. "Radio Frequency Current Generation by Waves in Toroidal Geometry," T. M. Antonsen, Jr. and K. R. Chu, Phys. Fluids **25**, 1295 (1982).

20. "Drift Resistive Interchange and Tearing Modes in Cylindrical Geometry," J. M. Finn, W. Manheimer, and T. M. Antonsen, Phys. Fluids **26**, 962 (1983).

21. "Quasilinear Theory Calculation of Ion Tails and Neutron Rates During Lower Hybrid Heating in Alcator A," J. J. Schuss, T. M. Antonsen, Jr., and M. Porkolab, Nucl. Fusion **23**, (1983).

22. "Fast Growing Trapped-Particle Modes in Tandem Mirrors," H. L. Berk, M. N. Rosenbluth, H. V. Wong, T. M. Antonsen, and D. E. Baldwin, Fiz. Plazmy **9**, 176 (1983).

23. "Stabilization of the Tearing Mode in High Terature Plasma," J. F. Drake, T. M. Antonsen, Jr., A. B. Hassam, and N. T. Gladd, Phys. Fluids **26**, 2509 (1983).

24. "Low Amplitude, Wave Induced Particle Energy Diffusion in an Inhomogeneous Magnetic Field," S. Riyopoulos, T. M. Antonsen, Jr., and E. Ott, Phys. Fluids **27**, 184 (1984).

25. "Ballooning Instabilities in Hot Electron Plasmas," T. M. Antonsen, Jr., Y. C. Lee, H. L. Berk, M. N. Rosenbluth, and J. W. Van Dam, Phys. Fluids **26**, 3580 (1983).

26. "The Influence of Finite Wavelength on the Quantum Kicked Rotator in the Semi-Classical Regime," J. D. Hanson, E. Ott, and T. M. Antonsen, Jr., Phys. Rev. A **21**, 819 (1984).

27. "Turbulent Relaxation of Compressible Plasmas with Flow," J. M. Finn and T. M. Antonsen, Jr., Phys. Fluids **26**, 3540 (1983).

28. "Nonlinear Reduced Fluid Equations for Toroidal Plasmas," J. F. Drake and T. M. Antonsen, Jr., Phys. Fluids **27**, 898 (1984).

29. "The Generation of Current in Tokamaks by the Absorption of Waves in the Electron Cyclotron Frequency Range," T. M. Antonsen, Jr. and B. Hui, IEEE Transactions on Plasma Science **PS12**, 118 (1984).

30. "Electromagnetic Stability of Space Charge Limited Flow," T. M. Antonsen, Jr., W. M. Miner, E. Ott, and A. T. Drobot, Phys. Fluids **27**, 1257 (1984).

31. "Theory of the Rippled Field Magnetron," C. L. Chang, E. Ott, T. M. Antonsen, Jr., and A. T. Drobot, Phys. Fluids **27**, 2937 (1984).

32. "Stability of Magnetically Insulated Gaps with Resistive Electrode Plasmas," C. L. Chang, E. Ott, T. M. Antonsen, Jr., and A. T. Drobot, Phys. Fluids **27**, 2545 (1984).

33. "Analytic Theory of Resistive Ballooning Modes," J. F. Drake and T. M. Antonsen, Jr., Phys. Fluids **28**, 544 (1985).

34. "The Effect of Noise on Time-Dependent Quantum Chaos," E. Ott, T. M. Antonsen, Jr., and J. D. Hanson, Phys. Rev. Lett. 53, 2187 (1984).

35. "Stabilization of an Axisymmetric Tandem Mirror Cell by a Hot Plasma Component," H. L. Berk, M. N. Rosenbluth, H. V. Wong, and T. M. Antonsen, Jr., Phys. Fluids **27**, 2705 (1985).

36. "Stability of Magnetically Insulated Ion Diodes," E. Ott, T. M. Antonsen, Jr., C. L. Chang, and A. T. Drobot, Phys. Fluids **28**, 1948 (1985).

37. "Negative Energy Waves and the Stability of Magnetic Insulation," E. Ott, T. M. Antonsen, Jr., C. L. Chang, and A. T. Drobot, Comments on Plasma Physics **8**, 243 (1984).

38. "Free Electron Laser with a Quadrupole Wiggler," B. Levush, T. M. Antonsen, Jr., W. M. Manheimer, and P. Sprangle, Phys. Fluids **28**, 2273 (1985).

39. "Ballooning Precessional Instabilities in a Single-Cell Hot Electron Plasma," Kang Tsang, X. S. Lee, B. Hafizi, Thomas M. Antonsen, Jr., Phys. Fluids **27**, 2511 (1984).

40. "Numerical Study of the Precessional Instabilities in a Symmetric Tandem Mirror with Hot Electron End Cells," K. T. Tsang, X. S. Lee, B. Hafizi, and T. M. Antonsen, Jr., Phys. Fluids **27**, 2912 (1984).

41. "Parametric Scaling of the Stability of Relativistic, Laminar Flow, Magnetic Insulation," T. M. Antonsen, Jr., Edward Ott, C. L. Chang, and A. T. Drobot, Phys. Fluids **28**, 2878 (1985).

42. "Quasiperiodically Forced Damped Pendula and Schrodinger Equations with Quasi-periodic Potentials: Implications of Their Equivalence," Anders Bondeson, Edward Ott, and Thomas M. Antonsen, Jr., Phys. Rev. Lett. **55**, 2103 (1985).

43. "Magnetic Helicity: What Is It and What Is It Good For?," John M. Finn and Thomas M. Antonsen, Jr., Comments on Plasma Physics and Controlled Nuclear Fusion **9**, 111 (1985).

44. "RF Induced Current and Transport in Toroidal Plasmas," Thomas M. Antonsen, Jr. and K. Yoshioka, Phys. Fluids **29**, 2235 (1986).

45. "Electron Orbits in Combined Rotating Quadrupole and Dipole Magnetic Field," B. Levush, T. M. Antonsen, Jr., and W. M. Manheimer, J. Appl. Physics **59**, 2634 (1986).

46. "Spontaneous Radiation of an Electron Beam in a Free Electron Laser with a Quadrupole Wiggler," B. Levush, T. M. Antonsen, Jr., and W. M. Manheimer, J. Appl. Physics **60**, 1584 (1986).

47. "Influence of Thermal Spread on Space-Charge Limiting Current," T. Antonsen, Jr. and B. Levush, Int. J. Electron. **61**, 871 (1986).

48. "Effect of A.C. and D.C. Transverse Self-Fields in Gyrotrons," T. Antonsen, Jr., W. M. Manheimer, and B. Levush, Int. J. Electron. **61**, 821 (1986).

49. "Oscillating Current Drive and Current Penetration in Tokamaks," J. M. Finn and T. M. Antonsen, Jr., Phys. Fluids **30**, 2450 (1987).

50. "Neoclassical Effects on RF Current Drive in Tokamaks," K. Yoshioka and T. M. Antonsen, Jr., Nucl. Fusion **26**, 839 (1986).

51. "Feasibility of Steady State Spheromak Operation by ECRH Current Drive," K. Yoshioka, T. M. Antonsen, Jr., and E. Ott, Nucl. Fusion **26**, 439 (1986).

52. "Gyrotron Simulations without Particles," T. M. Antonsen and B. Levush, Phys. Fluids **30**, 3757 (1987).

53. "Nonlinear Theory of a Quadrupole Free Electron Laser," T. M. Antonsen and B. Levush, IEEE J. Quantum Electron. **QE-23**, 1621 (1987).

54. "Quasiperiodically Forced Dynamical Systems with Strange Nonchaotic Attractors," F. Romeiras, A. Bondeson, E. Ott, T. Antonsen, and C. Grebogi, Physica D **26D**, 277 (1987).

55. "Analysis of a Wide-Band Rotating Beam Free-Electron Laser," L. S. Schuetz, E. Ott, and T. M. Antonsen, Jr., Phys. Fluids **31**, 1720 (1988).

56. "Density and Deceleration Limits in Tapered Free-Electron Lasers," T. M. Antonsen, Jr., Phys. Rev. Lett. **58**, 211 (1987).

57. "Space Charge Instabilities in Gyrotron Beams," A. Bondeson and T. M. Antonsen, Int. J. Electron. **61**, 855 (1986).

58. "The Effect of the Time Dependent Self-Consistent Electrostatic Field on Gyrotron Operation," R. G. Kleva, T. M. Antonsen, Jr., and B. Levush, Phys. Fluids **31**, 375 (1988).

59. "Space Charge Limited and Terature Limited Electron Flow in the Vicinity of Edges and Conical Points," J. M. Finn, T. M. Antonsen, Jr., and W. M. Manheimer, IEEE Trans. Plasma Science **16**, 281 (1988).

60. "Linear Stability of Obliquely Propagating Electromagnetic Waves in Magnetically Insulated Gaps," C. L. Chang, E. Ott, and T. M. Antonsen, Jr., Phys. Fluids **29**, 3851 (1986).

61. "Electromagnetic Stability of High Power Ion Diodes," C. L. Chang, D. P. Chernin, A. T. Drobot, E. Ott, and T. M. Antonsen, Jr., Phys. Fluids **29**, 1258 (1986).

62. "Regions of Stability of FEL Oscillators," B. Levush and T. M. Antonsen, Jr., Nucl. Inst. Meth. A **272**, 375 (1988).

63. "Optical Guiding in the Separable Beam Limit," T. M. Antonsen, Jr. and B. Levush, Nucl. Inst. Meth. **A 272**, 472 (1988).

64. "Near-Millimeter Free Electron Lasers with Small Period Wigglers and Sheet Electron Beams," V. L. Granatstein, T. M. Antonsen, Jr., H. J. Booske, W. W. Destler, P. E. Latham, B. Levush, I. D. Mayergoyz, D. J. Radack, and A. Serbeto, Nucl. Inst. Meth. **A 272**, 110 (1988).

65. "Propagation of Wiggler Focused Relativistic Sheet Electron Beams," J. H. Booske, W. W. Destler, Z. Segalov, D. J. Radack, E. T. Rosenbury, J. Rodgers, T. M. Antonsen, Jr., V. L. Granatstein, and I. D. Mayergoyz, J. Applied Phys. **64**, 6 (1988).

66. "Magnetosonic Instability in a Field Reversed Configuration with an Energetic Ion Component," G. R. Burkhardt and T. M. Antonsen, Jr., submitted to Phys. Fluids.

67. "Efficiency Optimization for FEL Oscillators," A. Serbeto, B. Levush, and T. M. Antonsen, Jr., Phys. Fluids **B1**, 435 (1989).

68. "Magnetic Helicity Injection for Configurations with Open Field Lines," J. M. Finn and T. M. Antonsen, Jr., Phys. Fluids **31**, 3012 (1988).

69. "Mode Competition and Suppression in Free Electron Laser Oscillators," T. M. Antonsen, Jr. and B. Levush, Phys. Fluids **B 1**, 1097 (1989).

70. "Kinetic Stability of Space Charge Limited Flow," T. M. Antonsen, Jr., C. L. Chang, Phys. Fluids **B 1**, 1728 (1989).

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