GANESH B. KUMBHAR, PH.D.

Department of Electrical Engineering,
Indian Institute of Technology-Roorkee,
Roorkee, Uttarakhand- 247667, INDIA
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EDUCATION

- **Ph. D., Electrical Engineering** July, 2007
  Institute: Indian Institute of Technology-Bombay, Powai, Mumbai, India
  Thesis: Application of coupled field formulations for analysis of intricate phenomena in transformers.
  Adviser: Dr. S. V. Kulkarni
- **M. Tech., Electrical Engineering** January, 2002
  Institute: Indian Institute of Technology-Madras, Chennai, India
  GPA: 8.87 (10.00 scale)
  Thesis: Experimental and theoretical studies on tracking phenomena in composite insulation materials.
  Adviser: Dr. R. Sarathi
- **B. E., Electrical Engineering** June, 1999
  Institute: Government College of Engineering, Karad, District: Satara, India
  Percentage: 71%
  Title of Project: Comprehensive protective scheme for the laboratory type alternator.
  Adviser: Dr. N. Gopalkrishnan

EXPERIENCE

- **Assistant Professor:** Indian Institute of Technology-Roorkee, Roorkee, INDIA
  - June, 2011 – Till date
- **Deputy Manager:** Crompton Greaves, Ltd., Global R&D Center, Mumbai, INDIA
  - July, 2010–May, 2011
- **Assistant Professor:** Veermata Jijabai Technological Institute (VJTI), Mumbai, INDIA
  - January, 2010 – May, 2010
- **Post-Doctoral Research Scholar:** Tennessee Tech University, TN, USA.
  - October, 2008 – September, 2009
- **Assistant Consultant:** Tata Consultancy Services, Ltd., Mumbai, INDIA
  - January, 2008–October, 2008
- **Senior Engineer:** Eaton Industries Pvt. Ltd., Pune, INDIA
  - August, 2006–December, 2007
- **Project Associate:** Indian Institute of Technology, Bombay, INDIA
  - January, 2002 – June, 2003

- **Lecturer:** Rajaram college of Engineering-Pedhambe, District-Ratnagiri, INDIA,
    - July 1999 – July, 2000

AWARDS AND ACHIEVEMENTS

- **Dr. Ing. Dieter Kind Prize,** for being the student with the best project from amongst the areas in High Voltage Engineering, Instrumentation and Measurement and Power Systems in Electrical Engineering Branch of M. Tech Degree course for the period 2000-2001, at IIT Madras.
- **IEEMA Best Paper Award,** for best paper at Seventh International Conference on Transformers, TRAFOTECH- 2006 held at Mumbai on 21-22, January, 2006.
- **GATE:** All India rank 83 and Score of 98.63 at GATE 2000 examination.
- **M. Tech:** Highest GPA in M. Tech. class for all semesters.

PUBLICATIONS

- **JOURNALS**

[1] M. Nabi, S. V. Kulkarni, A. K. Gupta, and **G. B. Kumbhar**, "An improved finite element computational scheme for transient field-circuit coupled systems," *International Journal of Computational Methods in Engineering Science and Mechanics*, Vol. 7, No. 4, July-August 2006, pp. 313-322.

[2] **G. B. Kumbhar**, S. V. Kulkarni, and V. S. Joshi, "Analysis of half-turn effect in power transformers using nonlinear-transient FE formulation," *IEEE Transactions on Power Delivery*, Vol. 22, No. 1, January 2007, pp. 195-200.

[3] **G. B. Kumbhar** and S.V. Kulkarni, "Analysis of short circuit performance of split-winding transformer using coupled field-circuit approach," *IEEE Transactions on Power Delivery*, Vol. 22, No. 2, April 2007, pp. 936-943.

[4] **G. B. Kumbhar**, S.V. Kulkarni, R. Escarela-Perez, and E. Campero-Littlewood, "Applications of coupled field formulations to electrical machinery," *The International Journal for Computation and Mathematics in Electrical and Electronic Engineering*, Vol. 26, Issue 2, 2007, pp. 489-523.

[5] R. S. Bhide, **G. B. Kumbhar**, S. V. Kulkarni, and J. P. Koria, "Coupled circuit-field formulation for analysis of parallel operation of converters with interphase transformer," *Electric Power Systems Research,* Vol. 78, Issue 1, January 2008, pp 158-164.

[6] G. B. Kumbhar and Satish M. Mahajan, "Detection of saturation, and reconstruction of the secondary current of a CT," *International Journal of Emerging Electric Power Systems*, Vol. 11, Issue. 1, Art. 7, 2010.

[7] **G. B. Kumbhar** and Satish M. Mahajan, "Reduction of loss and local overheating in the tank of a current transformer," *IEEE Transactions on Power Delivery*, vol. 25, no. 4, pp. 2519–2525, Oct. 2010.

[8] **G. B. Kumbhar** and Satish M. Mahajan, "Analysis of Short Circuit and Inrush Transients in a Current Transformer using a Field-Circuit Coupled FE Formulation," International Journal of Electrical Power and Energy Systems, Accepted for future publication, 2010. http://www.sciencedirect.com/science/article/pii/S0142061511001189

- **CONFERENCES**

[1] S. V. Kulkarni, **G. B. Kumbhar**, and M. Nabi, "Current trends in coupled field formulations in electrical machinery," *6th International Symposium on Electric and Magnetic Fields*, Aachen, Germany, 6-9 October, 2003, pp. 287-291.

[2] **G. B. Kumbhar** and S. V. Kulkarni, "Applications of coupled field formulations to power system engineering," *International Conference on Power Systems* (*ICPS 2004*), Kathmandu, Nepal, 3-5 November, 2004, pp. 599-503.

[3] S. Verma, **G. B. Kumbhar**, and S. V. Kulkarni, "Coupled circuit-field formulation for analysis of parallel operation of converters with interphase transformer," *International Conference on Computer Applications in Electrical Engineering - Recent Advances*, Roorkee, Sep. 29 - Oct. 1, 2005, pp. 279-282.

[4] S. Kumar, **G. B. Kumbhar**, S. V. Kulkarni, R. P. R. C. Aiyar, and S. V. Desai, "Electromagnetic forming: A case study of coupled magneto-mechanical formulation," *XII International Symposium on Electromagnetic Fields in Mechatronics, Electrical and Electronic Engineering* (*ISEF 2005*), Baiona, Spain, September 15-17, 2005, Paper No. EE-2.22.

[5] S. V. Kulkarni, **G. B. Kumbhar**, Ashish Gupta, and Sourabh Varma, "Applications of field-circuit coupled formulations for reliability enhancement of transformers," *Seventh International Conference on Transformers* (*TRAFOTECH- 2006*), pp. II.10-II.26, 21-22, January, 2006.

[6] A. V. Kank, **G. B. Kumbhar**, and S.V. Kulkarni, "Coupled magneto-mechanical field computations," *International Conference on Power Electronics Drives and Energy Systems for Industrial Growth, PEDES 2006*, Organized by IEEE and IIT Delhi, December 12-15, 2006.

[7] **G. B. Kumbhar** and S. V. Kulkarni**, "**Analysis of sympathetic inrush phenomena in transformers using coupled field-circuit approach," *IEEE PES General Meeting*, Tampa, USA, June 24-28*, 2007*.

[8] **G. B. Kumbhar** and Satish Mahajan**, "**Field-circuit coupled formulation of transient phenomena in current transformers," *IEEE PES General Meeting, 2009*, Calgary, Alberta, Canada, July 26-30.

CONFERENCES, SHORT-TERM COURSES AND INVITED LECTURES

- **International Conference on Power Systems,** ICPS 2004, Kathmandu, Nepal, 3-5 November, 2004 (Presented a technical paper).
- **International Conference on Computer Applications in Electrical Engineering - Recent Advances**, CERA -2005, Roorkee, India, Sep. 29 - Oct. 1, 2005 (Presented a technical paper).
- **International Conference on Transformers**, TRAFOTECH-2006, Mumbai, India, 21-22, January, 2006 (Presented a technical paper).
- **International Conference on Transformers**, TRAFOTECH-2010, Mumbai, India, 18-19, January, 2010.
- **School of Pulse Power Technology,** 18-21 May, 2010, BARC, Mumbai
- **Short-term Courses:** delivered lectures on topic such as transient, time-harmonic, nonlinear finite element formulations and coupled field formulations like field-circuit, magneto-thermal, magneto-mechanical, etc.

- Department of Electrical Engineering, IIT Bombay on December 2004.
- Department of Electrical Engineering, IIT Bombay on November 2005.
- GE-IIC, Hydrabad on December 2005.
- ANSYS (EMAG) Users Workshop at Pune on September 2006.
- ANSYS (EMAG) Users Meet at Pune on May 2008.

PROFESSIONAL PROFILE AND SKILLS

- Work experience in design/design improvements, simulation and analysis of wide range of products (from electrical circuit breakers and transformers to actuators and sensor)
- Strong theoretical and technical background on modeling and simulation of challenging problems in electrical machines, transformers, circuit breakers, etc.
- Expertise in Multiphysics and Finite Element Analysis (FEA) Software Packages like ANSYS, ANSOFT (MAXWELL 2D/3D, SIMPLORER), FEMLAB, FEMM and MATLAB\PDE toolbox.
- Proficiency in MATLAB and programming experience in development of finite element code for coupled field modeling and simulation.
- Computer proficiency: MS office, Windows and UNIX/Linux operating systems, etc. Programming languages: C, C++.

REFERENCES

- **Dr. S. A. Khaparde**
  Professor, Department of Electrical Engineering,
  Indian Institute of Technology, Bombay, Powai, Mumbai-76, INDIA
  Phone: +91-22-25767434
  E-mail: sak@ee.iitb.ac.in

- **Dr. S. V. Kulkarni**
  Professor, Department of Electrical Engineering,
  Indian Institute of Technology, Bombay, Powai, Mumbai-76, INDIA
  Phone: +91-22-25767430
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- **Prof. Satish M. Mahajan**
  Professor, Department of Electrical and Computer Engineering
  Tennessee Technological University, Cookeville, TN-38505, USA
  Phone: +1-931-372-3760
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Place: Powai, Mumbai.

Date: May 10, 2010 (**Ganesh B. Kumbhar**)