



IEEE

Ottawa Section



Seminar by Joint IEEE Ottawa-Montreal Section DEIS Chapter, IEEE Ottawa IMS, PES, RS Chapters, and EPMG of INMS/NRC

The IEEE Ottawa Section is inviting all interested IEEE members and other engineers, technologists, and students to a seminar on dielectrics and electrical insulation.

Development of Diagnostic Measurement Techniques for Power Equipment Using Radio Sensing, Computational Electromagnetic Method, and Signal Processing by

Dr. Masatake Kawada

University of Tokushima, Tokushima, Japan

DATE: Jun 05, 2009.

TIME: 1:40 p.m. Registration and Networking; 2:00 p.m. – 3:30 p.m. Seminar.

PLACE: National Research Council, 1200 Montreal Road, Ottawa, Building M-50, Room 115.

PARKING: No fee at the visitor's parking. Please respect restricted areas.

Abstract:

The presentation will focus on research activities studying diagnostic measurement techniques for insulating material of power equipment using radio sensing and computational electromagnetic method, and vibration analysis for rotating machines using signal processing. Radio sensing techniques based on the interferometer system to detect electromagnetic (EM) waves emitted from a partial discharge (PD) have been used as a tool to detect symptoms of insulation failure. Because PD emits wideband EM waves, a VHF-UHF radio interferometer system was designed for obtaining the direction of arrival of EM waves emitted from PD. The detection system has been improved by adding advanced signal processing methods. Also, computational electromagnetic methods, such as, the finite difference time domain (FDTD) method and the constrained interpolation profile (CIP) method to visualize the propagation of EM waves emitted from PD have been developed. These methods are useful for knowing the multi-path effects as reflection, diffraction, and scattering at the apparatus when the EM waves are received with antennas. By combining radio sensing, signal processing, and computational electromagnetic methods, a new ubiquitous sensing system with high sensitivity for diagnostic measurement technique for power equipment is being explored. Furthermore, in the area of rotating machines, methods using advanced signal processing (wavelet transform) and the independent component analysis have been applied to a small turbine model to detect abnormal vibration due to rubbing (contact), oil whip, and clearance.

Speaker's Bio:



Masatake Kawada received the B.S. and M.S. degrees from Musashi Institute of Technology, Tokyo, Japan, in 1993 and 1995 respectively, and the Ph.D. degree in Electrical Engineering from Osaka University, Osaka, Japan, in 1998. In 1998 he joined the Nagoya Institute of Technology, Aichi, Japan. In 2002 he joined the University of Tokushima, Tokushima, Japan, where he currently is an associate professor. From 2005 to 2006 he was a visiting scholar at the University of Southern California, Los Angeles, USA. His research interests are development of diagnostic measurement techniques for electric power apparatus and facilities, radio sensing, application of signal and image processing, electromagnetic compatibility, and brain electromagnetic information engineering.

Admission: Free. Registration required for security reasons.

To ensure a seat, please register by e-mail contacting: maboudakka@ieee.org