John R. Long received the B.Sc. in Electrical Engineering from the University of Calgary in 1984, and the M.Eng. and Ph.D. degrees in Electronics from Carleton University in Ottawa, Canada, in 1992 and 1996, respectively. He was employed for 10 years by Bell-Northern Research, Ottawa (now Nortel Networks R&D) involved in the design of ASICs for Gbit/s fibre-optic transmission systems, and from 1996 to 2001 as an Assistant and then Associate Professor at the University of Toronto. Since January 2002 he has been chair of the Electronics Research Laboratory at the Delft University of Technology in the Netherlands. His current research interests include low-power and broadband/mm-wave transceiver circuitry for highly-integrated wireless applications, and electronics design for high-speed data communication systems.

Professor Long currently chairs the RF circuits subcommittee for the 2009 International Solid-State Circuits Conference (ISSCC), and is a member of the technical program committees for the ESSCIRC, ICUWB, and European microwave (EuMW) conferences. He is a Distinguished Lecturer for the IEEE Solid-State Circuits Society, a former Associate Editor of the IEEE Journal of Solid-State Circuits, and Past General Chair of the IEEE Bipolar/BiCMOS Circuits and Technology Meeting (BCTM). He is a recipient of the NSERC Doctoral Prize, Douglas R. Colton and Governor General's Medals for research excellence, and Best Paper Awards from the ISSCC in 2000 and 2007, IEEE-BCTM 2003, the 2006 RFIC Symposium, and EuMW 2006.

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Prof. John R. Long
Electronics Research Laboratory/DIMES
Delft University of Technology, the Netherlands

White Phones, Black Art: The Evolution of RF IC Design in Silicon Microelectronic Technologies

The growth in mobile communication technology over the past decade has astonished the experts and exceeded almost every expectation. Driven by innovations in radio architecture, circuit design and technology scaling as predicted by Moore's Law, perhaps it should be no surprise that we’re riding an exponential curve. With current cellular phone sales exceeding one billion units per year and a projected market for mobile communication technology and services of greater than $1,000 billion by 2020, RF IC technology continues to drive innovations in data networking and personal connectivity.

The milestones in radio frequency IC technology that have resulted in today’s single-chip GSM radios are reviewed in the first part of this presentation. However, even as we look back and celebrate our success and the 20th anniversary of GSM telephony, constraints on RF IC performance imposed by deep submicron CMOS technology are dimming the prospects of developing truly scalable analog/RF circuits using conventional circuit topologies. Potential solutions to the design of adaptive, wideband and possibly scalable RF receiver front-ends will be described. Finally, some of the directions which current research work in millimetre-wave to ultrawideband and sensor networks for future RF IC applications are projected.

Thursday June 12 @ 2:30 PM
École Polytechnique de Montréal
Lassonde Building
Room M-1020
(refreshments served before the lecture)

Organizers:
Prof. Anas Hamoui, McGill University
Prof. M. Sawan, École Polytechnique de Montréal

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