

Department Of Electrical Engineering

INPUT TO ANNUAL REPORT 2006-2007

1. Books and Book-Chapters published

1. **P K Kalra**, AGAINST THE CURRENT, VOL III: Electricity Act and Technical Choices for The Power Sector in India, MANOHAR, New Delhi, 2006. Edited by Prem K. Kalra and Joel Ruet.
2. **P. K. Kalra**, INDIAN INFRASTRUCTURE REPORT – Rural Infrastructure (3i Network), OXFORD UNIVERSITY PRESS, New Delhi, 2007, Managing Editors- Prem K. Kalra and Anupam Rastogi.
3. **A Ghosh**, *Power Systems Analysis*, an e-book prepared under National Programme on Technology Enhanced Learning (NPTEL), Government of India.
<http://nptel.iitm.ac.in/courses/Webcourse-contents/IIT-KANPUR/power-system/ui/TOC.htm>
4. **Laxmidhar Behera**, Information Processing using Quantum Probability, AIP Volume on Quantum Computing Back Action 2006, D. Goswami (Editor), pp 37-53.
5. **Laxmidhar Behera**, Indrani Kar and A.C. Elitzur, Chapter 9: Recurrent Quantum Neural Network and Its Applications, in *The Emerging Physics of Consciousness*, Jack Tuszynski (Ed), Springer Verlag, 2006.
6. Proceedings of the Thirteenth National Conference on Communications (Editors: **Ajit K. Chaturvedi, Srinivasan Umesh, Adrish Banerjee, Kameswari Chebrolu, Joseph John, Ayyangar R. Harish**), I.I.T. Kanpur, 26-28 January 2007. ISBN Number: 978-81-904444-0-8
7. **K. Vasudevan**, “Digital Communications and Signal Processing”, Universities Press, 2007. ISBN Number: 81-7371-575-4

- **Research Papers Published in Journals and Conference Proceedings**

1. Deepak Mishra, Abhishek Yadav, Sudipta Ray and **Prem K. Kalra**, “Artificial Neural Network Type Learning with Single Multiplicative Spiking Neuron”, International Journal of Computers, Systems and Signals, 2007, (In press).
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3. Mishra, D., and **P.K. Kalra**, “Modified Hopfield Neural Network Approach for Solving Nonlinear Algebraic Equations”, Engineering Letters on Soft Computing in Artificial Intelligence, Data and Web Mining, Machine Learning, (Part I), vol. 14, no. 1, pp. EL_14_1_23, 2007.
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6. Yadav, A, Deepak Mishra, Ray, S., Yadav, R.N. and **Kalra, P.K.**, “Time-series prediction with single integrate-and-fire neuron”, Applied Soft Computing, vol. 7, pp. 739–745, 2007.
7. Deepak Mishra, A. Yadav, S. Ray, and **P.K. Kalra**, “Controlling Synchronization of Modified FitzHugh-Nagumo Neurons Under External Electrical Stimulation”, NeuroQuantology, issue 1, pp. 50-67, 2006.
8. Mishra, D., Yadav, A., Dwivedi, A. and **Kalra, P.K.**, “A Neural Network Using Single Multiplicative Spiking Neuron for Function Approximation and Classification. IEEE International Joint Conference on Neural Networks, 2006. (IJCNN '06), 16-21 July pp. 396 – 403, 2006.
9. Deepak Mishra and **Prem K. Kalra**, Spiking Neuron Based Neural Network for Function Approximation and Classification, Conference on Neural Biology and Neural Informatics (NBNI-2006), Kyoto, Japan., July 23-24, 2006.
10. Ashutosh Dwivedi, Arvind Tolambiya , Prabhanjan Kandula ,N. Subhash Chandra Bose, Ashiwani Kumar and **P. K. Kalra**, "Color Image Compression Using 2-

Dimesional Principal Component Analysis (2DPCA)", The 9th Asian Symposium on Information Display (ASID), October 8 to 12, New Delhi, India, 2006.

11. Ashutosh Dwivedi, N. Subhash Chandra Bose, Ashiwani Kumar, Prabhanjan Kandula, Deepak Mishra and **P. K. Kalra**, "A Novel Hybrid Image Compression Technique: Wavelet-MFOCPN", The 9th Asian Symposium on Information Display (ASID), October 8 to 12, New Delhi, India, 2006.
12. Deepak Kumar Singh, Shipra Tripathi and **P. K. Kalra**, "Separation of Image Mixture using Complex ICA", The 9th Asian Symposium on Information Display (ASID), October 8 to 12, New Delhi, India, 2006.
13. Deepak Mishra, N. Subhash, A. Dwivedi, A. Tolambiya, A. Kumar, P. Kandula and **Prem K. Kalra**, "Color Image Compression with Modified Forward Only Counter Propagation Neural Network: Improvement of the Quality Using Different Distance Measures", The 9th IEEE International Conference on Information Technology, ICIT'06 (India), pp. 139-140, 2006.
14. Deepak Mishra, Amit Shukla and **Prem K. Kalra**, "Stability Analysis for Higher Order Complex-Valued Hopfield Neural Network", The 13th International Conference on Neural Information Processing, ICONIP'06 (Hong Kong), Lecture Notes in Computer Science, vol. 4232, pp. 608-615, 2006.
15. Deepak Mishra, Abhishek Yadav and **Prem Kumar Kalra**, "Learning with Single Quadratic Integrate-and-Fire Neuron", Third International Symposium on Neural Networks, Chengdu, China, May 28 - June 1, Lecture Notes in Computer Science, vol. 3971, pp.424-429, 2006.
16. Arvind Tolambiya, Deepak Mishra, Ashutosh Dwivedi, and **Prem K. Kalra**, "A Novel Neural Network Approach to Generate Orthogonal Wavelet Coefficients", Proceeding of workshop on Computational Intelligence, Leeds, UK, September (UKCI'06), 2006.
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23. Arvind Tolambiya and **Prem K. Kalra**, “WSVM with Morlet Wavelet Kernel for Image Compression”, IEEE International conference on System of Systems Engineering, San Antonio, USA, April 16-18, 2007.
24. B. Kalyan Kumar, S. N. Singh and **S. C. Srivastava**, “A Decentralized Nonlinear Feedback Controller with Prescribed Degree of Stability for Damping Oscillations”, *Electric Power Systems Research*, Vol. 77, March 2007, pp. 204-211.
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144. Rachna Asthana, Y.N.Singh, "Second Phase Reconfiguration of Restored Path for Removal of Loop Back in p-Cycle Protection," *IEEE Communication letters*, Vol.11, No.2, pp.201-203.
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185. "Multiple Transmitter Indoor Optical Wireless Systems: Prospects and Design Challenges," PHOTONICS 2006, Hyderabad, India, Dec 13-16, 2006, OCN-7 (Invited paper), Joseph John and A.Sivabalan.
186. M.Sachidananda and Dusan S Zrnic, "Ground clutter filtering dual-polarized, staggered PRT sequences. " Journal of Atmospheric and Oceanic Technology, volume 23, August 2006, pp.1114-1130.
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188. Mehta Kalpesh, A.R. Harish, Meenakshi Singh and Sudeep Bhattacharjee 2006 A Model for wideband nonlinear amplifier Microwave-06, University of Rajasthan, Jaipur, Sept 2006
189. Ravi Kumar Joshi and A.R. Harish 2006 A dual-band modified bow-tie antenna for WLAN Microwave-06, University of Rajasthan, Jaipur, Sept 2006
190. Ravi Kumar Joshi and A.R. Harish 2006 Characteristics of a rotated butterfly radial stub International Microwave Symposium, USA, 2006
191. Rachana Pandit and A.R. Harish 2006 UHF RFID tag antenna – design and measurements International conference on computational fluid dynamics, acoustics,

heat transfer and electromagnetics, Andhra University, Vishakhapatnam., July 2006

192. Manpreet Kaur Saini and A.R. Harish 2006 An improved wire grid reflector for a log periodic dipole array International conference on computational fluid dynamics, acoustics, heat transfer and electromagnetics, Andhra University, Vishakhapatnam., July 2006
193. A.R. Harish, Mehta Kalpesh, Meenakshi Singh and Sudeep Bhattacharjee 2006 High frequency wideband chaos using solid state amplifier International Symposium on Microwaves, Bangalore, Dec 2006
194. Ravi Kumar Joshi and A.R. Harish 2006 A triple band bow-tie antenna for mobile and wlan applications International Symposium on Microwaves, Bangalore, Dec 2006
195. Rajiv Srivastava, Rajat Kumar Singh and Yatindra Nath Singh, "Optical loop memory for photonic switching application" Journal of Optical Networking, Vol.6, Issue.4, 2007, pp.341-348.
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201. Rajiv Srivastava, Rajat Kumar Singh, Vipin Mangal, Y.N.Singh, "A modified photonic switch architecture based on fiber loop memory," IndiCon 2006, Delhi, 14-15 Sept 2006.
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207. "Absorption Profile of Quantum Well Intermixed InGaAsP/InP Waveguide Photodiode Structures", Tathagata Bhowmick, Utpal Das, Anurag Nigam, and Avijit Singh, pp465-468, Proceedings of the 3rd International Conference on Computers and Devices for Communication (CODEC-06), Institute of Radio Physics and Electronics, University of Calcutta, December 18-20, 2006.
208. "Grating Assisted Lateral directional Coupler Employing InGaAs/GaAs Multiquantum Wells and its Analysis Using Mode Conversion Technique", Ajit Barve and Utpal Das, pp411-414, Proceedings of the XIII National Conference on Communications, 26-28 January 2007, IIT Kanpur.

• **Seminars Presented:**

1. **P. K. Kalra:** Presentation on "Fingerprint Separation", 11th April 2007, Hyderabad, India.
2. **P. K. Kalra:** Invited Talk on "Fingerprint separation", 1st December, 2006, 3rd International Workshop on Biometrics, IIT Kanpur, India.
3. **P. K. Kalra:** Invited presentation on "Conceptualization of Power exchange in India – Solutions and challenges", 22 Feb. 2007, National regional load dispatch center (NRLDC), New Delhi, India.
4. **S.C.Srivatatava:** Delivered a key note lecture on 27th Dec. 2006 on "*Indian Power And Energy Sector Development: Present Scenario & Few Challenges*" in the 14th National Power Systems Conference (NPSC), IIT Roorkee, 27-30 December, 2006.
5. **S.C.Srivatatava:** Delivered an invited lecture on '*Secure Operation of Power System in Electricity Markets Power System Restructuring*' at Asian Institute of Technology Bangkok, Thailand on 4th November 2006.

6. **S.C.Srivastava:** Delivered an invited lecture on '*Strengthening Industry-Academia Collaboration*' during Technology Summit Meet of Crompton Greaves of India Ltd. at Mumbai on 8th Feb. 2007.
7. **S.P.Das:** Delivered an invited lecture "Introduction to Power Electronics" in AICTE sponsored Staff Development Programme on Recent Trends and Applications in Power Electronics and Drives, U.C.E. Burla, Sambalpur, June 19- July 1, 2006.
8. **S.P.Das:** Delivered an invited lecture "Multi-level Converters" in AICTE sponsored Staff Development Programme on Recent Trends and Applications in Power Electronics and Drives, U.C.E. Burla, Sambalpur, June 19- July 1, 2006.
9. **S.P.Das:** Delivered an invited lecture "DC and AC Variable Speed Drives" in AICTE sponsored Staff Development Programme on Recent Trends and Applications in Power Electronics and Drives, U.C.E. Burla, Sambalpur, June 19- July 1, 2006.
10. **S.P.Das:** Delivered an invited lecture "Unified Power Quality Conditioner for Power Distribution Systems" in AICTE sponsored Staff Development Programme on Recent Trends and Applications in Power Electronics and Drives, U.C.E. Burla, Sambalpur, June 19- July 1, 2006.
11. **S.P.Das:** Delivered an invited lecture "Modern Trends in Power Electronics" in PSIT, Bhauti, Kanpur, Nov. 2006.
12. **S.P.Das:** Delivered the seminar entitled "Matrix Converter-fed High Performance Synchronous Motor Drive System" in GE John F. Welch Technology Center, Bangalore, December 19, 2006.
13. **N. Gupta:** Extended course on "High Voltage Engineering", UPTECH, Kanpur, July, 2006.
14. **N. Gupta:** Seminar on "Basics of High Voltage Engineering", KCNIT, Banda, 2006.
15. **N. Gupta:** Three-day Workshop on "Rotating Machinery Insulation", BHEL, Bhopal, Jan 2007.
16. **R. K. Bansal,** "*On Universal Compression, Shannon's Entropy and Individual Sequences*" on February 11, 2006 in TECHNEX (Students' Technical Festival held at BHU-IT, Varanasi).
17. **S. Umesh,** "Introduction to Continuous Speech Recognition," *National Conference on Communication,* (IIT, Kanpur), Jan. 2007
18. **A. K. Chaturvedi,** "Spread Spectrum for Mobile Communications", National Workshop on Mobile Communications at Ujjain Engineering College jointly organized with SGSITS, Indore, 16th to 18th March 2007.
19. **K. S. Venkatesh,** "Visual Surveillance Technology", Workshop on use of Signal and Image Processing and its Application to Display Technology, May 6, 2006, IIT Bombay
20. **K. S. Venkatesh,** "Video Surveillance for Counterterrorism", INAE Seminar on Engineering Response to Hazards of Terrorism, 25-26 September. 2006, IIT Kanpur

21. K. S. Venkatesh, "Automation of Video Surveillance: Some Recent Advances. One day Workshop on Intelligent Assistive Systems for Health Care Applications", Jan 30th 2007, IIT Kanpur.
22. Y. N. Singh, *All-optical packet switching: architectural and design issues*, ADCAN Lab, Dept. of Computer Science, Chonbuk National University, Jeonju, South Korea, 04 December 2006.
23. Y. N. Singh, *Issues in design and development of learning management system*, Indian-ASEAN seminar of Elearning, 6-7 November 2006, Hyderabad
24. Y. N. Singh, *Optical communications: transmitters and receivers*, Short course on Optical Communications, NIT Raipur, 14 July 2006.
25. Y. N. Singh, *Optical networks: Introduction*, Short course on Optical Communications, NIT Raipur, 14 July 2006.
26. Y. N. Singh, *All Optical Packet Switching: Architectures and issues*, Invited talk in TIFAC-CORE@DCE, Delhi College of Engineering, Delhi, 23 April 2006.
27. G. C. Ray, *Evolution Does Not Lead To Cyborg*, Workshop on Intelligent Assistive Systems for Healthcare Applications, January 30, 2007, Indian Institute of Technology, Kanpur.
28. S. Qureshi, *Activities at Department of Electrical Engineering, I.I.T. Kanpur*, Presented at International Crossroads, Institut National des Telecommunications, Evry, France, January 26, 2007, S. Qureshi
29. A.R. Harish, *RFID: Identification using radio frequency*, IETE, Kanpur Chapter, 25th March 2007.
30. Y.N. Singh, *All-optical packet switching: architectural and design issues*, [ADCAN Lab](#), Dept. of Computer Science, Chonbuk National University, Jeonju, South Korea, 04 December 2006.
31. Y.N. Singh, *Issues in design and development of learning management system*, Indian-ASEAN seminar of Elearning, 6-7 November 2006, Hyderabad
32. Y.N. Singh, *Optical communications: transmitters and receivers*, Short course on Optical Communications, NIT Raipur, 14 July 2006.
33. Y.N. Singh, *Optical networks: Introduction*, Short course on Optical Communications, NIT Raipur, 14 July 2006.
34. Y.N. Singh, *All Optical Packet Switching: Architectures and issues*, Invited talk in TIFAC-CORE@DCE, Delhi College of Engineering, Delhi, 23 April 2006.

35. Anjan K. Ghosh, "Design of Optically Actuated MEMS components", School of Electrical and Electronics Eng., Nanyang Technological University, Singapore, June 2006.
36. Anjan K. Ghosh, Short-term course on Optical Communications, July 12-15, 2006, at NIT, Raipur.

1. Conference Attended Outside IIT Kanpur

2. **P. K. Kalra:** 9th Asian Symposium on Information Display (ASID), New Delhi, India, 11th October 2006, Paper presentation.
3. **P. K. Kalra:** Symposium on Computational Neuroscience and Imaging, Lucknow, India, 17th -20th December, 2006, Paper presentation.
4. **P. K. Kalra:** Elitex-2007, New Delhi, India, January , 2007, Poster Presentation.
5. **P. K. Kalra:** Twentieth International Joint Conference on Artificial Intelligence (IJCAI - 07), International Institute of Information Technology, Hyderabad, India, 6th - 12th January 2007, Workshop Lectures.
6. **P. K. Kalra:** International Conference on Wireless Sensor Networks (WCSN), Indian Institute of Information Technology, Allahabad, India, December 2007.
7. **P. K. Kalra:** International Conference on Neural Biology and Neural Informatics, (NBNI-2006), Kyoto, Japan, July 23-24, 2006, Paper presentation.
8. **S.C.Srivastava:** International Conference on Advanced Power System Operation Control and Management (APSCOM-2006), Hong Kong, 30th October – 2nd November, 2006 (*chaired a session and presented paper*).
9. **S.C.Srivastava:** 14th National Power Systems Conference (NPSC), IIT Roorkee, 27-30 December, 2006. (delivered a key note lecture).
10. **S.P.Das:** Chaired the technical session on "Reluctance and Special Drives" in IEEE International Conference on Industrial Technology (ICIT 2006), Dec. 15-17, 2006, Mumbai.
11. **S.N.Singh:** IEEE Power India Conference Delhi, April 10-12, 2006 (**Session Chairman**)
12. **S.N.Singh:** International Conference on Energy, Efficiency and Environment, UPTU Lucknow, June 10-11, 2006 (**Organizing committee member, Technical Committee Chairman, Session Chairman**)
13. **S.N.Singh:** IEEE Power Engineering Society, General Meeting, Montreal, Canada, June 18-22, 2006. (**Panelist, paper presenter**)
14. **S.N.Singh:** National Seminar on Voltage Stability (SVC'06), Arulmigu Kalasalingam College of Engineering, Tamil Nadu, October 13-14, 2006. (**Keynote Speaker**)
15. **S.N.Singh:** Workshop on Laboratory Teaching in Electrical Engineering (LTEE-06), KNIT Sultanpur, India, November 24-26, 2006 (**Guest of Honor, Valedictory session**).
16. **S.N.Singh:** AICTE Sponsored National Conference on Advances in Electrical Engineering, MITS Gwalior, Indian, November 29-30, 2006. (**Keynote Speaker, Inaugural Session**)
17. **S.P.Das:** Presented a contributed paper entitled "A Utility Friendly High Power Induction Motor Drive with Direct Torque and Flux Control," in IEEE International

- Conference on Industrial Technology (ICIT 2006), Mumbai, 15-17 Dec. 2006, pp. 1983-1988.
18. **L. Behera:** IEEE SoSE Conference, San Antonio, Texas, USA, April, 2007, presenting contributed paper.
 19. **L. Behera:** IEEE Int. Symposium on Intelligent Control (ISIC), Munich, Germany, 2006, presenting contributed paper.
 20. **P.Sensarma:** *International Conference on Information Technology IEEE-ICIT 2006*, December 15-17, 2006, Mumbai, India. Chaired two sessions.
 21. **R. Potluri:** Conference on Advances in Control and Optimization of Dynamic Systems. IISc Bangalore, January 2007. Presented contributed paper, chaired session.
 22. **N. Gupta:** 2006 IEEE 8th International Conference on Properties and Applications of Dielectric Materials, Bali, Indonesia: Presented two papers, Chaired a session
 23. **N. Gupta:** National Power Systems Conference (NPSC 06), IIT Rorkee, Dec 2006: Presented a paper, Chaired a session.

 24. S. Gupta, 2006 International Conference on Information Display, Organised by Asian Society for Information Display (ASID) in Oct. 2006, in New Delhi.

 25. R. K. Bansal, 2006 IEEE Information Theory Workshop held at Chengdu, China.

 26. S. Umesh, International Joint Conference on Artificial Intelligence, Hyderabad for presenting contributed paper.

 27. A. K. Chaturvedi, "12th National Conference on Communications, NCC 2006 at IIT Delhi.

 28. A. K. Chaturvedi, "IEEE International Conference on Communications, ICC 2006 at Istanbul.

 29. A. K. Chaturvedi, WINS, Goa, April 2006. Invited speaker.

 30. A. Banerjee, "12th National Conference on Communications, NCC 2006 at IIT Delhi.

 31. A. Banerjee, IEEE Wireless Communications and Networking Conference (WCNC), Hong Kong, March 2007.

 32. R. M. K. Sinha, The 2006 International Conference on Artificial Intelligence, Las Vegas, Nevada, USA, June 26-29, 2006.

 33. R. M. K. Sinha, The 2006 International Conference on Machine Learning; Models, Technologies and Applications, Las Vegas, Nevada, USA, June 26-29, 2006.

34. R. M. K. Sinha, Invited Panelist at Symposium on Modeling and Shallow Parsing of Indian Languages (MSPIL-06), IIT Bombay on April 2-4, 2006. Presented Invited paper on 'Machine Translation of Hinglish',
35. K. Chebrolu, WISARD, Bangalore, Jan 2007. Panelist in discussion.
36. K. Chebrolu, WINS, Goa, April 2006. Invited participant.
The 9th Asian Symposium on Information Display at New Delhi from 8th to 12th October, 2006. Was member of program committee; Chaired two tutorial sessions (by Prof. Harm Tolner and Prof. Y.N. Mohapatra); Made a poster presentation.
37. S.K.Iyer, Made a poster presentation and chaired two tutorial(Prof. Harm Tolner and Prof. Y.N. Mohapatra) Sessions in the 9th Asian Symposium on Information Display at New Delhi from 8th to 12th Oct 2006.

- **Research and Consultancy Projects**

- 1) **P. K. Kalra:** Testing of CHOICE application software CMC, CHIPS, Chhattisgarh, India.
- 2) **P. K. Kalra:** Development of Application for Printing of MAPS (Land Records), CHIPS, Chhattisgarh, India.
- 3) **P. K. Kalra:** Multi Year Tariff Framework in BESCO, BESCO, Bangalore, India.
- 4) **P. K. Kalra:** Day Ahead Auction Software for Power Exchange, National Commodity Derivative Exchange (NCDEX), Mumbai, India.
- 5) **P. K. Kalra:** India Infrastructure Report (IIR), 2007., Ministry of rural development (MORD), Government of India.
- 6) **P. K. Kalra:** INDIAN INFRASTRUCTURE REPORT (IIR), 2007, UNICEF, New Delhi, India.
- 7) **S. P. Das:** "Development of a 250 VA, 400 Hz Single-phase Soft-switching Inverter for Airborne Application", HAL Lucknow, 2006-2007, Rs 1.52 Lakhs.
- 8) **L. Behera:** Principal Investigator, Intelligent Control Schemes and Applications to Dynamic and Visual Control of Redundant Manipulator Systems, Funded by DST from 2006-2008, Rs 19.2 Lakhs.
- 9) **L. Behera:** Principal Investigator, Quantum Neural Network Models - Applications of Quantum Learning to Health Care System and Visual Tracking System, Funded by MHRD from 2005-2008, Rs 20 Lakhs.
- 10) **P.Sensarma:** "Infrastructure Upgradation for Research in Power Electronics", Department of IT, Govt. of India through nodal agency CDAC, Thiruvananthapuram, Amount: Rs. 68.33 lakhs
- 11) **P.Sensarma:** Project Title: "Application module for Full Spectrum Simulator", Department of IT, Govt. of India through nodal agency CDAC, Thiruvananthapuram, Amount: Rs. 12.08 lakhs.
- 12) **P.Sensarma:** Project Title: "Universal Front-End for Micro Generators Using Renewable Sources". Department of IT, Govt. of India through nodal agency CDAC, Thiruvananthapuram, Amount: Rs. 27 lakhs.
- 13) **P.Sensarma:** "Establishment of new measuring system for determination of Volt-Ampere (V-I) characteristics of shunt reactors", BHEL, Bhopal, Rs. 1.78 lakhs

- 14) **P.Sensarma:** “Development of Digital Automatic Voltage Regulator”, (jointly with **Dr. L. Behera and Dr. R. Potluri**), BHEL, Bhopal, Rs. 17.60 lakhs.
- 15) **P.Sensarma:** “Computation of Harmonics in transformer under No-load condition” ,BHEL, Bhopal, Rs. 5.65 lakhs
- 16) **N. Gupta:** Electrical Characterization of nanocomposites for use as novel dielectrics, DST-SERC, 22 lakhs, 2006-2009, Principal Investigator.
- 17) **N. Gupta:** Theoretical and experimental investigation into an artificial tree channel in high voltage polymeric insulation, DST Fast Track Scheme for Young Scientists, 8 lakhs, 2005-2008, Principal Investigator.
- 18) **N. Gupta:** Modeling of the gaseous discharge in a stationary plasma thruster, 10 lakhs, 2004-2008.
- 19) **N. Gupta:** Theoretical Investigation into treeing in polymeric dielectrics, 8 lakhs, 2004-2007, Principal Investigator, Completed.
- 20) **S.N.Singh:** Assessment and Analysis of Electric Power Quality Problems using AI and Advanced Digital Signal Processing Techniques, DST, 10.22 Lakhs, Principal Investigator, 3 years, in progress
- 21) **S.N.Singh:** Performance Analysis and Trading of Wind Power Generation in Emerging Electric Power System, Santioned, CPRI/MoP, 21.8 Lakhs, Two and half years.

- 22) S. Gupta, “Restoration and Storage of Old Films and Video Archives”: Sponsored by Zee Broadcasting Corporation.
- 23) S. Umesh, DST SERC Project: Development of Better Models for Speaker-Normalisation and their Application in Speech Recognition
- 24) A. K. Chaturvedi, CDMA 2000 sponsored by Reliance, Infocomm.
- 25) K. S. Venkatesh, Mixed Reality Visual Feedback System For Enhanced Teleoperation: BRNS/EE/2004 0087
- 26) Y. N. Singh, Development of content delivery tools to enhance the existing experimental education technology services in IIT Kanpur, MCIT.
- 27) Y. N. Singh, Brihaspati-Phase 2 – MCIT.
- 28) K. Chebrolu, RuralNet (Digital Gangetic Plains II), Funding Agency: Media Lab Asia, Budget: 33.78 Lakhs
- 29) K. Vasudevan, Design and Development of Burst Acquisition System for Geosynchronous SATCOM Channels. Rs 8.5 lakhs. Ongoing. Sponsor: DEAL, Dehradun
- 30) A. Biswas, Defence Lab DRDO, India Design and development of wide band band pass filter using multiconductor lines for high speed integrated applications

- 31) A.R. Harish and M. Sachidananda, SMALL ANTENNAS, Pico Mega Design Labs, Chennai.
- 32) A.R. Harish, ANTENNA FOR P-19 RADAR, Wig and Sons, Kanpur.
- 33) A.R. Harish and P.K. Kalra, PASSIVE AN ACTIVE RFID AND LOCATION TECHNOLOGY RESEARCH, Boeing Inc., USA.
- 34) A.R. Harish, ELECTOMAGNETIC MODLING OF BEAM FORMING NETWORK FOR HIGH POWER APPLICATION, ISRO, SAC, Ahmedabad.
- 35) M. Sachidananda and A.R. Harish, CHARACTERIZATION OF POLYMER COATED FABRIC SAMPLES AT MICROWAVE FREQUENCIES, Bhilwara Textiles, Bhilwara.
- 36) A.R. Harish and M. Sachidananda, RF PROPAGATION AND RADIATION STUDIES FOR WLAN SYSTEM, Airtight Networks, Pune.
- 37) A.R. Harish, PROJECTS ON MUTUAL BENEFIT BASIS, M-Tech Innovation, Pune.
- 38) A.R. Harish and M. Sachidananda, WIRELESS LAN ANTENNA CHARACTERIZATION, Wibhu Technologies, Pune.
- 39) Y.N. Singh, Development of content delivery tools to enhance the existing experimental education technology services in IIT Kanpur, MCIT.
- 40) Y.N. Singh, Brihaspati-Phase 2 – MCIT.
- 41) A. Biswas, Defence Lab DRDO, India Design and development of wide band band pass filter using multiconductor lines for high speed integrated applications
- 42) A.R. Harish and M. Sachidananda, SMALL ANTENNAS, Pico Mega Design Labs, Chennai.
- 43) A.R. Harish, ANTENNA FOR P-19 RADAR, Wig and Sons, Kanpur.
- 44) A.R. Harish and P.K. Kalra, PASSIVE AN ACTIVE RFID AND LOCATION TECHNOLOGY RESEARCH, Boeing Inc., USA.
- 45) A.R. Harish, ELECTOMAGNETIC MODLING OF BEAM FORMING NETWORK FOR HIGH POWER APPLICATION, ISRO, SAC, Ahmedabad.
- 46) M. Sachidananda and A.R. Harish, CHARACTERIZATION OF POLYMER COATED FABRIC SAMPLES AT MICROWAVE FREQUENCIES, Bhilwara Textiles, Bhilwara.

47) A.R. Harish and M. Sachidananda, RF PROPAGATION AND RADIATION STUDIES FOR WLAN SYSTEM, Airtight Networks, Pune.

48) A.R. Harish, PROJECTS ON MUTUAL BENEFIT BASIS, M-Tech Innovation, Pune.

A.R. Harish and M. Sachidananda, WIRELESS LAN ANTENNA CHARACTERIZATION, Wibhu Technologies, Pune.

- **Other Activities**

- (a) *Technology Developed*

- 1) **P.Sensarma:** Low power MOSFET based inverter; *Status:* packaging in progress
- 2) **P.Sensarma:** IGBT gate drivers with inherent short-circuit protection scheme and isolation (2 kV) for Voltage Source Inverters; *Status:* beta testing in progress
- 3) S. Gupta, "Removal of Scratches, Blotches and color fading in old Motion picture films", Ready for Transfer.
- 4) K. S. Venkatesh, True Zoom, Multiview Image Format. Some more Development Needed.
- 5) K. S. Venkatesh, Anthropological Security: Ready for Transfer.
- 6) K. S. Venkatesh, Laser Pointer Based HCI: Ready for Transfer.
- 7) K. S. Venkatesh, Laser Assisted Visual Metrology Applications: Under Development
- 8) K. Chebrolu, Wake-on-WLAN (Remotely wakes up wireless LAN devices and hences helps save considerable power), Further development needed.
- 9) K. Chebrolu, BriMon (Structural health monitoring tool for bridges), Further development needed.
- 10) G. C. Ray, Pain Monitor. Tested on many patients by Dr. Gautam Das, Specialist on pain management.
- 11) J. John, A working prototype developed for the measurement of Laser Range finder based Angle of Attack and Tracking Position of Rail axles for the Indian Railways as part of the project on "Trackside Bogie Monitoring System". Further development required before technology transfer.

12) A.R. Harish, UHF RFID tag antenna, prototypes are undergoing testing at the partnering organization.

13) Visibility Measurement of Fog, under the TMRS-Fog Vision Instrumentation.

(b) *Software Developed*

1) **P. K. Kalra:** Fingerprint Separation s/w and GUI Interface, Ready for Transfer.

2) **P. K. Kalra:** Audio separation s/w and GUI Interface, Ready for Transfer.

3) **P. K. Kalra:** Image compression s/w and GUI Interface, Ready for Transfer.

4) **P. K. Kalra:** Day Ahead Auction Software for Power Exchange, Ready for Transfer.

5) Y. N. Singh, Brihaspati

6) K. Chebrolu, Platform for measuring 802.11 Link performance, Ready for transfer

7) Ilamparidhi, Rajesh Kumar, and A.R. Harish Radio wave propagation prediction using ray tracing for indoor wireless application.

8) Kalpesh Mehta and A.R. Harish, RF breakdown power prediction in transmission lines.

9) Kalpesh Mehta and A.R. Harish, Generalized scattering matrix method for analysis microwave circuits.

10) Arunabh Chattopadhyay and A.R. Harish, Indoor location sensing using RFID.

(c) *Industry visited/visit to other Institute for research Industry/Institute Name, Purpose, Period.*

1) **P. K. Kalra:** TVS Motor Company Limited, Chennai, India, Discussion on project proposal titled "Engine Testing".

2) **P. K. Kalra:** Bajaj (Automobiles unit), Pune, India, Discussion on project proposal titled "Engine Testing".

3) **P. K. Kalra:** Mahindra & Mahindra, (Automobiles unit), Nasik, India., Discussion on project proposal titled "Engine Testing".

4) **P. K. Kalra:** NCDEX, Mumbai, India, Conceptualizations of Power exchange.

5) **S.C.Srivastava:** Visited Institute of Engineering Tribhuvan University Nepal, 8-9 Jan. 2006.

6) **S.C.Srivastava:** Visited Hong Kong Polytechnic Univ. Hong Kong during 1-2 Nov. 2006.

7) **S.C.Srivastava:** Visited Asian Institute of Technology Thailand during 3-4 Nov. 2006.

- 8) **S.C.Srivastava:** Visited Crompton Greaves of India Ltd. ,Kunjur Works, Mumbai for research collaboration in December 2006.
- 9) **P.Sensarma:** BHEL, Bhopal
- 10) **R. Potluri:** September 2006. Visited Indira Gandhi Center for Atomic Research. Discussed problems of mutual interest.
- 11) **R. Potluri:** October 03 - 05, 2006. Industrial visit to study distributed control systems in the following industry:
- 12) **R. Potluri:** Alumina Refinery plant of HINDALCO Renukut, 1 day
- 13) **R. Potluri:** Captive Power plant of HINDALCO, Renuagar, 1 day
- 14) **R. Potluri:** NTPC Shaktinagar, 1 day
- 15) **N. Gupta:** Crompton Greaves, Mumbai, to discuss research possibility.
- 16) **N. Gupta:** BHEL, to discuss possibility of research collaboration.
- 17) **N. Gupta:** CPRI, Bangalore, to establish collaboration.
- 18) **S. Gupta,** ZEE Broadcasting Corporation, Collaboration activity.

- 19) **S. Umesh,** City University of New York for Research Collaboration (Dec.8 – Dec.25th 2006)

- 20) **J. John,** Visit to RDSO, Lucknow in connection with the field trials and interactions with railway engineers on the Trackside Bogie Monitoring System project under the Technology Mission on Railway Safety. One visit per month from April 2006 to March 2007.

- 21) **A.R. Harish,** Visited NTU Singapore during December 03 – 16, 2006 for exploring possible technical collaboration. Delivered two lectures on Fractal Antennas and Chaos at Microwave Frequencies

- 22) **Anjan K. Ghosh,** Visited the Div. of Communication Engineering, School of EEE, Nanyang Technological University, Singapore as TCT Fellow during May 06-June 06.

- 23) **Anjan K. Ghosh,** Visiting the Telecomm Systems Program ,School of electrical and computer engineering, University of Oklahoma, Tulas as a visiting Professor from July 06-Aug08.

(d) Patents

- 1) **P. Sensarma:** Indian Patent titled “Improved Single Phase Phase-Locked-Loop” filed on Feb 20, 2007, Application No. 349/DEL/2007.
- 2) **A. K. Chaturvedi and Ketan Rajawat,** "A low complexity symbol timing estimator for MIMO Modem using two samples per symbol " (Pending award of patent)

- 3) K. S. Venkatesh, "Power Supply for Personal Computers, in place of the Conventional SMPS and UPS." (Pending award of patent).
- 4) S.K.Iyer,933/DEL/2006"Organic photovoltaic cells with thin films of carbon nano-tubes p-n junctions"31-03-2006.Co-inventor:Arun Tej Mallajosyula.
- 5) Kumar Vaibhav Srivastava, Vishwa V. Mishra and Animesh Biswas, Dielectric Resonator, Publication No. :US2006/0097826 A1, Publication Date: May 11, 2006, Appeared in : <http://www.uspto.gov/patft/>.
- 6) Kamal K. Kar, Ahankari Sandeep Sureshrao and Animesh Biswas, Functionally graded wide-band polymeric composites for microwave absorbers and method of manufacturing same, Application No.:- 737/DEL/2007, Dated :28th March 2007, India (2007).
- 7) A.R. Harish and Ravi Kumar Joshi Wide Band Loop Antenna, Patent Application No. 1594/DEL/2006 Dated: 07-07-2006.

(e) Awards and Honours

1. **A. Ghosh**, Elected Fellow, Institute of Electrical and Electronics Engineers (IEEE) *for contributions to education in power electronic applications to transmission and distribution systems.*
2. **P.K. Kalra**:The Brij Mohan Lal Memorial Prize, Institute of Engineers, Kolkata, India.
3. **P.K. Kalra**:The Sir Arthur Cotton Memorial Prize, Institute of Engineers,
4. **S. C. Srivastava**: Vice Chairperson, Technical Activities of IEEE India Council for the year 2006.
5. **S. C. Srivastava**: Invited to join as Member of the State Advisory Committee of the U.P. Electricity Regulatory Commission.
6. **S. C. Srivastava**: Member, Governing Council of Central Power Research Institute, Bangalore.
7. **S. C. Srivastava**: Member, Working Sub-group on 'Technology Advancement and R&D in Power' for XI plan, constituted by Ministry of Power, Government of India.
8. **S. C. Srivastava**: Vice Chairperson, Technical Activities of IEEE India Council for the year 2007.
9. **S. C. Srivastava**: Re-nominated as Member of the State Advisory Committee of the U.P. Electricity Regulatory Commission for 2007-09.
10. **S.N.Singh**: Elected Humboldt Fellow
11. **S.N.Singh**: Elected *Fellow* of The Institution of Engineers (India)- (FIE)
12. **S. Umesh**, Alexander von Humboldt Research Fellow (May 2004-July 2005)
13. **R. M. K. Sinha**, Member International Program Committee Machine Translation Summit 2007 Copenhagen, Denmark.

14. R. M. K. Sinha, Member national Technical Advisory Committee of Centre for Development of Advanced Computing (CDAC).
15. R. M. K. Sinha, Member Working Group on "Technology Development for Indian Languages (TDIL)", MCIT, Govt. of India.
16. R. M. K. Sinha, Member PRSG on OCR and OHR Consortia, MCIT, Govt. of India.
17. R. M. K. Sinha, Member PRSG on English to IL MT Consortia, MCIT, Govt. of India.
18. R. M. K. Sinha, Member IASTED International Technical committee
19. . S. S. K. Iyer, Senior member I.E.E.E
20. Anjan K. Ghosh, Tan-Chin-Tuan Fellowship from Nanyang Technological University, Singapore

(f) Continuing Education Activities

1. **P. Sensarma:** Convened the National Workshop on Power Electronics, NWPE 2006, at IIT Kanpur, from October 30-November 1, 2006. 90 participants
2. **P. Sensarma:** Lecture module (8 hours) delivered at BHEL, Bhopal on "Power Electronic Converters", November 9-10, 2006. 20 participants
3. **S. C. Srivastava:** Co-organized a short term course under QIP scheme of AICTE on 'Electric Power System Operation and Control: Modern Trends and Future Challenges' during 28th August – 1st September 2006, at IIT Kanpur. (Coordinators: S.N. Singh and S.C. Srivastava)
4. **R. Potluri:** Mar 14-15, 2006. Organized "Workshop on Recent Advances in Controls & Sensors" at IITK. Speakers included faculty of IIT Kanpur and scientists from ISRO. Audience included faculty & students from NITs, IITs, and engineering colleges, and engineers and researchers from industry.
5. **S.N.Singh:** Coordinator of Quality Improvement Program Course on *Electric Power System Operation and Control: Modern Trends and Future Challenges* at IIT Kanpur, August 28- September 1, 2006.
6. S. Umesh, Organizing Member of *Winter School on Speech & Audio Processing* (WISSAP'06 - 07), Bangalore. Self Sponsored (70 from Academia, 30 from Industry)
7. K. S. Venkatesh, Organization, Coordination, and main Instruction of Avionics Course For HAL candidates.

8. Short course on “Introduction to VLSI Design” at HBTI, Kanpur from 19th to 21st Jan., 2006. Gave one hour inaugural talk on “VLSI Processing” on 19th Jan., 2006. Attendance was from academia (~40 participants), S. S. K. Iyer
9. Short course on “Energy Management” at MNNIT, Allahabad from 27th to 31st March, 2006. Gave three one-hour lectures on “Organic Solar Cells” on 28th March, 2006. Attendance was from academia and industry (~80 attendees), S. S. K. Iyer
10. Short course under Instruction Enhanced Programme under the Special Manpower Development Programme II of MCIT, on “Digital IC Design” from 3rd to 14th July, 2006 at IIT Kanpur. Attendance (~25) was from academia from participating institutes of MCIT. S. Qureshi, S. S. K. Iyer, B. Mazhari, A. Dutta, A. Joshi
11. QIP short course on “Organic Electronics” from 17th to 21st July, 2006 at IIT Kanpur. Helped in organization as well as presented four one-hour lectures. Attendance (27 nos.) was from academic institutions, S. S. K. Iyer, B. Mazhari
12. Tutorial on “Organic Electronics - Technology, Devices, Circuits and Applications” at the 20th International Conference on VLSI Design at Bangalore on 6th January, 2007. Helped organize the six hour tutorial and also conducted it for three hours. Number of participants was 25 from both academia and industry.

(h) *Laboratory/Infrastructure Developed.*

- **P. S. Sensarma:** with help of Shri. Kole:Electronic Fabrication (ELFAB) module at 4-i Laboratory.
- **N. Gupta:** The High Voltage laboratory was enhanced with modern detection equipment: Partial discharge detector, high resolution high speed Basler camera, Pico-ammeter, photon counter, etc.
- **A.Banerjee:** Developed a DSP Laboratory based on Texas Instruments TMS320C6711/C6713 processors.
- **S. Qureshi:** Expansion and Upgradation of VLSI / EDA Laboratory for Teaching, Research and Conducting of Courses for Participants from Colleges and Industry, WL-211.
- **S. Qureshi:** Expansion and Upgradation of VLSI / EDA Laboratory for Teaching, Research and Conducting of Courses for Participants from Colleges and Industry, WL-211,
- **B. Mazhari & S. S. K. Iyer:** Setting up of Organic Characterization Lab’ in WL-125,
- **S.S.K.Iyer:** Participated in Class 1000 Room Functioning, SAMTEL Centre for Display Technology,

(i) *Any other important activity not specified in above columns.*

- The following paper figured in the list of "TOP25 Hottest Articles" within the journal "Operations Research Letters" for the months of April - June 2006: Determining the right-hand vectors of an irredundant linear inequality system. **Ramprasad Potluri** and Lawrence E. Holloway. Operations Research Letters, Volume 34, Issue 4, 1 July 2006, Pages 373-381.
- **S.N.Singh:** NPTEL Video Course on Power System Operation and Control
- **A.K. Chaturvedi:** "Organized the 13th National Conference on Communications at IIT Kanpur during 26th to 28th January, 2007.