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Gregory S. Nusinovich

Curriculum Vitae

I. PERSONAL INFORMATION

Address: Institute for Research in Electronics and Applied Physics
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Date and Place of Birth: July 18, 1946; Berdichev, USSR

Citizenship: Formerly USSR; from January 1991 permanent resident of the USA.
U.S. citizen from August 1996.

Marital Status: Married, two children

Education

1975 Ph.D. Equivalent, Gorky State University, USSR

1968 M.Sc. Equivalent, Gorky State University, USSR

Professional Employment History

July 1995 to present	Senior Research Scientist, Institute for Research in Electronics and Applied Physics, University of Maryland
1991 to July 1995	Visiting Scientist, Institute for Plasma Research University of Maryland
1977-1990	Senior Research Scientist and Head of the Gyrotron Group, Institute of Applied Physics Academy of Sciences of the USSR, Gorky, USSR
1968-1977	Research Scientist, Radiophysical Research Institute, Gorky, USSR.

II. RESEARCH ACTIVITY

Contributions to Books

1. Cyclotron and Synchrotron Masers (V.L. Bratman, N.S. Ginzburg, G. S. Nusinovich, M.I. Petelin, and V.K. Yulpatov) Chapter in the book of collected papers "High-Frequency Relativistic Electronics", IAP, Gorky, 1979, pp. 157-216 (in Russian).
2. Common Properties of Short-Wavelength Microwave Devices with the Dominant Inertial Electron Bunching (V.L. Bratman, N.S. Ginzburg, N.F. Kovalev, G. S. Nusinovich, and M.I. Petelin.) Ibid., pp. 249-274.
3. Ohmic heating of resonators and power limitations in long-pulse gyrotrons (V. A. Brailovskaya, S. N. Vlasov, G. S. Nusinovich, A. B. Pavelyev, A. Sh. Fix and T. N. Khlopko), A book of collected papers "Gyrotron", Gorky, USSR, 1980, pp.33-46.
4. Diffractive Q-factor of a resonator with a spiral gofer (A. L. Goldenberg, G. S. Nusinovich, A. B. Pavelyev), *ibid.*, pp. 91-97.
5. Electron selection of modes in gyrotrons operating at whispering gallery modes (A. G. Luchinin, G. S. Nusinovich, V. G. Usov, V. A. Flyagin, V. I. Khizhnyak), *ibid.*, pp. 139-146.
6. Gyrotrons with two-mirror resonators (S. N. Vlasov, A. G. Luchinin, G. S. Nusinovich, I. M. Orlova, V. G. Usov, V. A. Flyagin and V. I. Khizhnyak), *ibid.*, pp. 160-170.
7. Some Results of Numerical Study of Gyrotron Equations (M.A. Moiseev and G. S. Nusinovich), in the book of collected papers "Gyrotron," IAP, Gorky, 1981, pp. 41-52 (in Russian).
8. Theory of Multimode Gyrotrons, *Ibid.*, pp. 146-168.
9. Theory of Submillimeter-Wave Gyrotrons (G. S. Nusinovich and T.B. Pankratova), *Ibid.*, pp. 169-184.
10. Powerful Gyrotrons (V.A. Flyagin, A.L. Goldenberg and G. S. Nusinovich). Chapter in the book "Infrared and Millimeter Waves", ed. by K. Button, Academic Press, v. 11, pp. 179-226 (1984).
11. Some Perspectives of Operating Frequency Increase in Gyrotrons. Chapter in the book "Infrared and Millimeter Waves", ed. by K. Button, Academic Press, v. 11, pp. 227-238 (1984).
12. Powerful Gyrotrons for Thermonuclear Research (V.A. Flyagin and G. S. Nusinovich) Chapter in the book "Infrared and Millimeter Waves", ed. by K. Button, Academic Press, v. 13, pp. 1-17 (1985).

13. Powerful Short-Wavelength Gyrotrons (A.L. Goldenberg and G. S. Nusinovich). Chapter in the book “Reviews in Science and Technology, ser. Electronics”. Moscow, v. 17, pp. 3-81, 1985 (in Russian).
14. Stability of Single-Mode Oscillations and Non-Stationary Processes in Gyrotrons with Overmoded Low-Q Resonators (N.A. Zavolsky, G. S. Nusinovich and A.B. Pavelyev). Chapter in the book of collected papers “Gyrotrons”, IAP, Gorky, 1989, pp. 84-112 (in Russian).
15. Gyrotrons with Pulsed Magnetic Fields (A.G. Luchinin and G. S. Nusinovich), *Ibid.*, pp. 55-72.
16. Excitation of High Modes in the Gyrotron Operating at the Second Cyclotron Harmonics (M. Yu. Glyavin, A. A. Gurtochnik, G. S. Nusinovich and T. B. Pankratova), *Ibid.*, pp. 73-83.
17. Gyrotron (V. A. Flyagin and G. S. Nusinovich). Chapter in “McGraw Hill Yearbook of Science and Technology”, 1991, p. 178.
18. Principles and Capabilities of High-Power Microwave Generators (G. S. Nusinovich, T. M. Antonsen, Jr., V. L. Bratman, and N. S. Ginzburg), Chapter in the book “Applications of High-Power Microwaves”, Ed. by A. V. Gaponov-Grekhov and V. L. Granatstein, Artech House, Norwood, 1994, pp. 25-110.
19. Relativistic Cherenkov Devices (with J. Nation, Y. Carmel, G. S. Nusinovich, L. Schachter and E. Schamiloglu), Chapter in book “Advances in High Power Microwave Sources and Technologies,” Ed. by R. Barker and E. Schamiloglu, IEEE Press, 2000, Chapter 5, pp. 116-154.
20. Gyrotron Oscillators and Amplifiers (V. L. Granatstein, G. S. Nusinovich, M. Blank, K. Felch, R. M. Gilgenbach, H. Guo, H. Jory, N. C. Luhmann, Jr., D. B. McDermott, J. Rodgers, and T. A. Spencer), Chapter 6 in the same book, pp. 155-198.
21. Active Plasma Loading of High Power Microwave Devices (Y. Carmel, G. S. Nusinovich, A. Shkvarunets, S. Kobayashi, C. Grabowski, F. Hegeler, D. Goebel, R. J. Barker, A.T. Lin, O. Ishihara, D. Young, M. J. Arman, G. Benford, and J. Santoru), Chapter 7 in the same book, pp. 199-249.
22. Alternative Approaches and Future Challenges (R.J. Barker, J. Benford, Y. Carmel, J.A. Goudet, R.M. Gilgenbach, V. Granatstein, G. Guest, M. Kristiansen, Y.Y. Lau, A.T. Lin, J.A. Nation, A. Neuber, G. Nusinovich and R.J. Umstattd), Chapter 12 in the same book, pp. 438-476.
23. Co-Editor (with S. H. Gold) of “High Energy Density and High Power RF”, Proc. 6th Workshop on High Energy Density and High Power RF, (Berkeley Springs, West Virginia, June 2003), AIP Conf. Proc., vol. 691, Melville, New York, 2003.
24. Book “Introduction to the Physics of Gyrotrons”, The Johns Hopkins University Press, Baltimore – London, 2004.

25. Co-editor (together with R. Barker, J. Booske and N. C. Luhmann, Jr.) of “Modern Microwave and Millimeter-Wave Power Electronics”, The IEEE Press – Wiley, New York, 2005.
26. Co-Editor (with D. Abe) of “High Energy Density and High Power RF”, Proc. 7th Workshop on High Energy Density and High Power RF, (Kalamata, Greece, June 2005), AIP Conf. Proc., vol. 807, Melville, New York, 2006.
27. “Physics of the pasotron” (Yu. P. Bliokh and G. S. Nusinovich) Chapter 6 in Russian 2-volume book “Methods of nonlinear dynamics and theory of chaos in problems of microwave electronics”, vol. 2, Eds. A. A. Koronovskiy, D. I. Trubetskov and A. E. Khramov, “Fizmatlit”, Moscow, Russia, 2009.
28. Co-Editor (with S. H. Gold) of “Proceedings of the 2010 Advanced Accelerator Concepts Workshop (June 13-19, 2010, Annapolis, MD), AIP Conf. Proc., vol. **1299**, Melville, New York, 2010.

Publications in Refereed Journals:

1. Efficiency of a CRM-monotron with a Gaussian axial distribution of the RF field (with R.E. Erm). *Elektronnaya Tekhnika, Ser.1, Elektronika SVCh*, 1972, No. 8, pp. 55-60 (in Russian).
2. Theory of Multimode Oscillations in a Gyrotron (with M.A. Moiseev). *Radiophysics and Quantum Electronics (QE)*, v.17, No. 11, pp. 1305-1311 (1974).
3. Stability of Single-Mode Oscillations in a Multimode Gyrotron (with I.G. Zarnitsyna), *Radiophys. and QE*, v. 17, No. 12, pp. 1412-1424 (1974).
4. Start-up Scenarios for a Pulsed Gyromonotron Providing the High Efficiency in a Single-Mode Operation. *Elektronnaya Tekhnika, Ser. 1, Elektronika SVCh*, 1974, No. 3, pp. 44-48 (in Russian).
5. Mode Competition in a Gyromonotron with a Distorted Axial Symmetry. *Radioeng. and Electron. Phys.*, v. 19, No. 15, pp. 152-155 (1974).
6. Competition of Modes with an Arbitrary Frequency Separation in a Gyromonotron (with I.G. Zarnitsyna). *Radiophys. and QE*, v. 18, No. 2, pp. 223-225 (1975).
7. On the Stability of Phase-Locked Single-Mode Oscillations in a Multimode Gyromonotron (with I.G. Zarnitsyna). *Radiophys. and QE*, v. 18, No. 3, pp. 339-342 (1975).
8. Comparison of Efficiencies and Output Powers of CRM-Monotrons with Various Electrodynamical Systems (with A.G. Luchinin). *Elektronnaya Tekhnika, Ser. 1, Elektronika SVCh*, 1975, No. 11, pp. 26-36 (in Russian).

9. On the Theory of Phase-Locked Multimode Electron Microwave Oscillators. Radiophys. and QE, v. 18, No. 11, pp. 1689-1698 (1975).
10. Multimoding in Cyclotron Resonance Masers. Radiophys. and QE, v. 19, No. 12, pp. 1301-1306 (1976).
11. Competition of Modes Resonant with Different Harmonics of the Cyclotron Frequency in Gyromonotrons (with I.G. Zarnitsyna). Radiophys. and QE, v. 20, No. 3, pp. 313-316 (1977).
12. Efficiency of the Mode Nonlinear Selection Methods in CRM-Oscillators. Radioeng. and Electron. Phys., v. 22, No. 10, pp. 151-152 (1977).
13. Theory of the Relativistic Gyrotron (with V.L. Bratman, N.S. Ginzburg). Soviet Technical Physics Letters, v. 3, No. 9, pp. 395-396 (1977).
14. Theory of Phase-Locking in Multimode Oscillators with Hard Self-Excitation (with L.S. Rodygina and T.M. Tarantovich). Radioeng. and Electron. Phys., v. 23, No. 1, pp. 66-70 (1978).
15. Theory of Oscillations in a CRM with a Transverse Current (with I.G. Zarnitsyna). Radioeng. and Electron. Phys., v. 23, No. 6, pp. 74-78 (1978).
16. Excitation of Parasitic Modes Resonant with the First Cyclotron Harmonic in a Gyrotron Operating at the Second Harmonic (with V.E. Zapevalov and I.G. Zarnitsyna). Radiophys. and QE, v. 22, No. 3, pp. 254-259 (1979).
17. Theory of the Relativistic CRM with an Opposite Wave (with N.S. Ginzburg, I.G. Zarnitsyna). Radioeng. and Electron. Physics., v. 24, No. 6, pp. 113-118 (1979).
18. On the Nonlinear Theory of a Relativistic Gyrotron (with N.S. Ginzburg). Radiophys. and QE, v. 22, No. 6, pp. 522-528 (1979).
19. Some Perspectives of the Use of Powerful Gyrotrons for the Plasma ECRH in Large Tokamaks (with A.V. Gaponov, et al.). Int. Journal on Infrared (IR) and Millimeter (MM) Waves, v. 1, No. 3, pp. 351-373 (1980).
20. Mode Interaction in Free Electron Lasers. Soviet Technical Physics Letters, v. 6, No. 6, pp. 364-366 (1980).
21. On the Theory of Parameters Optimization for Short-Wavelength Gyrotrons. Elektronnaya Tekhnika, Ser. 1, Elektronika SVCh., 1981, No. 1, pp. 16-19 (in Russian).
22. Theory of Relativistic CRM-amplifiers (with N.S. Ginzburg, I.G. Zarnitsyna). Radiophys. and QE, v. 24, No. 4, pp. 331-338 (1981).
23. A Possible Reason for Excitation of Multimode Oscillations in Electron Masers. Izv. VUZov, Radiofizika 1981, v. 24, No. 8, pp. 1043-1044 (in Russian).

24. Powerful Millimeter-Wave Gyrotrons (with A.V. Gaponov, V.A. Flyagin, A.L. Goldenberg, Sh. E. Tsimring, V.G. Usov, S.N. Vlasov). *Int. Journal of Electronics*, v. 51, No. 4, pp. 277-302 (1981). Invited paper for a special issue on gyrotrons.
25. Mode Interaction in Gyrotrons. *Ibid*, pp. 457-474.
26. Relativistic Gyrotrons and Cyclotron Autoresonance Masers (with V.L. Bratman, N.S. Ginzburg, M.I. Petelin, P.S. Strelkov). *Ibid*, pp. 541-567.
27. A Submillimeter Gyrotron with a Pulsed Magnetic Field (with V.A. Flyagin, A.G. Luchinin). *Int. Journal on IR and MM Waves* v. 3, No. 6, pp. 765-769 (1982).
28. Dynamics of Multimode Electron Masers (with L.G. Blyakhman). *Radioeng. and Electron. Phys.*, v. 27, No. 5, pp. 137-144 (1982).
29. Powerful Submillimeter-Wave Gyrotron with a Pulsed Magnetic Field (with A.G. Luchinin et al.). *Soviet Technical Physics Letters*, v. 8, No. 9, pp. 492-493 (1982).
30. Submillimeter-Wave Gyrotrons: Theory and Experiments (with V.A. Flyagin, A.G. Luchinin). *Int. Journal on IR and MM Waves*, v. 4, No. 4, pp. 629-635 (1983).
31. Nonstationary Processes in a CRM with Counterrunning Waves (with E.M. Sher). *Radiophys. and QE*, v. 26, No. 9, pp. 848-854 (1983).
32. A Submillimeter-Wave Gyrotron with a Pulsed Magnetic Field (with A.G. Luchinin, O.V. Malygin, V.A. Flyagin). *Soviet Technical Physics Letters*, v. 53, No. 8, pp. 1001-1003 (1983).
33. Theory of Nonstationary Processes in CRM with Opposite Waves (with E.M. Sher). *Int. Journal of Electronics*, v. 56, No. 3, pp. 275-286 (1984).
34. An Analytical Theory for Comparing the Efficiency of Gyrotrons with Various Electrodynamical Systems (with A.G. Luchinin). *Int. Journal of Electronics, Special Issue on Gyrotrons*, v. 57, No. 6, pp. 827-834 (1984).
35. Mode Evolution in a Two-Mode Gyrotron (with V.E. Zapevalov). *Radiophys. and QE*, v. 27, No. 1, pp. 117-119 (1984).
36. Output Parameters of Radiation in Gyrotrons with Pulsed Solenoids (with A.G. Luchinin, B.V. Shishkin, V.A. Flyagin). *Soviet Technical Physics Letters*, v. 10, No. 8, pp. 417-418 (1984).
37. Gyrotrons as Sources of Powerful Electromagnetic Radiation at Millimeter Wavelengths. Invited paper. *Foreign Radioelectronics*, 1984, No. 11, pp. 71-79 (in Russian).
38. Analysis of Self-modulation Instability of Gyrotron Radiation. *Radiophys. and QE*, v. 28, No. 10, pp. 926-932 (1985).

39. Automodulation Instability of Gyrotron Radiation (with V.E. Zapevalov). *Radioeng. and Electron. Phys.* v. 30, No. 6, pp. 101-108 (1985).
40. Evolution of Oscillations in Microwave Electron Devices with a Diffraction Output (with N.S. Ginzburg, N.A. Zavolsky, A.S. Sergeev). *Radiophys. and QE*, v. 29, No. 1, pp. 89-97 (1986).
41. Estimation of Efficiency of the Quasioptical Gyrotron with a Hard Self-Excitation. *Elektronnaya Tekhnika, Ser. 1, Elektronika SVCh*. 1986, No. 4, pp. 10-13 (in Russian).
42. Theory of Nonstationary Processes in Gyrotrons with Low-Q Resonators (with N.S. Ginzburg, N.A. Zavolsky). *Int. Journal of Electronics, Special Issue on Gyrotrons*, v.61, No. 6, pp. 881-894 (1986).
43. An Estimate of the Efficiency of Quasioptical Gyrotrons (with A.G. Luchinin). *Sov. Journal of Commun., Technology and Electron.*, v. 31, No. 6, pp. 168-171 (1986).
44. Stabilization of UHF Oscillator Frequency by Use of an Auxiliary Resonator. *Radiophys. and QE*, v. 30, No. 1, pp. 72-77 (1987).
45. Dynamics of Gyrotrons with a Nonfixed Axial Structure of RF Field (with N.S. Ginzburg, N.A. Zavolsky). *Soviet Journal of Commun., Technology and Electron.*, v. 32, No. 9, pp. 132-139 (1987).
46. Theory of Parasitic Oscillations at Harmonics of the Operating Mode Frequency in Gyrotrons (with A.B. Pavelyev). *Radiotekhnika i Elektronika*, 1987, v. 32, No. 6, pp. 1274-1280 (in Russian).
47. Towards a Theory of Parasitic Radiation in Gyrotrons (with N.A. Zavolsky, A.B. Pavelyev). *Radiophys. and QE*, v. 31, No. 3, pp. 269-275 (1988).
48. Linear Theory of the Gyrotron with a Weakly Tapered External Magnetic Field. *Int. Journal of Electronics, Special Issue on Gyrotrons*, v. 64, No. 1, pp. 127-135 (1988).
49. Mode Competition in a Gyrotron with a Tapered External Magnetic Field (with O. Dumbrajs, A.B. Pavelyev). *Ibid*, pp. 137-145.
50. Gyrotron Oscillators (with V.A. Flyagin), Invited paper, *Proceedings of the IEEE*, v. 76, No. 6, pp. 644-656 (1988).
51. Theory of Amplitude-Phase Mode Interactions in Electron Masers (with V.E. Zapevalov). *Radiophys. and QE*, v. 32, No. 3, pp. 269-276 (1989).
52. Limitations on the Choice of Gyrotron Optimal Parameters Under Mode Competition Conditions (with A.B. Pavelyev, V.I. Khizhnyak). *Sov. Journal of Commun., Technology and Electron.*, v. 34, No. 9, pp. 114-117 (1989).
53. Influence of the Electron Beam on the Axial RF Field Structure and Efficiency of the

- Gyrotron (with A.B. Pylin). *Radiophys. and QE*, v. 32, No. 12, pp. 1565-1567 (1989).
54. Experimental Investigation of the Diagnostical Gyrotron (with T.B. Pankratova). *Soviet Physics-Technical Physics*, v. 59, No. 8, pp. 912-914 (1989).
 55. Mode Interaction in Gyrotrons with a Nonfixed Axial Structure of the RF Field (with N.A. Zavolsky). *Radiophys. and QE*, v. 33, No. 7, pp. 847-853 (1990).
 56. Competition of Modes Resonant with Arbitrary Cyclotron Harmonics in a Gyrotron with a Nonfixed Axial Structure of the HF Field (with O. Dumbrajs and A.B. Pavelyev). Preprint IAP, No. 196, Gorky, 1988; *IEEE-PS, Special Issue on High-Power Microwaves*, v. 18, No. 3, pp. 301-306 (1990).
 57. Stability of Monomode Self-Excited Oscillations in a Gyrotron with Synchronous Mode Interaction (with M.Yu. Glyavin). *Soviet Journal of Commun., Technology and Electron*, v. 36, No. 3, pp. 29-36 (1991).
 58. Nonstationary Processes in a Gyrotron with a Beam-Dependent Microwave Field Structure (with N.A. Zavolsky). Preprint IAP, No. 220, Gorky, 1988; *Soviet Journal of Commun., Technology and Electronics*, vol. 36, No. 9, pp. 117-122 (1991).
 59. On the Need to Allow for Variability of RF Field Longitudinal Structure in Calculation of Gyrotron Efficiency (with A.A. Gurtovnik). *Radiophysics and Quantum Electronics*, vol. 34, No. 9, pp. 1020-1026 (1992).
 60. Gyrotron Noise and Ion Plasma Temperature Measurements (with L.V. Lubyako, A.G. Luchinin, N.K. Skalyga, E.V. Suvorov, A.A. Fraiman). *Sov. Plasma Physics*, vol. 18, No. 2, pp. 211-212 (1992).
 61. Resonantly Enhanced Degenerate Four-Wave Mixing on Millimeter-Wave Radiation in Gas. (N.A. Bogatov, M.S. Gitlin, A.G. Litvak, A.G. Luchinin and G. S. Nusinovich). *Phys. Rev. Letters*, vol. 69, No. 25, pp. 3635-3638 (1992).
 62. Theory of the Relativistic Gyrotwistron (G. S. Nusinovich and H. Li). *Phys. Fluids B, Plasma Physics*, vol. 4, No. 4, pp. 1058-1065 (1992).
 63. Theory of Gyro-Traveling-Wave-Tubes at Cyclotron Harmonics (G. S. Nusinovich and H. Li). *Int. Journal of Electronics, Special Issue on Gyrotrons*, vol. 72, Nos. 5-6, pp. 895-907 (1992).
 64. Nonlinear Theory of a Large-Orbit Gyrotron, *Ibid.*, pp. 959-967.
 65. Parametric Instabilities in Gyro-Devices at Cyclotron Harmonics, *Ibid.*, pp. 795-805.
 66. Cold-Cavity and Self-Consistent Approaches in the Theory of Mode Competition in Gyrotrons (with O. Dumbrajs). *IEEE-PS, Special Issue on High-Power Microwaves*, vol. 20, No. 3, pp. 133-138 (1992).

67. Large-Signal Theory of Gyro-Traveling-Wave-Tubes at Cyclotron Harmonics (G. S. Nusinovich and H. Li), *Ibid*, pp. 170-175.
68. High-Power X-Band Amplification from an Overmoded Three-Cavity Gyroklystron with a Tunable Penultimate Cavity (with S. Tantawi, et al.), *Ibid.*, pp 205-215.
69. Cyclotron Resonance Masers with Inhomogeneous External Magnetic Fields, *Phys. Fluids B, Plasma Physics*, vol. 4, No. 7, pp 1989-1997 (1992).
70. Theory of a Frequency Step-Tunable Gyrotron for Optimal Plasma ECRH (G. S. Nusinovich and O. Dumbrajs). *IEEE-PS*, vol. 20, No. 4, pp. 452-457 (1992).
71. Effect of Window Reflections on Gyrotron Operation (with T. Antonsen, Jr., and S.Y. Cai), *Phys. Fluids B, Plasma Physics*, vol. 4, No. 12, pp. 4131-4139 (1992).
72. Efficiency of Combined Cyclotron-Cherenkov Interaction between Electrons and Electromagnetic Fields (G. S. Nusinovich and A. N. Vlasov). *Phys. Fluids B, Plasma Physics*, vol. 5, No. 2, pp. 605-609 (1993).
73. Relativistic Backward-Wave Oscillators Operating Near Cyclotron Resonance (with A.N. Vlasov, B. Levush, A. Bromborsky, W. Lou, and Y. Carmel). *Phys. Fluids B, Plasma Physics*, vol. 5, No. 5, pp. 1625-1638 (1993).
74. Nonlinear Theory of Stable, Efficient Operation of a Gyrotron at Cyclotron Harmonics (with G.P. Saraph, T.M. Antonsen, Jr., and B. Levush). *Phys. Fluids B, Plasma Physics*, vol. 5, No. 12, pp. 4473-4485 (1993).
75. Theory of Gyrotrons with Coaxial Resonators (G. S. Nusinovich, M.E. Read, O. Dumbrajs, and K.E. Kreisler). *IEEE-ED*, vol. 41, No. 3, pp. 433-438 (1994).
76. Parametric Effect of a Spatially Periodic Voltage Depression on Operation of Cherenkov Sources of Electromagnetic Radiation (G. S. Nusinovich and A.N. Vlasov), *Physics of Plasmas*, vol. 1, No. 3, pp. 774-779 (1994).
77. High Power Operation of an X-Band Gyrotwyston (with P.E. Latham, W. Lawson, V. Irwin, B. Hogan, H.W. Matthews, and M.K.E. Flaherty), *Phys Rev. Letters*, vol. 72, No. 23, pp. 3730-3773 (1994).
78. Efficiency of Frequency Up-shifted Gyrodevices: Cyclotron Harmonics Versus CARMs (G. S. Nusinovich, P.E. Latham and H. Li). *IEEE-PS, Special Issue on High-Power Microwaves*, vol. 22, No. 5, pp. 796-803 (1994).
79. Theory of Phase-Locked Gyrotrons Operating at Cyclotron Harmonics (with P.E. Latham, B. Levush, and S. Parikh), *ibid.*, pp. 818-824.
80. Electromagnetic Properties of Open and Closed Overmoded Slow-Wave Resonators for Interaction with Relativistic Electron Beams (with W. Main, Y. Carmel, K. Ogura et al), *ibid.*, pp. 566-577.

81. Theory of Gyrotwistrons with Mixed Transverse Geometries of the Various Stages (G. S. Nusinovich, P.M. Malouf and V.L. Granatstein), *ibid.*, pp. 518-525
82. Two Harmonic Prebunching of Electrons in Multi-Cavity Gyrodevices (G. S. Nusinovich, O. Dumbrajs). *Physics of Plasmas*, vol. 2, pp. 568-577 (1995).
83. A study of parametric instability in a harmonic gyrotron: Designs of third harmonic gyrotrons at 94 GHz and 210 GHz (G. P. Saraph, T. M. Antonsen, Jr., G. S. Nusinovich, and B. Levush), *Phys. Plasmas*, vol. 2, pp. 2839-2846 (July 1995).
84. Theory of relativistic gyro-traveling wave devices (P.E. Latham and G. S. Nusinovich), *Physics of Plasmas*, vol. 2, No. 9, pp 3494-3510 (1995).
85. Stability analysis of relativistic gyro-traveling wave devices (P.E. Latham and G. S. Nusinovich), *Physics of Plasmas*, vol. 2, No. 9, pp. 3511-3523 (1995).
86. Theory of relativistic cyclotron masers (G. S. Nusinovich, P.E. Latham and O. Dumbrajs), *Phys. Rev. E*, vol. 52, No. 1, pp. 998-1012 (1995).
87. Phase-locking of a second-harmonic gyrotron oscillator using a quasi-optical circulator to separate injection and output signals (with H.Z. Guo, et al). *IEEE-PS 1995*, vol. 23, No. 5, 822-832 (1995).
88. The linear theory of cyclotron resonance masers with trochoidal electron beams, *Physics of Plasmas*, vol. 2, No. 9, pp. 3531-3538 (1995).
89. High power operation of first and second harmonic gyrotwistrons (with W. Lawson, P.E. Latham, J.P. Calame, J. Cheng, B. Hogan, V.L. Granatstein, and M. Reiser) *J. Appl. Physics*, vol. 78, 550-559 (1995).
90. Wave interaction in gyrotrons with off-axis electron beams (G. S. Nusinovich, O. Dumbrajs and B. Levush) *Phys. Plasmas*, vol. 2, 4621-4630 (1995).
91. Theory of gyro-backward wave oscillators with tapered magnetic field and waveguide cross section (G. S. Nusinovich and O. Dumbrajs) *IEEE-PS, Special Issue on High-Power Microwaves*, vol. 24, 620-629 (1996).
92. Design of a 3-MW 140-GHz Gyrotron with a Coaxial Cavity (with M.E. Read, O. Dumbrajs, G. Bird, J.P. Hogge, K. Kreischer, and M. Blank) *Ibid*, 586-595.
93. 100-150 MW designs of two-and three-cavity gyrokystron amplifiers operating at the fundamental and second harmonics in X-and Ku-Bands, (with G.P. Saraph, W. Lawson, M. Castle, J. Cheng, J.P. Calame) *Ibid*, 671-677.
94. On the design of electron guns for cyclotron resonance masers utilizing trochoidal electron beams (trochotrons), (with W. Lawson and M. Garven) *Ibid*, 999-1004.
95. High-efficiency relativistic backward wave oscillator: theory and design, (with B. Levush,

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215. Yong Han, G. S. Nusinovich, T. M. Antonsen, Jr., J. Rodgers, and O. V. Sinitsyn, “Waveguides loaded with spatially periodic dielectrics for microwave sources”, *IEEE Transactions on Plasma Science*, **40**, 3420-3426 (Dec. 2012).
216. Yong Hun, G. S. Nusinovich, and T. M. Antonsen, Jr., “Effect of electron emission on microparticle heating and melting in high-power microwave systems”, *IEEE Trans. on Plasma Science*, **41**, 70-76 (January 2013).
217. D. S. Tax, O. V. Sinitsyn, W. C. Guss, G. S. Nusinovich, M. A. Shapiro, and R. J. Temkin, “Experimental Study of the Start-Up Scenario of a 1.5 MW, 110 GHz Gyrotron”, *IEEE Trans. on Plasma Science*, **41**, 862-871 (April 2013)
218. M. Yu. Glyavin, N. A. Zavolskiy, A. S. Sedov, and G. S. Nusinovich, “Low-Voltage Gyrotrons”, *Physics of Plasmas*, **20**, 033103 (2013)
219. G. S. Nusinovich, F. Qiao, D. G. Kashyn, R. Pu, and L. S. Dolin, “Breakdown-prone volume in terahertz wave beams”, *Journal of Applied Physics*, **113**, 233303 (2013)
220. O. Dumbrajs and G. S. Nusinovich, “Effect of electron beam misalignments on the gyrotron efficiency”, *Physics of Plasmas*, **20**, 073105 (May 03, 2013)

221. A. C. Keser, T. M. Antonsen, G. S. Nusinovich, D. G. Kashyn, and K. L. Jensen, "Heating of Microprotrusions in Accelerating Structures", *Phys. Rev. Special Topics on Accelerators and Beams*, **16**, 092001 (2013).
222. G. S. Nusinovich, M. K. A. Thumm and M. I. Petelin, "The Gyrotron at 50: Historical Overview", *Journal of Infrared, Millimeter and Terahertz Waves* (accepted in Dec. 2013)
223. P. Sprangle, B. Hafizi, H. Milchberg, G. Nusinovich, and A. Zigler, "Active Remote Detection of Radioactivity Based on Electromagnetic Signatures", *Phys. Plasmas*, **21**, 013103 (2014)
224. M. Yu. Glyavin, A. G. Luchinin, A. A. Bogdashov, V. N. Manuilov, M. V. Morozkin, G. G. Denisov, D. Kashyn, J. Rodgers, C. A. Romero-Talamas, R. Pu, A. G. Shkvarunets, and G. S. Nusinovich, "Experimental studies of a pulsed THz gyrotron with record power and efficiency", *Izv. VUZov, Radiofizika* (submitted in July 2013)
225. G. S. Nusinovich, D. G. Kashyn, Y. Tatematsu, and T. Idehara, "Effect of atmospheric conditions on operation of terahertz systems for remote detection of ionizing materials", *Physics of Plasmas*, **21**, 013108 (2014)
226. L. B. Nguyen, T. M. Antonsen, Jr., and G. S. Nusinovich, « Planar Slow-Wave Structure with Parasitic Mode Control », *IEEE Trans. on Electron Devices*, (accepted for publication)
227. M. Read, R. Jackson, P. Ferguson, G. Nusinovich, and R. Lawrence Ives, "Design of a 10 MW, L-Band, Annular Beam Klystron", *IEEE Trans. on Electron Devices*, (accepted for publication)
228. B. Godfrey, J. Luginsland, G. Nusinovich, and E. Schamiloglu, "A Tribute to Dr. Robert (Bob) Barker (1949-2013)", *IEEE Trans. Plasma Science* (accepted for publication)

Invited Talks and Lectures

1. Gyrotrons for the electron-cyclotron plasma heating in large tokamaks (with V.V. Alikev, V. A. Flyagin, V. I. Khizhnyak, A.G. Luchinin, V.G. Usov, S. N. Vlasov), invited talk given by G.S. Nusinovich, *Int. Symp. on Heating in Toroidal Plasmas, Grenoble, France, July 1978, Proc. Symp.*, v. 2, pp. 339-349.
2. Mode Interaction in CRM-Oscillators. Lectures on Microwave Electronics, IVth School on Microwave Engineering, Saratov University, 1978, v. 3, pp. 163-198 (in Russian).
3. Theory of Relativistic Cyclotron Resonance Masers. Invited talk at the First All-Union Seminar on Relativistic Microwave Electronics. Gorky, Sept. 1978.
4. A Gyrotron Complex for Plasma ECRH in Tokamak T-10 (with V.A. Flyagin, V.V. Alikev, K.M. Likin, V.G. Usov, S.N. Vlasov), invited talk given by G.S. Nusinovich, *Proc. 3rd Int. Symp. on Heating in Toroidal Plasmas, Grenoble, France, 1982, v. 3, pp. 1059-1065.*

5. Electron-Cyclotron Heating in Toroidal Plasmas (with V.A. Flyagin, E.V. Suvorov), invited talk given by E.V. Suvorov at 12th Int. Symp. on Fusion Technology, Julich, West Germany, Sept. 1982; Proc. v. 2, pp. 113-125.
6. Some Perspectives of Operating Frequency Increase in Gyrotrons, invited talk at 7th Int. Conf. on Infrared and Millimeter Waves, Marseille, France, Feb. 1983.
7. Powerful Gyrotrons for ECH and Active Plasma Diagnostics (with A.Sh.Fiks, V.A. Flyagin, A.G. Luchinin, B.V. Shishkin). Invited talk given by G.S. Nusinovich, Proc. 4th Int. Symp. on Heating in Toroidal Plasmas, Rome, Italy, March 1984, v. 2, pp. 1416-1423.
8. Powerful Gyrotrons for Thermonuclear Research (with V.A. Flyagin), invited talk given by G.S. Nusinovich at 8th Int. Conf. on Infrared and Millimeter Waves, Miami Beach, Florida, Dec. 1983.
9. Development of Gyrotrons with Pulse Solenoids (with A.G. Luchinin, V.A. Flyagin), invited talk given by G.S. Nusinovich at 10th All-Union Conf. on Microwave Electronics, Minsk, USSR, Sept. 1983, Conf. Digest, p. 17.
10. Some Problems in the Development of High-Power Long-Pulse Gyrotrons (with V.A. Flyagin), invited talk given by G.S. Nusinovich, 4th All-Union Seminar on High-Frequency Relativistic Electronics, Moscow, USSR, Jan. 1984.
11. Theory of Mode Interaction in Gyrotrons. Course of lectures, Kernforschungszentrum Karlsruhe, West Germany, Oct. 1984; KFK, 4111 (1986).
12. Results of Gyrotron Investigations (with V.A. Flyagin), invited talk given by G.S. Nusinovich at 10th Int. Conf. on Infrared and Millimeter Waves, Orlando, Florida, USA, Dec. 1985.
13. Review of Gyrotron Development for Plasma Experiments, invited talk given at the All-Union Conference on Plasma Physics and Its Applications, Zvenigorod, USSR, April 1986.
14. State-of-the Art in Gyrotron Development, invited talk given at the All-Union Workshop on High-Frequency Relativistic Electronics, Gorky, USSR, May 1986.
15. Theory of Automodulation Instability of Electron Maser Oscillations (with V.E. Zapevalov), invited talk given by G.S. Nusinovich at 11th Int. Conf. on Infrared and Millimeter Waves, Tirrenia, Pisa, Italy, Oct. 1986.
16. Theory of Automodulation Instability in Gyrotrons (with V.E. Zapevalov), a lecture given by V.E. Zapevalov; Lectures on Microwave Electronics, 7th School on Microwave Engineering, Saratov University, 1986, v. 2, pp. 118-126 (in Russian).
17. Relativistic microwave electronics; state-of-the-art and perspectives (with V.L. Bratman), invited talk given by G.S. Nusinovich at the 7th Int. Conf. on High-Power Particle Beams, Karlsruhe, West Germany, July 1988; Conf. Proc., v. 1, pp. 395-403.

18. Gyrotron Development and Plasma Heating Experiments in the USSR, invited lecture given at the Institute for Plasma Physics, Garching, West Germany, Oct. 1987.
19. Present Status of Soviet Gyrotron Development, invited lecture given at Kernforschungszentrum Karlsruhe, Germany, Oct. 1987.
20. Gyrotrons for ECRH; State-of-the-Art and Prospects, (with V.A. Flyagin, A.L. Goldenberg, V.E. Zapevalov. Invited talk given by V.E. Zapevalov at 8th Int. Conf. on High-Power Particle Beams, July 1990, Novosibirsk, USSR; Conf. Proc., v. 1, pp. 307-312.
21. a) Mode Interaction and Non-Stationary Phenomena in Powerful Gyrotrons, b) Gyrotron Development in USSR. Invited lectures given at the Institute for Space Research, Sao-Jose-dos-Campos, Brazil, Sept. 1989.
22. State-of-the-Art in Gyrotron Development for ECRH, invited lecture given at Institute of Physics, University of Sao-Paulo, Brazil, Sept. 1989.
23. Present Status of Gyrotron Development for ECRH, invited lecture given at All-Union Workshop on Open Mirror Systems, Kurchatov Institute, Moscow, Oct. 1989.
24. Review of Gyrotron Development, invited lecture given at 6th All-Union Seminar on Relativistic Microwave Electronics, Sverdlovsk, May 1989.
25. Review of Gyrotron Development for ECRH, invited lecture given at 9th School on Microwave Engineering, Saratov University, Jan. 1990.
26. Gyroklystron Research for Application to TeV Linear Colliders (with W. Lawson, J. Cheng, V.L. Granatstein, B. Hogan, P.E. Latham, W. Main, H.W. Matthews, M. Reiser). Invited talk given by W. Lawson at 9th Int. Conf. on High-Power Particle Beams, Washington, D.C., May 1992, Conf. Proc., pp 185-194.
27. Gyrotrons of High Average Power. A lecture at the Minicourse on High-Power Microwave Generation. Tampa, FL., USA, June 1992.
28. The Physics of Frequency Agile Sources (with V.L. Granatstein et al.) invited talk given by V.L. Granatstein at 6th National Conference on HPM Technology, August 1992.
29. On the Optimal Choice of Microwave Systems for Driving TeV Linear Colliders (with V.L. Granatstein). Invited talk given by V.L. Granatstein at the Int. Workshop "Strong Microwaves in Plasmas", Proc. of the Int. Workshop, Moscow-Nizhny Novgorod-Moscow, 15-22 Aug. 1993, Ed. by A.G. Litvak, v. 2, pp. 575-586.
30. Tunable Sources of Microwave Radiation (with B. Levush, T. Antonsen, Jr., A. Bromborsky, and V. Granatstein). Invited talk given by G.S. Nusinovich. Ibid, pp. 712-729.
31. Criteria for Comparison the Suitability of Microwave Amplifiers for Driving TeV Linear Colliders (with V.L. Granatstein). Invited talk given by V.L. Granatstein at Particle Accelerator Conference, Washington, D.C., May 1993, Proc. PAC-93, v. 4, pp. 25722574.

32. Investigation of the Electromagnetic Properties of Finite Length X-Band Slow-Wave Structures (with W. Main, Y. Carmel et al). Invited talk given by W. Main at the 20th Int. Conf. on Plasma Science, Vancouver, Canada, June 7-9, 1993, Conf. Record Abstracts, p. 102.
33. Overview of Microwave R&D in Russia and the Former USSR. Invited lecture given at the IEEE-MTT Society, Washington, DC/Northern VA Chapter, Oct. 12, 1993.
34. Can Plasma Microwave Devices Revitalize and Broaden the Scientific and Technological Base of Microwave Sources? (with Y. Carmel, T.M. Antonsen, Jr., B. Levush, W.W. Destler, and V.L. Granatstein). Invited talk given by Y. Carmel at the 21st Int. Conf. on Plasma Science, June 6-8, 1994, Santa Fe, NM, USA.
35. Some Perspectives of Microwave Sources for Future Linear Colliders; Overview of Microwave Generation Activity at the University of Maryland. Invited talk given at the Center for Accelerator Physics at Brookhaven National Laboratory, Nov. 1994 (Selected topics in Particle Accelerators; Proc. of the CAP Meetings, BNL-52292, v. 5).
36. Microwave Structures for High-Power Gyrotrons. A lecture given at the Electromagnetic Research Seminar, Helsinki University of Technology, Finland, April 1995.
37. Relativistic Cyclotron Masers. A lecture given at the Radio Laboratory, Helsinki University of Technology, Finland, April 1995.
38. High-Power Microwave Sources for Plasma Heating, Particle Accelerators and Radars. A lecture given at the Advanced Energy Systems Lab., Helsinki University of Technology, Finland, May 1995.
39. A Study of Parametric Instability in a Harmonic Gyrotron: Designs of Third Harmonic Gyrotrons at 94 GHz and 210 GHz. (with G.P. Saraph, T.M. Antonsen, Jr., and B. Levush), Invited talk given by G. Saraph at the 22nd Int. Conf. on Plasma Science, June 5-8, 1995, Madison, WI, USA.
40. Studies of Gyrodevices for Plasma Heating, Particle Accelerators and Radars at the University of Maryland. Invited talk at the Tel-Aviv University, Israel, July 1995.
41. Analytical Theory of Stagger-Tuned Gyroklystrons. Invited talk given at NRL, Febr. 29, 1996.
42. Gyrodevices and their applications. Invited talk given at the Tel-Aviv University, Israel, March 1997.
43. Two lectures on the fundamentals of the theory of gyrodevices. Tel-Aviv University, Israel, April 1997.
44. Recent progress in the development of plasma-filled traveling-wave tubes and backward-wave oscillators (with Y. Carmel, T.M. Antonsen, Jr., D.M. Goebel and J. Santoru). Invited talk given by V.L. Granatstein at the 25th Int. Conf. on Plasma Science, June 1-4, 1998, Raleigh, N.C.,

USA.

45. Mode and wave interaction in gyrodevices. A lecture given at the research workshop "Cyclotron Resonance Masers and Gyrotrons," May 18-21, 1998, Kibbutz Ma'ale Hachamisha, Israel.
46. Gain and bandwidth in stagger-tuned gyroklystrons and gyrotwistrons, *Ibid.*
47. Microwave Research at IPR, University of Maryland, Invited talk given at the Institute of Applied Physics, Nizhniy Novgorod, Russia, June 1, 1998.
48. Recent progress in the development of plasma-filled traveling-wave tubes and backward-wave oscillators (with Y. Carmel, T.M. Antonsen, Jr., D.M. Goebel and J. Santoru), Invited talk given by G.S. Nusinovich at the 12th Int. Conf. on High-Power Particle Beams (Beams-98), Haifa, Israel, June 7-12, 1998.
49. Excitation of backward waves in gyro-forward-wave amplifiers and forward-wave amplifiers driven by linear electron beams (with M. Walter and J. Zhao), Invited Keynote Talk given by G.S. Nusinovich at the 23rd Int. Conf. on Infrared and Millimeter Waves, Colchester, Essex, UK, Sept. 7-11, 1998.
50. Operation of a high performance, three stage, harmonic multiplying, inverted gyrotwistron (with H. Guo, J. Rodgers, V.L. Granatstein, M. Walter and J. Zhao), Invited Keynote Talk given by H. Guo at the 23rd Int. Conf. on Infrared and Millimeter Waves, Colchester, Essex, UK, Sept. 7-11, 1998.
51. Analytical Theory of Multi-Stage Gyro-Amplifiers. Invited Talk at the 26th Int. Conf. on Plasma Science, June 20-24, 1999, Monterey, CA, USA.
52. Physics of pasotrons (with Yuri Bliokh), Invited Talk at the 27th Int. Conf. on Plasma Science, June 4-7, 2000, New Orleans, Louisiana, USA.
53. Cherenkov radiation in vacuum and plasma-filled microwave sources in the absence of guiding magnetic fields (with Yu.P. Bliokh and T.M. Abu-elfadl), Invited Talk given by G.S. Nusinovich at the 25th Int. Conf. on Infrared and Millimeter Waves, Beijing, P.R. China, Sept. 12-15, 2000.
54. Progress in the development of relativistic gyroamplifiers for future linear colliders, (with W. Lawson, M. Castle, S. Gouveia, V. L. Granatstein, B. Hogan, M. Reiser, and I. Spassovsky), Invited Talk given by W. Lawson at the 25th Int. Conf. on Infrared and Millimeter Waves, Beijing, China, Sept. 12-15, 2000.
55. Theory of gyro-TWTs with distributed losses (with O. V. Sinitsyn), Invited Keynote given by G. S. Nusinovich at the 26th Int. Conf. on Infrared and Millimeter Waves, Toulouse, France, Sept. 10-14, 2001.
56. Recent progress in understanding the physics of plasma-filled, high-power microwave sources (with D. M. Goebel), Invited Talk given by G. S. Nusinovich at the 5th Workshop on

High Energy Density and High Power RF, Snowbird, Utah, Oct. 1-5, 2001.

57. Start-up scenarios in high-power gyrotrons (with M. Yedulla, L. Velikovich, T. M. Antonsen, Jr., A. N. Vlasov, S. Cauffman and K. Felch), Invited Keynote given by G.S. Nusinovich at the 27th Int. Conf. on Infrared and Millimeter Waves, San Diego, CA, Sept. 22-26, 2002.
58. Progress in Pasotron Development, (with A.G. Shkvarunets, Y. Carmel, T.M. Abu-elfadl, J. Rodgers, T.M. Antonsen, Jr., V.L. Granatstein, Y. Bliokh, D.M. Goebel, and J.P. Verboncoeur), Invited Talk given by Y. Carmel at the 6th Workshop on High Energy Density and High Power RF, Berkeley Springs, West Virginia, June 22-26, 2003.
59. Progress in the theory and experiments with pasotrons, (with A. G. Shkvarunets, J. Rodgers, Y. Carmel, Yu. Bliokh, and D. M. Goebel), Invited talk given by G. S. Nusinovich at the 5th IEEE Int. Vacuum Electronics Conf., April 27-29, 2004, Monterey, CA.
60. High-efficiency operation of a plasma-assisted slow-wave microwave oscillator at a MW power level, (with A. G. Shkvarunets, Y. Carmel, T. M. Abu-elfadl, J. Rodgers, T. M. Antonsen, Jr., V. L. Granatstein, Y. Bliokh, D. M. Goebel, and J. P. Verboncoeur), Invited talk given by G. S. Nusinovich at the 31st Int. Conf. on Plasma Science, June 28 – July 1, 2004, Baltimore, MD.
61. ITER ECH System and US ECH Program for ITER (with R. J. Temkin, R. Callis, K. Felch, T. V. George, M. Shapiro, R. Vernon and the US ITER ECH Team), Invited talk given by R. Temkin at the ANS biennial Topical Meeting on the Technology of Fusion Energy (TOFE), Sept. 14-16, 2004, Madison, WI.
62. Stochastic phenomena in relativistic gyrodevices, Invited keynote at the 29th Int. Conf. on IR&MM Waves/THz radiation, Sept. 27 – Oct. 01, 2004, Karlsruhe, Germany.
63. Reflections in Gyrotrons with Radial Output: Consequences for the ITER Coaxial Gyrotron (with O. Dumbrajs and B. Piosczyk), *ibid.*, invited keynote given by O. Dumbrajs.
64. “Introduction to high-power microwave technologies”, A lecture given at the minicourse at the 7th Annual DEPS Symposium, October 18, 2004, Rockville, MD.
65. “Gyroklystrons for driving linear accelerators”, (V. Granatstein, W. Lawson, G. Nusinovich, T. Antonsen, B. Hogan, A. Singh and E. Gouveia), Invited talk given by V. Granatstein at 11th Advanced Accelerator Concepts Workshop, 2004.
66. “Symbiosis: Microwave Sources for Application to Plasmas and Plasma-Assisted Microwave Sources” (V. L. Granatstein, Y. Carmel and G. S. Nusinovich), Invited Keynote given by V. Granatstein at the 8th Israeli Conference on Plasma Science and Applications, January 2005.
67. “Recent progress in the pasotron studies” (Yu. P. Bliokh, G. S. Nusinovich, J. Felsteiner, Y. Carmel, A. G. Shkvarunets, J. C. Rodgers, and V. L. Granatstein), Invited Talk given by Yu. P. Bliokh at the 7th Int. Workshop “Strong Microwaves in Plasmas”, July – August 2005, Russia.

68. “Analytical theory of novel configurations of THz and sub-THz sources driven by linear electron beams”, Invited keynote at the 2006 Joint 31st Int. Conf. on IR&MM Waves and 14th Int. Conf. on THz Electronics, Sept. 18-22, 2006, Shanghai, China, Conf. Digest, p.382.
69. “Overview of Russian and Ukrainian THz Research & Development” (G. S. Nusinovich and B. Levush), Invited Paper given by G. Nusinovich at the Department of Defense Advisory Group on Electron Devices (AGED) Special Technology Area Review (STAR) on Compact THz Sources, 28 Febr. -2 March, 2007, Arlington, VA.
70. “Modeling of mode interaction in cylindrical and coaxial high-power gyrotrons using MAGY” (A. N. Vlasov, I. A. Chernyavskiy, T. M. Antonsen, Jr., G. S. Nusinovich, O. V. Sinitsyn, J. A. McDonald and B. Levush), Invited talk given by A. N. Vlasov at the 2007 IEEE PPS Conference, Albuquerque, New Mexico, June 17-22, 2007.
71. “Soft and hard mode switching in gyrotrons”, (G. S. Nusinovich, O. V. Sinitsyn and T. M. Antonsen, Jr.), Invited keynote given by G. S. Nusinovich at the 2007 Joint 32nd Int. Conf. on IR&MM Waves and 15th Int. Conf. on THz Electronics, Sept. 02-07, 2007, Cardiff, UK.
72. “New Vistas for Micro-Fabricated Slow-Wave Devices”, (B. Levush, J. P. Calame, T. M. Antonsen, Jr., K. T. Nguyen, G. Nusinovich, D. Chernin, J. E. Yater, R. H. Abrams, Jr.), Invited talk given by B. Levush at the Government Microcircuit Applications & Critical Technology Conference (GOMACTech-07), Lake Buena Vista, FL, March 2007.
73. “Numerical Models of Mode Interaction in Gyrotrons: Capabilities and Limitations”, (A. N. Vlasov, I. A. Chernyavskiy, T. M. Antonsen, Jr., G. S. Nusinovich, J. A. McDonald, and B. Levush), Session Keynote given by A. N. Vlasov at 2008 IEEE Int. Vacuum Electronics Conf., (IVEC 2008), April 22-24, 2008, Monterey, CA, USA, pp. 58-59.
74. “Structures and RF Breakdown”, Plenary Talk, 13th Advanced Accelerator Concepts Workshop, July 27- August 02, 2008, Santa Cruz, CA; AIP Conf. Proc., vol. 1086, Eds. C. B. Schroeder, W. Leemans and E. Esarey, Melville, New York, 2009, pp. 38-46.
75. “THz Pulse Gyrotron”, (M. Read, J. Neilson, G. Nusinovich, P. Borchard and R. Lawrence Ives), Topical lecture given by M. Read at the 7th Int. Workshop “Strong Microwaves: Sources and Applications”, N. Novgorod, Russia, July 27 – August 2, 2008.
76. “Design of a 94 GHz Gyrotron Operating at the 4th Harmonic, TE_{5,4}-Mode”, (O. V. Sinitsyn, G. S. Nusinovich, A. N. Vlasov, B. Levush, J. A. Pasour K. T. Nguyen), Session Keynote given by O. V. Sinitsyn at the IEEE/NPSS 36th Int. Conf. on Plasma Science and 23rd Symposium on Fusion Engineering, May 31 – June 5, 2009, San Diego, CA, USA, p. 35.
77. “Development of gyrotrons with pulsed solenoids for detecting concealed radioactive materials”, Seminar at the Kirtland AFB, Albuquerque, NM, October 12, 2010.
78. “Development of gyrotrons with pulsed solenoids for detecting concealed radioactive materials” (G. S. Nusinovich and V. L. Granatstein), Seminar – lunch at the AAAS, Washington D.C., December 15, 2010.

79. “Some problems in the theory of high-gradient accelerating structures”, (G. S. Nusinovich, T. M. Antonsen, Jr., O. V. Sinitsyn and K. L. Jensen), 8th Int. Workshop “Strong Microwaves and Terahertz Waves: Sources and Applications”, invited talk given by G. Nusinovich.
80. G. Nusinovich, “Terahertz gyrotrons”, Plenary talk, 36th Int. Conf. Infrared, Millimeter, and Terahertz Waves, Houston, TX, USA, October 2-7, 2011, paper W1.1.
81. G. S. Nusinovich “Terahertz Gyrotrons for Detecting Concealed Radioactive Materials”, Invited Talk at the 4th International Workshop on Far-Infrared Technologies, Fukui, Japan, March 7-9, 2012.
82. G. S. Nusinovich, “Gyrotrons for plasma experiments: historical overview”, Special honorary lecture at the EC-17 (17th Joint Workshop on Electron Cyclotron Emission and Electron Cyclotron Resonance Heating), 7-10 May 2012, Deurne, The Netherlands.
83. G. S. Nusinovich, “Gyrotron news from the University of Maryland”, Seminar at the Karlsruhe Institute of Technology, Germany, May 11, 2012.
84. G. S. Nusinovich, “To understand the gyrotron”, Lecture at the Wroclaw University of Technology, Poland, May 15, 2012.
85. G. S. Nusinovich, “Gyrotron for plasma experiments”, Lecture at the Wroclaw University of Technology, Poland, May 15, 2012.
86. V. L. Granatstein, G. S. Nusinovich, P. A. Sprangle, J. Rodgers, C. A. Romero-Talamas, R. Pu, D. Kashyn, A. Shkvarunets, “Remote Detection of Radioactive Materials Using a Near-THz Gyrotron” (invited), 39th IEEE Int. Conf. on Plasma Science, July 8-12, 2012, EICC-Edinburgh, Scotland, UK, paper 7B-5.
87. G. S. Nusinovich, “Cyclotron masers and gyrotrons”, Plenary lecture, 37th Int. Conf. Infrared, Millimeter, and Terahertz Waves, Wollongong, Australia, Sept. 2012.
88. O. V. Sinitsyn, G. S. Nusinovich and T. M. Antonsen, Jr., “Multipactor Phenomenon in Dielectric-Loaded Accelerating Structures: Review of Theory and Code Development”, Invited Talk at the 3rd Int. Workshop on Mechanisms of Vacuum Arcs, 1-4 Oct. 2012, Albuquerque, NM, USA.
89. G. S. Nusinovich, M. Yu. Glyavin and A. G. Luchinin, “The concept of remote detection of radioactive materials by using high-power THz radiation”, Invited Talk at the 38th Int. Conf. on Infrared, Millimeter and Terahertz Waves, Sept. 1-6, 2013, Mainz, Germany, paper W9-1.
90. A. G. Luchinin, M. Yu. Glyavin, M. V. Morozkin, G. S. Nusinovich, “THz gyrotrons: state-of-the art and perspectives”, Invited Talk at the All-Russian Conference “Problems of microwave electronics”, 24-25 October, Moscow, Russia.

Contributed papers presented at conferences and meetings:

1. “On the theory of electron spatial bunching in curvilinear electron beams” (with V.K.

- Yulpatov). All-Union Session of the A.S. Popov's Scientific Society of Radioeng., Electron. and Communications, Moscow, USSR, 1968, p.7.
2. "Space charge effects in a drift section of a gyrokystron" with (V. K. Yulpatov). Workshop on the Development of Microwave Tubes, Moscow, USSR, April 1970.
 3. "Stability of Single-Mode Oscillations in Multimode Gyrotrons" (with I. G. Zarnitsyna). 5th All-Union Conf. on Microwave Electronics, Tomsk, USSR, Sept. 1972.
 4. "Wave Interaction in Gyrotrons with Distorted Axial Symmetry of the Interaction Space", Ibid.
 5. "Mode Interaction in Gyrotrons", All-Union Seminar "Wave and Mode Interaction in Microwave Tubes", Gorky, USSR, May 1975.
 6. "Output Power Limits Caused by Microwave Ohmic Heating of the Resonator Walls in CW/Long Pulse Gyrotrons" (with A. Sh. Fix) 7th All-Union Conf. on Microwave Electronics, Rostov-Don, USSR, 1976, Conf. Digest, p. 57.
 7. "A Complex for Microwave Plasma Heating in the Tokamak T-10" (with V.V. Alikaev et al.) All-Union Conf. on Eng. Problems of Fusion Reactors, Leningrad, USSR, 1977, Conf. Proc., v. 2, pp. 3-8.
 8. "Phase-Locking of Multimode Oscillators with a Hard Self-Excitation" (with L. S. Rodygina and T. M. Tarantovich), All-Union Workshop on Microwave Sources Development, Moscow, USSR, May 1977.
 9. "Competition of Modes Resonant with Different Cyclotron Harmonics in Gyrotrons" (with I. G. Zarnitsyna and V. E. Zapevalov), *ibid.*
 10. "On the theory of a relativistic CRM-BWO" (with N.S. Ginzburg and I.G. Zarnitsyna), 6th All-Union Seminar "Oscillation Phenomena in Charged Particle Beams," Leningrad, USSR, 1978, Conf. Digest, pp. 50-53.
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263. J. Yu, T. M. Antonsen, Jr., G. S. Nusinovich, A. N. Vlasov, "Destabilization of backward waves by space charge in gyrotron beams", paper IO6B-7.
264. O. V. Sinitsyn, G. S. Nusinovich, T. M. Antonsen, Jr., "Ultimate choice of operating modes in high-power gyrotrons", *ibid.*, paper IO6B-4.
265. S. J. Papadakis, J. A. Hoffmann, A. H. Monica, D. M. Deglau, J. Yu, G. S. Nusinovich, T. M. Antonsen, R. Osiander, "A micro-fabricated sheet-beam Orotron THz source", in *Micro- and Nanotechnology Sensors, Systems, and Applications III*, ed. T. George, M. S. Islam, A. K. Dutta, Proc. SPIE, vol. 8031, 80310C (2011).
266. O. V. Sinitsyn, T. M. Antonsen, G. S. Nusinovich, "Self-consistent time-dependent quasi-3D model of multipactor in dielectric-loaded accelerating structures", IPAC-2011 (2nd Int. Particle Accelerator Conference), September 4-9, 2011, San Sebastian, Spain, paperTUPC041.
267. D. G. Kashyn, T. M. Antonsen, I. Haber, G. S. Nusinovich, "Ion motion in the vicinity of microprotrusions in accelerating structures", *ibid.*, paper MOPC065.
268. O. Sinitsyn, R. Pu, G. Nusinovich, T. Antonsen, « Studies of gyrotron second harmonic operation in high-order modes », 36th Int. Conf. Infrared, Millimeter, and Terahertz Waves, Huston, TX, USA, October 2-7, 2011, paper W2A.5.
269. D. Tax, O. Sinitsyn, W. Guss, I. Mastovsky, G. Nusinovich, M. Shapiro, T. Antonsen, R. Temkin, "Mode excitation during start-up of a 1.5 MW, 110 GHz gyrotron", *ibid.*, paper W4A.2.
270. B. Lenardo, C. A. Romero-Talamas, V. L. Granatstein, G. S. Nusinovich, "Emulating microwave-induced breakdown in air with trigatron spark gap", 53rd Annual Meeting of the APS-DPP, Nov. 14-18, 2011, Salt Lake City, Utah, paper JP9 49; *Bulletin of the APS*, **56**, No. 12, p. 158.
271. O. Sinitsyn, G. Nusinovich, T. Antonsen, Jr., D. Tax, R. Temkin, "Numerical studies of startup scenarios in a 1.5 MW, 110 GHz gyrotron operating in short pulses", *ibid.*, paper TO7 1, p. 288.
272. D. Tax, W. C. Guss, I. Mastovsky, M. A. Shapiro, R. J. Temkin, G. S. Nusinovich, O. V. Sinitsyn, "Excitation of modes during the voltage rise of a 1.5 MW, 110 GHz gyrotron", *ibid.*, paper YP9 3, p. 362.
273. R. Pu, O. Sinitsyn, G. Nusinovich, "Numerical study of the start-up scenario of a 670 GHz gyrotron operating at TE_{31,8} mode", *ibid.*, paper YP9 4, p. 363.
274. C. A. Romero-Talamas, A. Shkvarunets, B. Lenardo, R. C. Elton, D. Kashyn, R. Pu, G. S. Nusinovich, V. L. Granatstein, "Experimental program to investigate the technique of remote detection of suspected nuclear materials with a 670 GHz gyrotron", *ibid.*, paper YP9 5, p. 363.

275. Y. S. Dimant, G. S. Nusinovich, P. Sprangle, V. L. Granatstein, « Passage of energetic radiation through air: collisional kinetics of photons and electron production », 64th Annual Gaseous Electronics Conference, Nov. 2011, Salt Lake City, Utah, Bulletin of the APS, **56**, No. 15, p. 71, paper PR2 4.
276. Y. S. Dimant, G. S. Nusinovich, P. Sprangle, J. Penano, C. A. Romero-Talamas and V. L. Granatstein, “Propagation of gamma rays and production of free electrons in air”, arXiv 1204.2186 [physics.plasm-ph], subm. 09 April 19, 2012.
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278. C. A. Romero-Talamas, G. S. Nusinovich, J. C. Rodgers, D. Kashyn, B. Lenardo, R. C. Elton, A. G. Shkvarunets, V. L. Granatstein, “Experimental program to test a high-power 670 GHz gyrotron, and its applicability to the remote detection of concealed radioactive materials”, *ibid.*, paper P2.23.
279. Y. Han, G. S. Nusinovich, T. M. Antonsen, Jr., J. Rodgers, O. V. Sinitsyn, “A study of waveguide loaded with periodical dielectrics”, *ibid.*, paper 22.3.
280. G. S. Nusinovich, C. A. Romero-Talamas, R. Pu, T. M. Antonsen, Jr., V. L. Granatstein, P. Sprangle, “Possible standoff detection of ionizing radiation with high-power THz electromagnetic waves”, 2012 SPIE Defense, Security+Sensing, (Conf. 8358: Chemical, Biological, Radiological, Nuclear, and Explosives Sensing XIII), Baltimore, MD, USA, 24-27 April 2012, 8358-58, Session 9.
281. O. V. Sinitsyn, G. S. Nusinovich and T. M. Antonsen, Jr., “3D Monte-Carlo Simulations of Multipactor in Dielectric-Loaded Accelerating Structures”, 2012 Advanced Accelerator Concepts Workshop, June 10-15, 2012, Austin, TX.
282. R. A. Kishek, O. Sinitsyn, and G. Nusinovich, “Modeling of Multipactor in High-Gradient Structures”, *ibid.*
283. O. V. Sinitsyn, R. Pu, G. S. Nusinovich, T. M. Antonsen, Jr., « Stability of Gyrotron Operation on the Second Harmonic », 39th IEEE Int. Conf. on Plasma Science, July 8-12, 2012, EICC-Edinburgh, Scotland, UK, paper 4B-5.
284. R. H. Jackson, M. E. Read, P. Ferguson, G. Nusinovich, R. L. Ives, “L-Band, Annular Beam Klystron Design”, *ibid.*, paper 2P-57.
285. A. Keser, T. M. Antonsen, Jr. and G. S. Nusinovich, “Electron emission for micro-protrusions in High-Gradient Accelerating Structures” (tent.), 3rd Int. Workshop on Mechanisms of Vacuum Arcs, 1-4 Oct. 2012, Albuquerque, NM, USA.
286. G. S. Nusinovich, C. A. Romero-Talamas, Y. Han, and T. M. Antonsen, Jr., “Excitation of parasitic waves in forward-wave amplifiers with weak guiding fields”, 54th APS-DPP Meeting, Oct. 28-Nov. 03, 2012, Providence, RI, USA, Bull. APS, **57**, No. 12,

paperJ07.00008.

287. A. Keser, G. Nusinovich, D. Kashyn, T. Antonsen, Jr., “Role of Nottingham and Thomson effects in heating of micro-protrusions in high-gradient structures”, *ibid.*, paper J07.00010.
288. C. A. Romero-Talamas, W. C. Young, G. S. Nusinovich and R. C. Elton, “Electron and Negative Ion Production Rates in Air Plasma with Ionizing Radiation”, *ibid.*, paper TP8.00096.
289. D. Kashyn, G. Nusinovich, J. Rodgers, C. Romero-Talamas, and A. Shkvarunets, “Experimental Studies of sub-THz Gyrotron with Pulsed Solenoid for Air Breakdown Investigation”, *ibid.*, paper PP8.00153.
290. O. V. Sinitsyn, G. S. Nusinovich, T. M. Antonsen, Jr., R. Pu and C. R. Talamas, «Progress in the gyrotron theory and experiments at the University of Maryland», US-Europe-Japan Gyrotron Developers/Users Meeting, Dec. 2012, Nara, Japan.
291. L. Nguyen, T. Antonsen, G. Nusinovich, « Open Planar Sheath Slow-Wave Structure », IVEC 2013, 21-23 May 2013, Paris, France, paper 5B.6.
292. G. S. Nusinovich, C. A. Romero-Talamas, Y. Han, “Excitation of Parasitic Waves in Forward-Wave Amplifiers with Weak Guiding Fields”, IEEE Pulsed Power & Plasma Science Conf., PPS 2013, June 16-21, 2013, San Francisco, CA, USA, paper 7A-4.
293. O. V. Sinitsyn, G. S. Nusinovich, T. M. Antonsen, Jr., « Multipactor Simulations in Dielectric-Loaded Accelerating Structures », *ibid.*, paper 6D-7.
294. L. B. Nguyen, T. M. Antonsen, G. S. Nusinovich, «Open Planar Sheath Slow-Wave Structure», *ibid.*, paper P4-37.
295. O. Dumbrajs and G. S. Nusinovich, “Effect of the tilt on the gyrotron operation”, 38th Int. Conf. IR, MM and THz Waves, Sept. 1-6, 2013, Mainz, Germany
296. M. Yu. Glyavin, N. S. Ginzburg, A. G. Luchinin, V. N. Manuilov, G. S. Nusinovich, A. S. Sedov, N. A. Zavolsky, V. Yu. Zaslavsky, I. V. Zotova, V. E. Zapevalov, “Optimization and 3D analysis of high frequency gyrotrons”, *ibid.*, paper Mo.1-6.

Memos and Archive Papers

1. G. S. Nusinovich, B. Levush and D. K. Abe, “A Review of the Development of Multiple-Beam Klystrons and TWTs”, NRL/MR/6840-03-8673, March 17, 2003.
2. P. Sprangle, B. Hafizi, H. Milchberg, G. Nusinovich, and A. Zigler, “Active Remote Detection of Radioactivity Based on Electromagnetic Signatures”, NRL/MR/6703-13-9484. August 15, 2013.
3. G. S. Nusinovich and T. M. Antonsen, Jr., “Role of rf electric and magnetic fields in heating

of micro-protrusions in accelerating structures”, arXiv:1105.5097v1 [physics.acc-ph], 25 May 2011.

4. Y. S. Dimant, G. S. Nusinovich, P. Sprangle, J. Penano, C. A. Romero-Talamas, and V. L. Granatstein, “Propagation of gamma rays and production of free electrons in air”, arXiv:1204.2186v1 [physics.plasm-ph] 9 Apr. 2012.
5. A. C. Keser, T. M. Antonsen, G. S. Nusinovich, D. G. Kashyn, and K. L. Jensen, “Heating of Micro-protrusions in Accelerating Structures”,), arXiv 1305.3643 [physics.acc-ph].

297. Inventions and Patents:

1. “Two-Beam Cyclotron Resonance Maser” (with V. E. Zapevalov, V. I. Kurbatov, O. V. Malygin, V. N. Manuilov, and Sh. E. Tsimring), Copyright No. 786677 with priority of July 25, 1979. Official Bulletin KDIO of SM USSR, No. 7, p. 281, 1989.
2. “Two-Beam Electron Gun for a Cyclotron Resonance Maser (variants)” (with V. E. Zapevalov, V. I. Kurbatov, O. V. Malygin, V. N. Manuilov, and Sh. E. Tsimring), Copyright No. 897039 with priority of July 28, 1980. Official Bulletin KDIO of SM USSR, No. 7, p. 282, 1989.
3. “Quasioptical Converter of a Whispering Gallery Mode Radiation into a Focused Wave Beam” (with L. I. Zagryadskaya), Classified Certificate.
4. “Cyclotron Resonance Maser with an Additional Resonator for Frequency Stabilization” (with A. G. Luchinin and E. V. Sokolov), Classified Certificate.
5. “Microwave amplifier having cross-polarized cavities” (P. M. Malouf and G. S. Nusinovich), US004001758B2, Appl. No.: 610,778, Reg. Number H1758; Filed: March 4, 1996, Published Nov. 3, 1998.

Contracts and Grants: PI and Co-PI in the Following Contracts:

1. “Studies of Cyclotron Laser Amplifiers with Trochoidal Electron Beams” (1994), sponsored by Air Force Office of Scientific Research, \$25,000 (Oct. 1994 – Dec. 1994)
2. “Experimental and Theoretical Research in Advanced Vacuum Electronic Microwave Devices” (1994-1996), (with W. W. Destler, T. M. Antonsen, Jr., Y. Carmel, V. L. Granatstein, H. Guo, W. Lawson, and B. Levush), sponsored by Air Force Office of Scientific Research, \$265,000 per year (Oct. 1994 – Oct. 1997).
3. “Research on Compact, High-Energy Microwave Sources” (MURI-1994), (with V. L. Granatstein, T. M. Antonsen, Jr., Y. Carmel, W. W. Destler, B. Levush, H. Guo, I. Lloyd, and C. Grebogi), sponsored by Air Force Office of Scientific Research, \$1,000,000 per year (March 1995 – March 2000).
4. “Basic studies of High Power Millimeter Wave Amplifiers and Associated Technology,” (with V. L. Granatstein, T. M. Antonsen, Jr., W. Lawson, A. Singh, and M. Walter),

sponsored by NRL, \$300,000 per year (June 1998-Oct. 2000).

5. “Investigation of Basic Physics Processes in the Pasotron HPM Source”, (1999-2001), (with Y. Carmel, T. M. Antonsen, Jr., and V. L. Granatstein), sponsored by Air Force Office of Scientific Research, \$300,000 per year.
6. “MURI-99 Innovative Vacuum Electronics”, (1999–2004) (with V. L. Granatstein, T. M. Antonsen, Jr., Y. Carmel, H. Guo, A. Singh, I. Lloyd, and O. Wilson), sponsored by Air Force Office of Scientific Research, \$300,000 per year.
7. “Microwave Generation for Magnetic Fusion Energy”, (1999-2002) (with V.L. Granatstein, T. M. Antonsen, Jr., and A. Singh,) sponsored by DOE, \$150,000 per year.
8. “Physics and Optimization of Pasotron Microwave Sources”, (2002-2004), (with Y. Carmel, T. M. Antonsen, Jr., A. G. Shkvarunets and V. L. Granatstein), sponsored by Air Force Office of Scientific Research, \$200,000 per year.
9. “Microwave Generation for Fusion Energy Applications”, (2002-2005) (with V. L. Granatstein, T. M. Antonsen, Jr. and A. Singh), sponsored by DoE, \$150,000 per year.
10. PI on “Theory of Gyrotrons for Controlled Fusion Reactors”, (2005-2007), (Co-PIs – T. M. Antonsen, Jr. and V. L. Granatstein), sponsored by DoE, \$160, 000 per year.
11. “Miniature electron sources for tomorrow’s vacuum THz devices” (2005-2006) (with Y. Carmel, T. M. Antonsen, Jr., V. L. Granatstein, J. Rodgers and A. G. Shkvarunets), sponsored by AFOSR, \$170,000.
12. “A plasma-assisted megawatt-class microwave source with an output energy of 1 kJ per pulse” (2005-2007) (with Y. Carmel, J. Rodgers, A. G. Shkvarunets, T. M. Antonsen, Jr., and V. L. Granatstein), sponsored by AFOSR, \$250,000 per year.
13. PI on “Break-Through to Strong T-rays: Gyrotrons and Novel Types of Gyrodevices” (2006-2008), sponsored by CRDF, \$12,000 per year.
14. PI on the Grant “ “, Task 2 (2008-2010) sponsored by NRL, \$60,000 per year
15. PI on “Theory of RF Breakdown and Multipactoring in High Gradient Accelerating Structures” (2007-2010, 2010-2013) (Co-PIs – V. L. Granatstein and R. Kishek), sponsored by DoE, \$200, 000 per year.
16. PI on “Theory and Modeling of High-Power Gyrotrons” (2002-2009; 2009-2012, 2013), (Co-PIs – T. M. Antonsen, Jr. and V. L. Granatstein), sponsored by DoE, \$140,000 per year.
17. PI on “Wave and mode interaction in overmoded high-power amplifiers of short wavelength radiation (from W-band up to THz)“, (2009-2012), (Co-PIs - T. M. Antonsen, Jr., O. V. Sinitsyn), sponsored by AFOSR, \$150 per year.; **renewal proposal was submitted in August 2012**, (requested budget - \$150/year for three years)

18. Co-PI on Task C7 of AppEl: “High-power THz-range gyrotron with pulsed magnetic field for detecting concealed radioactive materials” (2010 – 2013), (PI – V. L. Granatstein), \$400 per year during first two years, then \$200/year for the third and fourth years.
19. “Remote detection of nuclear materials using air breakdown ionization signatures” (PI – P. Sprangle), **submitted to DTRA** (requested budget - \$350/year for three years)
20. Co-PI on “Novel concepts of high-power sources of short-wavelength millimeter-wave radiation”, (PI – T. M. Antonsen, Jr.) – uploaded to ORAA 06/07/2013, sponsoring agency – **NRL**. (requested budget \$500/year for three years)
21. PI on “Towards Higher Efficiencies and Frequencies in High Gradient Accelerating Structures”, **submitted to HEP DOE on Sept. 09, 2013** (requested budget \$770K for three years)

Editorship and Reviewing Activities

- Associate editor for books “Gyrotrons” (1980), “The Gyrotron” (1981) and “Gyrotrons” (1989), published by the Institute of Applied Physics, Gorky, USSR.
- Guest Editor for the 6th Special Issue on High-Power Microwave Generation of the IEEE Trans. on Plasma Science (v. 24, No. 3, 1996).
- Guest Editor for the Special Issue on Cyclotron Resonance Masers and Gyrotrons of the IEEE Trans. on Plasma Science (v. 27, No. 2, 1999).
- Associate Editor of the IEEE Transactions on Plasma Science; Senior Editor (June 2006-June 2009).
- Reviewer for manuscripts submitted to Physical Review Letters, Physical Review, Physics of Fluids, Physics of Plasmas, Int. Journal of Electronics, IEEE Transactions on Plasma Sciences, Electron Devices and Microwave Theory and Technique, Journal of Applied Physics, Applied Physics Letters, Journal of Plasma Physics, Journal of Physics D, Applied Physics; Int. Journal on Infrared and Millimeter Waves, Journal of Fusion Energy.
- In the past, reviewer for Soviet journals: Journal of Technical Physics, Technical Physical Letters, Radio Engineering and Electronic Physics, Radiophysics and Quantum Electronics, Elektronnaya Tekhnika, Ser. 1 Elektronika SVCh.
- Reviewer of research proposals for the U.S. Department of Energy (Phase I and Phase II)
- Reviewer of research proposals for the Air Force Office of Scientific Research.
- Reviewer of research proposals for the Particle Physics and Astronomy Research Council at the UK’s Strategic Science Investment Agency.
- Reviewer of research proposals for the National Institutes of Health.

- Reviewer of research proposals for U.S. Civilian Research and Development Foundation (CRDF).
- Reviewer of research proposals for the US-Israel Bi-National Science Foundation (BSF).
- Co-Editor of Proceedings of the 6th Workshop on High Energy Density and High Power RF, Berkeley Springs, West Virginia, June 22-26, 2003; AIP Conf. Proc., v. 691, 2003.
- Co-Editor of the book “Modern Microwave and Millimeter-Wave Power Electronics”, IEEE Press - Wiley, 2005.
- Co-Editor of Proceedings of the 7th Workshop on High Energy Density and High Power RF, Kalamata, Greece, June 13-17, 2005; AIP Conf. Proc., v. 807, 2006.
- Co-Editor of Proceedings of the 14th Advanced Accelerator Concepts Workshop, Annapolis, Maryland, June 13-19, 2010; AIP Conf. Proc., vol.1299, 2010.
- Reviewer of the ONR SAAET Fall Technical Review Meeting (26-28 October 2010, Atlanta, GA)

Advising

1. Undergraduate Advising: for about 10 undergraduate students at the Gorky State University, USSR during 70's and 80's [equivalents of M.S. were obtained by G.M. Minevich (1976), A.B. Pavelyev (1979), M. Yu Glyavin (1989), A.A. Gurtovnik (1989)].
2. Graduate Advising: Advisor of A.G. Luchinin, Gorky, USSR (Ph.D. equivalent in 1985).
3. Co-advisor of graduate students at the University of Maryland: Hai Li, (Ph.D. in 1993). Girish Saraph (1992 - 1997), Sami Tantawi (1991-1992), Perry Malouff (1992-1994). W. Chen (1996-2000), J. Zhao (1996-2000), O. V. Sinitsyn (2000-2005), M. Yeddulla (2001-2005), T. M. Abu-elfadl (1999-2002) R. Ngogang (2003-2005), J. Yu (2007-2010), Ruifeng Pu (2010 -present), Dmitry Kashyn (2010 -present), Aydin Keser (2011 – present). Member of Ph.D. committees for Hai Li, Perry Malouf, Girish Saraph, T. M. Abu-elfadl, M. Yeddulla, R Ngogang and J. Yu.

Professional Service:

1. *Committee membership:*
 - Scientific Secretary of the branch “High-Frequency Relativistic Electronics” of the Scientific Council on Physical Electronics of the Academy of Sciences of the USSR (1979-1990);
 - Member of the above mentioned Scientific Council (1981-1990);
 - Member of the Scientific Council of the Division of Plasma Physics and High-Power Microwaves, Institute of Applied Physics, Academy of Sciences of the USSR (1985-1990);
 - Scientific Secretary of Organizing Committees for All-Union Seminars on “Wave and Mode

Interaction in Microwave Tubes” (Gorky, USSR, May 1975), “High-Frequency Relativistic Electronics” (Gorky, USSR, Sept. 1978; Tomsk, Sept. 1980; Gorky, Feb. 1983).

- Chairman of the Program Committee for the 22nd International Conference on Infrared and Millimeter Waves, Wintergreen, VA, July 1997.
- Co-Chairman of the International Workshop on Cyclotron Resonance Masers and Gyrotrons, Israel, May 1998.
- Member of the Programme Council for the 23rd International Conference on Infrared and Millimeter Waves, Colchester, UK, Sept. 1998.
- Leader of the Working Group “ Millimeter-Wave Sources,” 9th Workshop “Advanced Accelerator Concepts,” Santa Fe, New Mexico, June 14-17, 2000.
- Member of the Program Committee for the 25th International Conference on Infrared and Millimeter Waves, Beijing, P.R. China, Sept. 2000.
- Member of the Program Committee for the 27th International Conference on Infrared and Millimeter Waves, San Diego, CA, Sept. 2002.
- Co-chair of the 6th International Workshop RF-2003, (Berkeley Springs, West Virginia, June 2003).
- Member of the Technical Program Committee and the Technical Area Coordinator for “Microwave Generation and Microwave-Plasma Interaction” for ICOPS-2004, (Baltimore, MD, June 2004.)
- Member of the Executive Committee of the NPSS and Plasma Science and Application Committee (PSAC) of the IEEE (2001-2003, 2006 – 2008, 2010 - present).
- Member of the International Advisory Committee for the 29th International Conference on Infrared and Millimeter Waves, (Karlsruhe, Germany, Sept. 2004).
- Member of the Technical Program Committee and the Technical Area Coordinator for “Microwave Generation and Microwave-Plasma Interaction” for ICOPS-2005, (Monterey, CA, June 2005.)
- Member of the International Advisory and Program Committees for the International Conference IRMMW/THz-2005, Williamsburg, VA, September 2005.
- Chairman of the Program Committee for the 7th International High Energy Density and High Power RF Workshop, June 13-17, 2005, Kalamata, Greece.
- Member of the International Advisory Committee for the International Conference IRMMW/THz-2006, Shanghai, China, Sept. 2006.

- Member of the Advisory Council for the U.S. Collaboration on High Gradient Research for a Multi-TeV Linear Collider (since Sept. 2005)
- Member of the International Advisory Committee for the International Conference IRMMW-THz-2007, Cardiff, U.K., 02-07 Sept. 2007.
- Member of the Program Committee for IVEC-08, Monterey, CA, USA, April 2008.
- Member of the International Advisory Committee for the International Conference IRMMW-THz-2008, Pasadena, CA, Sept. 2008.
- Chair of the International Collaboration Workshop on High Gradient Accelerating Structures, University of Maryland, College Park, MD, USA, Jan. 2008.
- Member of the Program Committee for the Conference “Terahertz Emitters, Receivers, and Applications II (2011 Photonic Devices + Applications; SPIE Optics + Photonics, 21-25 August 2011, San Diego, CA, USA).
- Member of the International Advisory Committee of the 8th International Workshop “Strong Microwaves and Terahertz Waves: Sources and Applications”, Nizhny Novgorod, Russia, July 9 -16, 2011

2. *Consulting Service:*

- Consultant to Science Application International Corporation, SAIC (1991-1992, 2000-present).
- Consultant to Physical Sciences Inc. (1991-1993, 1997-2000).
- Consultant to Omega-P (1995-2000).
- Consultant to Calabazas Creek Research, Inc. (2003-2004, 2006-2008, 2011-2013).
- Consultant to Stanford University (2004 – 2005).
- Consultant to Alan, Booze and Hamilton (2010).
- Consultant to General Atomics, (2010-2011).

I certify that this curriculum vitae is accurate and up to date
