

Friday, Nov. 18, 2011
McGill University, Trottier Building, Room 2120
3630 University St, Montreal, QC, H3A 2B2

The IEEE Montreal AP-S / WIE chapters and CREER are pleased to invite you to their jointly held seminar. The event will combine the presentation of the IEEE WIE Montreal group and their new chair with the IEEE AP-S chapter and CREER to a high-quality technical seminar.

MICROWAVE ACTIVE CIRCUITS FOR SOME INTERESTING APPLICATIONS

2:00 PM –
3:00 PM

Prof. Zoya Popovic

University of Colorado, Boulder, CO, U.S.A.

This talk will present an overview of the activities in the microwave and antennas group at the University of Colorado, Boulder, followed by a more detailed discussion of a few specific projects: (1) ultra-broadband (11:1) low-loss high-density micro-fabricated coaxial circuits and waveguides and their applications in radar transmitters (from S to G-band); (2) high-efficiency microwave power amplifiers (PAs) with dynamic supplies for communications and radar transmitters; (3) far-field wireless powering for low-power wireless sensors operating in the 2-GHz cellular and 2.4-GHz and 5.8-GHz unlicensed bands; and (4) near-field passive microwave probing for sub-surface defect detection and material characterization, time permitting.

MICROWAVES FOR BREAST CANCER DETECTION – A PATH TOWARDS SAFER, NON-INVASIVE, AND MORE COMFORTABLE SCREENING METHODS

3:00 PM –
3:45 PM

Dr. Simone Angela Winkler

Chair IEEE WIE Montreal, McGill University, Montreal, QC, Canada

This talk, presented as a part of the IEEE Montreal Women in Engineering chapter will introduce a review of recent progress in the domain of breast cancer detection, with emphasis on the research conducted at McGill University Montreal. Microwave breast imaging is currently being researched as a method for detecting malignant tissue within the breast. It is based on the reported contrast in the dielectric properties of healthy tissue and tumors over the microwave frequency range. Microwave imaging has the potential to be a complementary modality to standard detection techniques (X-ray mammography, ultrasound, magnetic resonance imaging) in that it would be cost-effective, non-invasive, painless, and would require no ionizing radiation.

3:45 PM –
4:00 PM

COFFEE BREAK

TWENTY THREE YEARS: THE ACCEPTANCE OF MAXWELL'S EQUATIONS

4:00 PM –
5:00 PM

Dr. James Rautio

Sonnet Software, North Syracuse, NJ, U.S.A.

Maxwell first published what came to be called “Maxwell’s equations” in 1865. However, it was not until 1888, and Heinrich Hertz’s experimental validation that Maxwell’s equations were widely accepted as correct. The story of the intervening 23 years is little known. Maxwell, who died in 1879, was exceptionally modest and did not promote his own results at any time. The survival of Maxwell’s equations was up to the only three researchers in the entire world who paid serious attention to Maxwell’s paper in 1865, and his seminal Treatise in 1873: Oliver Heaviside, Oliver Lodge, and George Francis FitzGerald. Later, Hertz joined the group forming “The Four Maxwellians”. In this presentation, we describe the torturous 23 year path Maxwell’s equations took from their creation to their initial acceptance.

BIOGRAPHIES:

Zoya Popovic is a Distinguished Professor and the Hudson Moore Jr. Endowed Chair of Electrical Engineering at the University of Colorado. She obtained her Dipl.Ing. degree at the University of Belgrade, Serbia, and her Ph.D. at Caltech. She has graduated 40 PhDs and currently advises 16 doctoral students in various areas of microwave engineering. She is the recipient of two IEEE MTT Microwave Prizes for best journal papers, the White House NSF Presidential Faculty Fellow award, the URSI Issac Koga Gold Medal, the ASEE/HP Terman Medal and the German Humboldt Research Award. She has a husband physicist and three daughters.

Simone Angela Winkler received her Dipl.–Ing. (M.Sc.) degree in mechatronics from the Johannes Kepler Universität Linz, Austria and her Ph.D. degree in microwave engineering at the École Polytechnique Montréal, QC, Canada. Her main research interests are concerned with the design of nonlinear circuits, radar system engineering, millimeter-wave imaging applications, and biomedical engineering for early breast cancer detection and high-field magnetic resonance imaging. For her doctoral research, Dr. Winkler received the 2009 IEEE MTT-S Graduate Student Fellowship, the FQRNT 2007 Merit Scholarship Program, ranked first, the 2006 IEEE CCECE Best Paper Award, the 2006 Hedy-Lamarr Award and a fellowship from the Austrian Academy of Science for her doctoral studies. She has also received 5 different awards for her master program. She is member of various engineering organizations, serves as the Chair of the IEEE Montreal Women in Engineering Chapter, the IEEE IMS 2012 Steering Committee, and has served as the Student Committee Vice President of CREER Québec.

James C. Rautio started life on a farm and might still be there but for amateur radio. His father had a pre-World War II "rig" and James was intensely curious. That curiosity drove James to become the first from his family to attend college. James received a BSEE from Cornell in 1978. He then worked for General Electric Space Systems while completing a MS in Systems Engineering from the University of Pennsylvania. In 1982, James transferred to GE Electronics Laboratory in Syracuse, NY. Here he designed monolithic GaAs microwave integrated circuits. Software development was pursued at home by starting Sonnet Software in 1983. In 1986, James completed a Ph. D. at Syracuse University under Roger Harrington.

After completing his Ph. D., he worked for several years as a visiting professor at Syracuse and at Cornell, while continuing to develop the software started during his Ph. D. research. Then, in 1988, he took Sonnet full time. Sonnet's first major sale was in 1989, the same year Sonnet incorporated and hired its first employee. The following decade was devoted to promoting the acceptance of numerical electromagnetics in the high frequency design cycle. Dr. Rautio was elected a Fellow of the IEEE in 2000. The following year, he received The Microwave Application Award from The IEEE Microwave Theory and Techniques Society (MTT-S) "For Development of Widely-Used Full-Wave Electromagnetic Solution Software for the Computation of Printed Circuit Characteristics."