

# PUBLICATIONS

## In Journals

1. "Contribution of longitudinal electric field of a Gaussian beam to second harmonic generation", S R Mishra and K C Rustagi, *Optics Comm.*, 74, 419 (1990).
2. "Optical properties of small particles and composite materials", K C Rustagi and D D Bhawalkar, *Ferroelectrics*, 102, 367 (1990).
3. "A two stage G-M cycle cryorefrigerator operated by gas balancing principle", M Thirumaleshwar and R M Pandey, *Cryogenics*, 30,100-104 (1990).
4. "Various techniques for multiline operation of TEA CO<sub>2</sub> lasers", P K Gupta and U K Chatterjee, *Optics and Laser Technology*, 22, 403-413 (1990).
5. "An unstable resonator laser with a modified output coupling scheme", B Singh, S K Dixit, J K Mittal and R Bhatnagar, *J. Appl. Phys.* 67, 3880 (1990).
6. "Negative branch unstable resonator copper vapour laser", S K Dixit, B Singh, S V Nakhe, J K Mittal and R Bhatnagar, *Optics Letter.*, 15, 420 (1990).
7. "Multiline CO<sub>2</sub> Lasers and their uses", D J Biswas, A K Nath, U Nundy and U K Chatterjee, *Prog. Quant. Electr.*, 14, 1 (1990).
8. "Effect of boron on high temperature creep behavior of austenitic stainless steel DIN 1.4970", R V Nandedkar, W Kesternich, *Metallurgical Transactions A*, 21A, 3033-3038 (1990).

## Internal Reports

1. "Proposal for a 500 MeV Proton Synchrotron", Accelerator programme, CAT/I/90-1.
2. "Feasibility report on vacuum system of 100m arm for gravitational wave detector", A S Raja Rao, CAT/I/90-2.
3. "Correction of closed orbit distortion in booster synchrotron and Indus-I", A D Ghodke, G Singh and S S Ramamurthi, CAT/I/90-3.
4. "Emittance and energy spread measurement of 20 MeV Microtron", Deepa Angal, G Singh, S S Ramamurthi, CAT/I/90-4.
5. "Polarization characteristics of radiation from bending magnets of Indus-I", G K Sahoo, G Singh, S S Ramamurthi, CAT/I/90-5.
6. "Reduction of beam emittance of an electron storage ring by combination of focussing and defocussing gradients in each bending magnet", G Singh, S S Ramamurthi, CAT/I/90-6.
7. "Calculation of closed orbit distortion in the synchrotron and Indus-I", A D Ghodke, G Singh, S S Ramamurthi, CAT/I/90-7.

## Contributed Papers in Conferences/ Symposia

1. "Design features of superconducting wiggler for Indus-I", S C Bapna, P K Nema, G Singh and S S Ramamurthi, Intl. Conf. on Superconductivity, Bangalore, Jan. 1990.
2. "Electron Beam Systems for Research and Industrial Applications", S A Pande, S C Bapna, S S Marhas and S S Ramamurthi, Symposium on Beam and Plasma Applications in Material Technology, BARC, Bombay, Jan 31- Feb. 2, 1990.
3. "Design & development of microtrons at CAT", H C Soni et al., *ibid.*
4. "Variation of beam emittance during the acceleration cycle of the synchrotron for Indus-I", G K Sahoo, G Singh, S S Ramamurthi, *ibid.*
5. "Injection into the synchrotron for Indus-I & Indus-II", B Singh, G Singh & S S Ramamurthi, *ibid.*
6. "Design of transfer lines for Indus-I", Deepa Angal, G Singh & S S Ramamurthi, *ibid.*
7. "Septum magnet for booster ring", R K Mishra, S P Mhaskar, S S Ramamurthi, *ibid.*
8. "RF system for Indus-I", S A Pande, P R Hannurkar, M Lad, S S Chaudhary and S S Ramamurthi, National Symposium on DC & RF Power Sources in Research and Industry, BARC, Feb 26-28, 1990.
9. "200 W solid state wideband amplifier", M Lad, P R Hannurkar and S S Ramamurthi, *ibid.*
10. "Pulse modulator for 5 MW klystron amplifier", P Shrivastava, P R Hannurkar and S S Ramamurthi, *ibid.*
11. "Magnet power supplies for Accelerator Programme at CAT, Indore", S Kotaiah, *ibid.*
12. "5 kHz, 5 kW, class A inverter for DC accelerator in CAT, Indore", A C Thakurta and B Krishnaswamy, *ibid.*
13. "Raman spectra of CdS<sub>2</sub> micro crystals", M L Bansal and K C Rustagi, Twelfth Intl. Conf. of Raman spectroscopy, Columbia, Aug. (1990).
14. "Applications of microwaves in accelerators", R Bhasaran, National Symposium on "Microwave Power Tubes and their Applications", CEERI, Pilani, Sept. 21-23, 1990.
15. "A 5 MW pulsed microwave system for 20 MeV microtron", P Shrivastava, P R Hannurkar and S S

Ramamurthi, *ibid.*

16. "Optimization of electron optical parameters for high current electron guns", L M Rangarajan, S Mahadevan and S S Ramamurthi, *ibid.*
17. "On-line computerization of a Governmental Purchase Department", A Rawat and A K Gupta, Seminar-cum-workshop on database applications in physical sciences, BARC, Bombay, Oct. 1990.
18. "Space and time resolved observations of enhanced X-ray emission in laser produced plasmas", P A Naik, P D Gupta and S R Kumbhare, Fifth National Symposium on Plasma science, Jadavpur University, Calcutta, Dec. 1990.
19. "A new assesment of the role of Helium in high temperature irradiation embrittlement of austenitic steels", W Kesternich, R V Nandedkar and D Meertens, Proc. Jahrestagung Kerntechnik, 589 (1990).
7. "XUV lasing and soft X-ray generation in laser produced plasmas", P D Gupta, 2 lectures, *ibid.*
8. "FEL Status & Perspective", D D Bhawalkar, 2 lectures, Summer School on Physics of Free Electron Lasers, DAVV, Indore, June 11-12, 1990.
9. "Synchrotron radiation sources Indus-I and Indus-II", G Singh, *ibid.*
10. "Lasers and their principles of operation", A K Nath, *ibid.*
11. "Undulators and their practical considerations", S C Bapna, 2 lectures, *ibid.*
12. "Copper vapour lasers", R Bhatnagar, International Workshop on Lasers and their Applications, Nov 12 - 30, CAT, Indore.
13. "Novel resonators", R Bhatnagar, *ibid.*
14. "Unstable resonators", D D Bhawalkar, *ibid.*
15. "Bessel beams", D D Bhawalkar, *ibid.*
16. "Optically pumped molecular gas lasers", P K Gupta, 2 lectures, *ibid.*
17. "Electrical discharges for population inversion", A K Nath, 2 lectures, *ibid.*
18. "Laser energy and power measurements", U Nundy, *ibid.*
19. "Soft X-ray lasers", P D Gupta, *ibid.*
20. "Mode locked lasers", S M Oak, 2 lectures, *ibid.*
21. "Optical nonlinearities in low dimensional systems", K C Rustagi, *ibid.*
22. "Optically pumped solid state lasers", T P S Nathan, 2 lectures, *ibid.*
23. "Accelerator programme at CAT", S S Ramamurthi, Symposium on Nuclear Physics 1990, Madras, Dec 1-4, 1990.
24. "Lasers and their applications", D D Bhawalkar, DAE-C V Raman Lecture, Dec. 20, 1990.

#### Invited Lectures

1. "Present status of vacuum technology in India", A S Raja Rao, Workshop on Laser Interferometric Gravitational Wave Detector, CAT, Indore Feb. 1-3, 1990.
2. "Laser technology in India", D D Bhawalkar, *ibid.*
3. "Accelerator programme at CAT Indore", S S Ramamurthi, 2nd National Seminar on Physics & Technology of particle Accelerators & their applications, VECC, Calcutta, Feb. 5-7, 1990.
4. "Ophthalmic Laser: Indian Horizon", D D Bhawalkar, International Symposium on Lasers in Ophthalmology, New Delhi, Mar. 26, 1990.
5. "Indus-I and Indus-II Synchrotron radiation sources", D D Bhawalkar, S S Ramamurthi and G Singh, Symposium on Medium-Scale Synchrotron Radiation Facilities in Asia, Hiroshima, Japan, May 1990. Published in "Medium Scale Synchrotron radiation facilities in Asia", Ed. K Kohra and T Kasuga, World scientific, Hong Kong, (1990).
6. "Laser induced fusion", D D Bhawalkar, Tutorial school on "Modern developments in Optics", Indian Institute

## OTHER ACTIVITIES / NEWS

### Hindi Day

Official Language Implementation Committee (OLIC), CAT organised an extempore Hindi elocution competition and a Hindi poetry recitation competition on Hindi day at CAT on Sept. 14, 1990. Prof. G D Tripathi, Head, Hindi Department, Govt. Arts & commerce college,

Indore was the chief guest and Shri Narendra Chanchal, Asstt. Producer, AIR, Indore centre was the special guest. The function was presided over by Dr. D D Bhawalkar, Director, CAT.

### CAT Staff Club

CAT Staff Club arranged sports activities like Badmin-