
REFERENCES

- Alaria, M. K., Bhomia, V., Nayek, N., Das, S., and Sinha, A. K., "Thermal design of RF window for High Power Gyrotron," *IEEE Trans. on Plasma Sci.*, Vol.39, No. 9, pp. 1795, 2011.
- Alaria, M. K., Mukherjee, P., Das S., and Sinha A. K., "Study of Cavity and Output Window for High Power Gyrotron," *J. of Fusion Energy*, Vol. 30, No 1, 2011.
- ANSYS *Help guide*, version 10, ANSYS Inc., USA.
- Baird, J. M., "Survey of fast wave tube developments," *IEDM Tech. Dig.*, pp. 156-163, 1979.
- Baird, J. M., and Lawson W., "Magnetron injection gun (MIG) design for gyrotron applications," *Int. J. Electronics*, Vol. 61, pp. 953-967, 1986.
- Bajaj, V. S. *et al.*, "250 GHz CW gyrotron oscillator for dynamic nuclear polarization in biological solid state NMR," *J. Magnetic Resonance*, Vol. 189, pp. 251-279, 2007.
- Barker, R. J., Booske, J. H., and Luhmann, N. C. Jr., and Nusinovich, G. S., *Modern Microwave and Millimeter Wave Power Electronics*, John Wiley & Sons Publication and IEEE Press, USA, 2005.
- Barroso J. J., Castro P. J., Pimenta A. A., Spassov, V. A., Correa R. A., Idehara, T., and Ogawa I., "Operation of a 32 GHz gyrotron," *International journal of Infrared and Millimeter Waves*, Vol. 18, No. 11, pp. 611-616, pp. 2147-2160, 1997.
- Basu, B. N., *Electromagnetic Theory and Applications in Beam-Wave Electronics*, Singapore: World Scientific, 1996.
- Becerra, L. R., Gerfen, G. J., Bellew, B. F., Bryant, J. A., Hall, D. A., Inati, S. J., Weber R. T., Un, S., Prinsner, T. F., McDermott, A. E., Fishbein, K. W., Kreisler, K. E., Temkin, R. J., Singel, D. J., and Griffin, R. G., "A spectrometer for dynamic nuclear polarization and electron paramagnetic resonance at high frequencies," *J. Magnetic Resonance*, Vol. 117, No. 1, pp. 28-40, 1995.
- Becerra, L. R., Gerfen, G. J., Temkin, R. J., Singel, D. J., and Griffin, R.G., "Dynamic nuclear polarization with a cyclotron resonance maser at 5 T," *Physics Review Letters*, Vol. 71, No.21, pp. 3561-3564, 1993.
- Beck, A. W. H., *Space Charge Waves and Slow Electromagnetic Waves*, New York: Pergamon, 1958.
- Borie E., *Review of Gyrotron Theory*, Kern Forschungszentrum Karlsruhe, Institute for Technical physics, Internal report, Aug. 1991.
- Bykov, Y., Ereemeev, A., Flyagin, V., Kaurov V., Kutfin A., Luchinin, A., Malygin O., Plotnikov I. and Zapevlov, V., "The gyrotron system for ceramics sintering. Microwaves:

- Theory and Applications; Materials Processing III,” *Ceramics Trans.*, Vol. 59, pp. 133–140, 1995.
- Callis, R. W., Lohr, J., Gorelov, I. A., Ponce, D., Kajiwara, K. and Tooker, J. F., “Technical report on the upgrade of the DIII-D ECRH system using 120 GHz ITER gyrotrons,” *General Atomics*, August 2004.
- Carter, R.G., *Electromagnetic Waves, Microwave Components and Development*, London: Chapman & Hall, 1990.
- Chatterjee, R., *Microwave, Millimetre-Wave and Submillimetre-Wave: Vacuum Electron Devices*, New Delhi: Affiliated East-West Press, 1999.
- Chodorow, M., and Susskind, C., *Fundamentals of Microwave Electronics*, New York: McGraw-Hill, 1964.
- Choi, E. M., Archewka, C. M., Mastovsky, I., Shapiro, M. A., Sirigiri J. R. and Temkin R. J., “Megawatt power level 120 GHz gyrotrons for ITER start up,” *3rd IAEA Technical Meeting on ECRH*, Como Italy, 2-5 May 2005.
- Collin, R. E., *Foundations for Microwave Engineering*, New York: McGraw-Hill, 1966.
- Staprans, A, Varian, Associates, Palo, Alto, Calif, McCune, E. W., Ruetz, J. A. “High-power linear-beam tubes,” *Proc. IEEE*, Vol. 61, pp. 299-330, 1973.
- Correa, R. A., and Barroso, J. J., “Space charge effects of gyrotron beams in coaxial cavities,” *Int. J. electronics*, Vol. 74, pp. 131, 1993.
- Dammertz, G., Borie E., Iatrou, C. T., Kuntzee, M., Piosczyk, B. and Thumm, M., “140 GHz gyrotrons with multimewatt output power,” *IEEE Trans. Plasma Science*, Vol. 28, No. 3, 2000.
- Denisov, G. G., Kuftin, A. N., Malygin, V. I., Venediftov, N. P., Vinogradov, D. V. and Zapevalov, V. E., “110 GHz gyrotron with built-inhigh-efficiency converter,” *J. Electronics*, Vol. 72, No. 5 and 6, pp.1079–1091, 1992.
- Dumbrajs, O., and Nusinovich, G. S., “Co-axial gyrotrons: past, present, and future (Review),” *IEEE Trans. Plasma Science*, Vol. 32, No. 3, pp. 934-946, 2004.
- Eaves, J. L., and Reedy, E. K., *Principle of Modern Radar*, New York: D. Van Nostrand, 1987.
- Kimura, Takuji, “Experimental Study of a 1 MW, 170 GHz Gyrotron Oscillator,” PhD thesis, Massachusetts Institute of Technology, 1997.
- Edgecombe, C. J., Ed., *Gyrotron Oscillators: Their Principles and Practice*, Cambridge University Press, 1993.
- EPRI Centre, “*Industrial Microwave Heating Application*,” Published by EPRI center for materials fabrication, Vol. 4, No.3, 1993.
- Feinstein, J., and Felch, K., “Status review of research on millimeter-wave tubes,” *IEEE Trans. Electron Dev.*, Vol. 34, pp. 461-467, 1987.
- Felch, K., Huey, H., and Jory, H., “Gyrotrons for ECH applications,” *J. Fusion Energy*, Vol. 9, No.1, pp. 59–75, 1990.

- Felch, K. L., Danly, B. G., Jory, H. R., Kreischer, K. E., Lawson, W. Levush, B. Temkin, R.J. "Characteristics and applications of fast-wave gyro-devices," *Proc. IEEE*, 1999, pp. 752-781.
- Flyagin, V. A., and Nusinovich, G. S., "Gyrotron oscillators," *Proc. IEEE*, Vol. 76, 1988, pp. 644-656.
- Gandhi, O. P., *Microwave Engineering and Applications*, New York: Pergamon Press, 1981.
- Gaponov, A. V., Petelin, M. I., and Yulpatov, V. K., "The induced radiation of excited classical oscillators and its use in high frequency electronics," *Radiophys. Quantum Electron.*, Vol. 10, pp. 794-813, 1967.
- Gaponov, A. V., "Interaction of irrectilinear electron flows with electromagnetic waves in waveguides," *Izv.VUZov, Radiofiz.*, Vol. 2, pp. 450-462, 1959.
- Gaponov, A. V., and Granatstein V. L., Ed., *Application of High Power Microwaves*. Boston: Artech House, 1994.
- Gerfen, G. J., Temkin, R. J., and Singel, D. J., "High frequency (140 GHz) dynamic nuclear polarization: polarization transfer to a solute in frozen aqueous solution," *J. Chemical Physics*, Vol. 102, No. 24, pp. 9494-9497, 1995.
- Gewartowski, J. W., and Watson, H. A., *Principles of Electron Tubes*, New Jersey: D. Van Nostrand, 1965.
- Gilmour, A. S., *Microwave Tubes*, Boston: Artech House, 1986.
- Ginzton, E. L., *Microwave Measurements*, McGraw Hill, New York, 1957.
- Glyavin, M. Yu., and Luchinin, A. G., "A terahertz gyrotron with pulsed magnetic field," *Radio Engineering and Electronic Physics*, Vol. 50, pp. 10-11, 2007.
- Goldenberg, A. L., and Petelin, M. I., "The Formation of helical electron beams in an adiabatic gun," *Izv.VUZov. Radiofizika*, Vol. 16, pp. 141-149, 1973.
- Grantstein, V. L., and Alexeff, I., Ed., *High Power Microwave Sources*, Boston: Artech House, 1987.
- Haldeman, G. S., "A Novel Window for Megawatt Gyrotrons," Ph.D Thesis, MIT, 2001.
- Hal, D. A., Maus, D. C., Gerfen, G. J., Inati, S. J., Becerra L. R., Dahlquist, F. W., and Griffin, R. G., "Polarization-enhanced NMR spectroscopy of biomolecules in frozen solution," *Science*, Vol. 276, pp. 930-932, 1997.
- Heidinger, R., Dammertz, G., Meier, A., and Thumm M., "CVD diamond windows studied with low and high power millimeter waves," *IEEE Trans. Plasma Science*, Vol. 30, pp. 800, 2002.
- Hermannsfelt, W. B., "EGUN," Stanford Linear Accelerator Center, Menlo Park, CA, Stanford. Univ. Report SLAC-226, 1979.
- Hirotaa, M., Valecillosb, M. C., Britoc, M. E., Hiraob, K., and Toriyamad, M., "Grain growth in millimeter wave sintered silicon nitride ceramics," *J. European Ceramic Society*, Vol. 24, No. 12, pp. 3337-3343, 2004.

- Hu, W., Shapiro, M. A., Kreischer, K. E., and Temkin R. J., "140-GHz gyrotron experiments based on a confocal cavity," *IEEE Trans. on Plasma Science*, Vol. 26, pp. 366, 1998.
- Hutter, R. G. E., *Beam and Wave electronics in Microwave Tubes*, New Jersey: D. Van Nostrand, 1960.
- Idehara, T., Saito T., Mori H., Tsuchiya, H., Agusu, La., and Mitsudo S., "Long pulse operation of the THz gyrotron with a pulse magnet," *J Infrared Milli. Terahz.waves*, Vol. 29, pp. 131, 2008.
- Idehara, T., Saito, T., Ogawa, I., Mitsudo S., Tatematsu, Y., Agusu L., Mori H. and Kobayashi S., "Development of terahertz FU CW gyrotron series for DNP," *Applied Magnetic Resonance*, Vol. 34, pp. 3-4, 2008.
- Idehara, T., Saito, T., Ogawa, I., Mitsudo, S., Tatematsu, Y., Ikeda R., Mudiganti, and Kosuga, K., "THz Gyrotron FU CW Series for high power THz technologies," *Proc. Int. conf. on Infrared, Millimeter and Terahertz Waves*, Rome, Italy, 2010.
- , pp. 1-3. *IEEE*, Vol. 61, pp. 299-330, 1973.
- Incropera, F. P., and Dewitt, D. P., *Introduction to Heat Transfer*, 2nd edition, Pear Johan Willey & Sons.
- Joseph, A., and Thumm, M., *Vacuum Electronics - components and Devices*, New York: Springer, 2008.
- Kartikeyan, M. V., Borie E., and Thumm M., *Gyrotrons High-Power Microwave and Millimeter Wave Technology*, Germany: Springer, 2004.
- Kasugai, A., Minami, R., Takahashi, K., Kobayashi, N., and K., Sakamoto, "Long pulse operation of 170 GHz ITER gyrotron by beam current control," *15th International Toki Conf. (ITC)*, Gifu, Japan, Dec. 6-9, 2005.
- Kern, S., Ph.D thesis, "Numerical simulation of coaxial resonator cavity," 1996, Karlsruhe Institute of Technology (KIT), Germany.
- Khatun, H., Sharan, S., Singhal, K., Goswami, U., Kumar, Singh, U. and Sinha, A. K., "Design of a single-stage depressed collector for a 42 GHz, 200 kW gyrotron," *Vacuum*, Vol. 86, pp. 1465, 2012.
- Kimrey, H. D., Janney, M. A. and Becher, P. F., "Techniques for ceramic sintering using microwave energy," *Proc. 12th Int. Conf. Infrared and Millimeter Waves*, Orlando, FL, 1987, pp. 136-137.
- Kimura, T, "Experimental Study of a 1 MW, 170 GHz Gyrotron Oscillator," PhD thesis, Massachusetts Institute of Technology, 1997.
- Kreischer, K. E., Farrar, C., Temkin, R. J., and Vieregge J., "The development of a 250 GHz CW gyrotron for EPR and NMR spectroscopy," *Proc. Int. Conf. on Infrared and Millimeter Waves*, Sep. 1999.
- Krivosheev, P. V., Lygin, V. K., Manuilov, V. N. and Tsimring, S. E., "Numerical simulation models of forming systems of intense gyrotron helical electron beams," *Int. J. of Infrared and millimeter Waves*, Vol. 22, pp. 1119-1146, 2001.

- Kumar N., Singh U., Kumar A. and Sinha A.K., "Design and Misalignment Analysis of 140GHz, 1.5MW Gyrotron Interaction Cavity for Plasma Heating Applications," *Journal of Fusion Energy*, Vol. 30, pp. 169, 2011.
- Kumar A., Goswami U. K., Poonia S., Singh U., Kumar N., *et al.*, "Integrated design of undepressed collector for low power gyrotron," *Int. J. of Infrared , Millimeter Wave and THz wave*, Vol. 32, pp. 733, 2011.
- Kumar, N., Bhattacharya, R., Khatun, H., Singh, U., and Sinha, A. K., "Simulation of filament heater for uniform emission from dispenser cathode," *J. Fusion Energy*, Vol. 31, No. 5, pp. 205-210, 2012.
- Kumar, N., Singh, U., Singh, T. P. and Sinha, A. K., "Suppression criteria of parasitic mode oscillations in a gyrotron beam tunnel," *Physics of Plasmas*, Vol. 18, pp. 022507, 2011.
- Kumar, N., Singh, U., Kumar, A., Bhattacharya, R., Singh, Singh, T. P., and Sinha, A .K., "Numerical Design of Megawatt Gyrotron with 120 GHz frequency and 50 % Efficiency for Plasma Fusion Application," *J. Fusion Energy*, Vol. 32, pp. 20, 2012.
- Kumar, N., Singh, U., Kumar, A., Khatun, H. and Sinha A. K., "Numerical design of 120 GHz, 1 MW gyrotron interaction cavity," *Infrared Physics and Technology*, Vol. 54, pp. 512, 2011.
- Kumar, N., Singh, U., Kumar, A., Khatun, H., and Sinha, A. K., "On the design of High Efficiency Double Beam Gyrotron," *IEEE Trans. Plasma Science*, Vol. 39, pp. 1781, 2011.
- Kumar, N., Singh, U., Kumar, A., Khatun, H., Singh, T. P., and Sinha, A. K., "Numerical Analysis of Interaction Cavity for 1.5 MW/127.5 GHz Gyrotron," *Journal of Fusion Energy*, Vol. 30, pp. 1, 2011.
- Kumar, N., Singh, U., Singh, T. P., and Sinha, A. K., "A review on the applications of high power, high frequency microwave source - Gyrotron," *J of Fusion Energy*, Vol. 30, pp. 257, 2011.
- Kumar, N., Singh, U., Singh, T. P., and Sinha, A. K., "Analysis of parasitic oscillations in 42 GHz gyrotron beam tunnel," *Int. J. of Electronics*, Vol. 98, pp.271, 2011.
- Hermitte, R. M., "Small cumuli observed with a 3 mm wavelength doppler radar," *Geophysics Research. Letters*, Vol. 14, pp. 707, 1987.
- Liao, S. Y., *Microwave Electron Tubes*, New Jersey: Prentice-Hall, 1988.
- Liao, S., Y., *Microwave Devices and Circuits*, Englewood Cliffs, New Jersey: Prentice-Hall, 1985.
- Liebe, H. J., "MPM—An atmospheric millimeter-wave propagation model," *Int. J. Infrared and Millimeter Waves*, Vol. 10, pp. 631-650, 1989.
- Ling, G., Piosczyk, B., and Thumm, M., "A new approach for a multistage depressed collector for gyrotrons," *IEEE Trans. Plasma Sci.*, Vol. 28, 2000.

- Link, G., Feher, L., Thumm, M., Ritzhaupt-Kleissl, H. J., Ohme, R. B., and Weisenburger, A., "Sintering of advanced ceramics using a 30 GHz, 10 kW, CW industrial gyrotron," *IEEE Trans. Plasma Science*, Vol. 27, No. 2, pp. 547-554, 1999.
- Lorbeck, J. A., and Vernon, R. J., "A shaped-reflector high-power converter for a whispering-gallery mode gyrotron output," *IEEE Trans. Antennas Propagation*, Vol. 43, No. 12, pp. 1383-1388, Dec. 1995.
- MAGIC *User Manual: 2007 version of Magic 3D*, ATK Mission Research, Washington.
- Makino, Y., Toshiyuki, Matsumoto, T., and Miyake, S., "Fabrication of bulk ceramics by high power millimeter wave radiation," *Japanese J. Applied Physics*, Vol. 40, pp. 1080-1082, 2001.
- Manheimer, W. M., "On the possibility of high power gyrotrons for super range resolution radar and atmospheric sensing," *Int. J. Electronics*, Vol. 72, pp. 1165-1189, 1992.
- Mitsudo, S., Aripin, S., T., Matsuda, T., Kanemaki, T., and Idehara, T., "High power, frequency tunable, submillimeter wave ESR device using a gyrotron as a radiation source," *Int. J. Infrared Millimeter Waves*, Vol. 21, No. 4, pp. 661-676, 2000.
- Miyake, S., "Millimeter-wave materials processing in Japan by high-power gyrotron," *IEEE Trans. Plasma Science*, Vol. 31, No. 5, pp. 1010- 1015, 2003.
- Neilson, J., Read, M., and Ives, L., "Design of a permanent magnet gyrotron for active denial systems," in *Proc. 34th Int. conf. on Infrared, Millimeter and Terahertz waves*, Busan, South Korea, 2009, pp. 1-2.
- Neilson, J., "Optimal synthesis of quasi-optical launchers for high power gyrotrons," *IEEE Trans. Plasma Science*, Vol. 34, No. 3, pp. 635-641, 2006.
- Nguyen, K. T., Calame, J. P., Pershing, D. E., Danly, B. G., Garven, M., Levush, B., and Antonsen, T. M., "Design of a Ka-band gyro-TWT for radar applications," *IEEE Trans. Electron Devices*, Vol. 48, No. 1, pp.108-115, 2001.
- Nusinovich, G. S., "Review of the theory of mode interaction in gyro devices," *IEEE Trans. Plasma Sci.*, Vol. 27, pp. 313-326, 1999.
- Nusinovich, G. S., and Jerby, E., "Guest editorial," *IEEE Trans. Plasma Science*, Vol. 27, No. 2, pp. 287-293, 1999.
- Nusinovich, G. S., *et al.*, "Development of THz gyrotrons with pulse solenoids for detecting concealed radioactive materials," *Proc. Int. Vacuum Electronics Conf. IVEC-2010*, California, USA, 2010, pp. 197-198.
- Nusinovich, G. S., *Introduction to the Physics of Gyrotrons*, Baltimore, MD: Johns Hopkins Univ.Press, 2004.
- Castro, P. J., Barroso, J. J., and Rafael, C. A., "Experimental Study of a Ka-Band cylindrical open resonator," *International Journal of Infrared and Millimeter Waves*, Vol. 21, No.4, pp. 633-645, Oct. 2000.

- Petlin, M. I., "One century of cyclotron radiation," *IEEE Trans. Plasma Science*, Vol. 27, pp. 294, 1999.
- Piosczyk, B., "A 2 MW, 170 GHz coaxial cavity gyrotron experimental verification of the design of main components," *IOP. J. Physics, Conf. Ser.* 25, pp. 24–32, 2005.
- Piosczyk, B., *et al.*, "Towards a 2 MW, CW, 170 GHz coaxial cavity gyrotron for ITER," *Fusion Engineering and Design*, Vol. 66, pp. 481, 2003.
- Piosczyk, B., "Invited talk on gyrotrons and its components," CEERI, Pilani, India, 2007.
- Popov, L. G., *et al.*, "Development in Russia of 170 GHz gyrotron for ITER," *Proc. Int. Conf. on Infrared, Millimeter and Terahertz Waves*, Pasadena, CA, 2010, pp. 1-2.
- Rzesnicki, T., Piosczyk, B., Gantenbein, G., Jianbo, J., Kern, S., Samartsev, A., and Thumm, M., "170 GHz, 2 MW coaxial cavity gyrotron for ITER- recent results obtained with a short pulse tube," *Proc. IEEE Int. Vacuum Electronics Conf., IVEC-2009*, Rome, Italy, Apr. 2009, pp. 277-278.
- Sabchevski S., Illy S., Piosczyk B., Borie E. and Zhelyazkob I., "Towards the formulation of a realistic 3-D model for simulation of magnetron injection guns for gyrotrons," Forschungszentrum Karlsruhe, Karlsruhe, Germany, Scientific Report FZKA-7409, July, 2008.
- Saito H., Danly B. G., Mulligan W. J., Temkin R. J. and Woskoboinikow P., "Gyrotron with a high Q cavity for plasma scattering diagnostics," *IEEE Trans. Plasma Science*, Vol. PS-13, No. 6, pp. 393–397, 1985.
- Sakamoto K., K. A., Kajiwar, K., Takahashi, K. Oda, Y., Hayashi, K., and Kobayashi N., "Progress of high power 170 GHz gyrotron in JAEA," *Nucl. Fusion*, Vol. 49, pp. 095019, 2009.
- Schneider J., "Stimulated emission of radiation by relativistic electrons in a magnetic field," *Phys. Rev. Lett.*, Vol. 2, pp. 504–505, 1959.
- Sharma, R. K, Sharma, S. M, Gupta, R. K, Sinha, A. K., and Joshi, S. N, "Optimisation of pierce type convergent electron gun for gain and phase matched miniature helix TWTs," *IEEE- Int. Vacuum Electronics Conf. (IVEC-2000)*, May 2-4, 2000, Monterey, California, USA.
- Sharma RK, Sharma SM, Chandrasekhar, Gupta RK, Sinha AK and SN Joshi, "Optimisation of electron gun geometry for gain and phase matched miniature helix TWTs," *National System Conference*, 9- 11 Dec. 1999, BHU, Varanasi.
- Sharma, R. K, Sharma, S. M, Sinha A. K, Gupta, R. K. , Joshi S. N, and Kumar L," Design and Development of Coaxial Convergent Electron Gun for Gain and Phase Matched Miniature Helix TWT," *IETE Tech Rev.*, Vol. 16, No.6, Nov-Dec. 1999, pp. 487-496.
- Sharma, R. K, Sinha, A. K, and Joshi, S. N, "An Improved Method for the Synthesis of Anode Aperture for Pierce Guns," *IEEE Trans. on Electron. Devices*, Vol. 48, No.2, Feb.2001, pp. 395-396.

Sharma, R. K., Sinha, A. K., Joshi, S. N, and Sancheti S, “Quick estimation and sensitivity analysis of pierce electron gun parameters,” *IEEE International Vacuum Electronics Conference (IVEC- 2002)*, April 23-25, 2002, Monterey, USA.

Sheng Y., Xinjian N., Hongfu L., Rui L., Yong X., Xue D., Hui W. and Li W., “Design of a 3mm second-harmonic complex cavity gyrotron,” *IRMMW-THz*, Shanghai, 2006.

Sims, G. D., and Stephenson, I. M., *Microwave Tubes and Semiconductor Devices*. London: Blackie & Son, 1963.

Singh, U., Kumar, N., Kumar, A. and Sinha, A. K. , “ Three-dimensional simulation of triode-type MIG for 1 MW, 120 GHz gyrotron for ECRH applications,” *Infrared Physics & Technology*, Vol. 55, pp. 108-111, 2012.

Singh, U., Kumar, N., Kumar, N., Tandon, S., Khatun, H., Purohit, L. P., and Sinha A. K., “Numerical Simulation of a Magnetron Injection Gun for 120 GHz, 1 MW Gyrotron,” *Progress in Electromagnetics Research Letters (PIER L)*, Vol. 16, pp. 21-34, 2010.

Singh, U., Kumar, N, Purohit, L. P. and Sinha, A. K., “Improved Design of Beam Tunnel for 42 GHz Gyrotron,” *J. of Fusion Energy*, Vol. 30, No. 2, pp. 180-183, 2011.

Singh, U., Kumar, A., Kumar, N., Kumar N., Pratap, B., Purohit, L. P. and Sinha, A. K., “Electron beam emission and interaction of double-beam gyrotron,” *Fusion Engineering and Design*, Vol. 87, pp. 1583-1588, 2012.

Singh, U., Kumar, A., Kumar, N., Kumar, N., Raju, R. S., Purohit, L. P., and Sinha, A. K., “Thermal and Structural Analysis of MIG for Gyrotron,” *J of Fusion Energy*, Vol. 30, No. 2, pp. 176-179, 2011.

Singh, U., Kumar, N., and Sinha, A. K., “Gyrotron and its Electron Beam Source: A Review,” *J. Fusion Energy*, Vol. 31, pp. 489-505, 2012.

Singh, U., Kumar, N., Purohit, L. P., and Sinha, A. K., “Design of Electron Gun for 1.5 MW, 140 GHz Gyrotron,” *J of Fusion Energy*, Vol. 30, pp. 53-57, 2011.

Singh, U., Kumar, N., Purohit, L. P., and Sinha, A. K., “Design of Magnetically Tunable Magnetron Injection Guns for Gyrotrons at Multiple Frequencies,” *IEEE Trans. Plasma Science*, Vol. 39, No. 4, pp. 1082-1085, 2011.

Singh, U., Kumar, N., Purohit, L. P., and Sinha, A. K., “Numerical Simulation of a Double-anode Magnetron Injection Gun for 110 GHz, 1 MW Gyrotron,” *Int. Journal of Infrared, Millimeter, and Terahertz*, Vol. 31, No. 7, pp. 878-883, 2010.

Singh, U., PHD Thesis, *Study of Electron Beam Source Used in Fast Wave Microwave Tube*, Gurukula Kangri Vishwavidyalaya, Haridwar, Feb, 2012.

Sirigiri, J. R., Kreisler, K. E., Machuzak, J., Mastovsky, I., Shapiro, M. A., and Temkin R. J., “Photonic-band-gap resonator gyrotron,” *Physical Review Letters*, Vol. 86, pp. 5628, 2001.

Sivan L, *Microwave Tube Transmitters*, London: Chapman and Hall, 1994.

Staprans A. Mccune E.W. and Ruetz J.A. “High-power linear-beam tubes,” *Proc. IEEE*, Vol. 61, No. 3, pp. 299-330, 1973.

- Steyskal, H., "Microwave tubes 1920-1990: A review of ideas and progress," *IETE Review*, Vol. 9, pp. 81-85, 1992.
- Symons, R. S., "Tubes still vital after all these years," *IEEE Spectrum*, Vol. 35, pp. 52-63, 1998.
- Symons, R. S., and Jory, H. R., "Cyclotron resonance devices," *Adv. Electron Phys.*, Vol. 55, pp. 1-75, 1986.
- Tatsukawa, T., Maeda T., Sasai, H., Idehara T., Mekata, M., Saito, T. and Kanemaki, T., "ESR spectrometer with a wide frequency range using a gyrotron as a radiation power source," *Int. J. Infrared and Millimeter Waves*, Vol. 16, pp. 293-305, 1995.
- Thumm, M., Yang, X., Arnold, A., Dammertz, G., Michel, G., Pretterebner, J., and Wagner, D "A High-Efficiency Quasi-Optical Mode Converter for a 140-GHz 1-MW CW Gyrotron," *IEEE Trans. Electron Devices*, Vol.52, pp.818, 2005.
- Thumm, M., "Development of output windows for high power long pulse gyrotrons and EC Wave application," *Int. J. of Infrared and Millimeter Waves*, Vol. 19, pp. 3, 1998.
- Thumm, M., "History, presence and future of gyrotrons," *Proc. IEEE Int. Vacuum Electronics Conf.*, IVEC-2009, Rome, Italy, Apr. 2009, pp. 37-40.
- Thumm, M., "Progress in gyrotron development," *Fusion Engineering and Design*, Vol. 66-68, pp. 69-90, 2003.
- Thumm, M., "Progress on gyrotrons for ITER and future thermonuclear fusion reactors," *IEEE Trans. Plasma Science*, Vol. 39, pp. 971, 2011.
- Thumm M., "Recent applications of millimeter and sub millimeter wave gyrotrons," *Proc. 25th Int. Conf. on Infrared and Millimeter Waves*, Beijing, China, pp. 99-102, 2000.
- Thumm, M., "State-of-the-art of high power gyro-devices and free electron masers update 2006," FZK, KIT, Germany.
- Thumm, M., "State-of-the-art of high power gyro-devices and free electron masers update 2010," Forschungszentrum Karlsruhe, Karlsruhe, Germany, Scientific Report FZKA 7575, 2010.
- Thumm, M., "State-of-the-art of high power gyro-devices and free electron masers update 2004," Forschungszentrum Karlsruhe, Karlsruhe, Germany, Scientific Report, Germany, 2004.
- Tsimring, S. E., "Gyrotron electron beams: velocity and energy spread and beam instabilities," *Int. J. of Infrared and millimeter Waves*, Vol. 22, pp. 1433-1468, 2001.
- Tsimring, S. E., *Electron Beams and Microwave Vacuum Electronics*, John Wiley & Sons, pp. 468-470, 2007.
- Twiss, R., Q., "Radiation transfer and the possibility of negative absorption in radio astronomy," *Aust. J. Phys.*, Vol. 11, pp. 567-579, 1958.
- Van de Roer, T. G., *Microwave Electronic Devices*, London: Chapman and Hall, 1994.

- Vlasov, S. N., Shapiro, M. A., and Sheinina, E. V., “Wave beam shaping on diffraction of a whispering gallery wave at a convex cylindrical surface,” *Radiophysics and Quantum Electronics*, Vol. 31, pp. 1070, 1988.
- Vlasov, S. N., Zagryadskaya, L. I., and Petelin, M. I., “Transformation of a whispering gallery mode, propagating in a circular waveguide, into a beam of waves,” *Radio Engineering and Electronic Physics*, Vol. 12, No. 10, pp. 14 – 17, 1975.
- Vlasov, S. N., Zagryadskaya L. I., and Orlova, I. M., “Open coaxial resonators for gyrotrons,” *Radio engg. Electron.Phys.*, Vol. 21, pp. 96, 1976.
- Watanabe, B., Tsuchiya H., Mori H., Agusu L., Mitsudo S., Ogawa I., Saito T., and IdeharaT., “Development of a tera hertz gyrotron as a radiation source,” *Plasma and Fusion Research*, Vol. 2, pp. 1043, 2007.
- Weis, V., Bennati, M., Rosay, M., Bryant, J. A., and Griffin, R. G., “High-field DNP and ENDOR with a novel multiple-frequency resonance structure,” *J. Magnetic Resonance*, Vol. 140, pp. 293–299, 1999.
- Wenjie, F. U., Yang, Y. and Shenggang, L., “Study on a 60 kV/5 A magnetron injection gun for 200 GHz electron cyclotron master,” *Front. Electr. Electron.Eng. China*, Vol. 4, pp. 440–445, 2009.
- Whaley, D. R., Tran, M. Q., Tran, T. M. and Antonsen Jr., T. M., “Mode competition and startup in cylindrical cavity gyrotrons using high order operating mode,” *IEEE Tans.. Plasma Science*, Vol. 22, pp. 850, 1994.
- Woskoboinikow, P. P., and Mulligan, W. J.,” Nondestructive Gyrotron Cold Cavity Q Measurements,” *IEEE Trans. Microwave Theory Tech.*, Vol. 35, pp. 96-100, 1987.
- Yadav, V., Sharan, S., Khatun, H., Kumar, N., Alaria, M. K., Jha, B, Deorani, S. C., Sinha, A. K., and Jain P. K., “Cold characterization of cylindrical open resonator for gyrotron,” *Infrared Physics and Technology*, Vol. 54, pp 337, 2011.
- Yong, H., Hongfu L., Pingzhong, D. and Shenggang, L., “Third-harmonic complex cavity gyrotron self-consistent nonlinear analysis,” *IEEE Trans. Plasma Science*, Vol. 25, pp. 1406, 1997.