



SEMINAIRE EXCEPTIONNEL
(de 10 h 30 à 11 h 30, amphithéâtre du bâtiment INP, MINATEC)

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“0.5-V Analog integrated circuits for nanoscale CMOS technologies”

by Professor **Peter KINGET**

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Abstract : Semiconductor technology scaling a.k.a. 'Moore's Law' has enabled function density increases and cost reductions by orders of magnitudes, but for shrinking device sizes the operating voltages have to be reduced. As we move into the nanoscale semiconductor technologies, power supply voltages well below 1 V are projected. The design of MOS analog circuits operating from a power supply voltage of 0.5 V is discussed in this talk. The scaling of traditional circuit topologies is not possible anymore and new circuit topologies and biasing strategies have to be developed. Several design examples are presented. The circuit implementations of gate and body-input 0.5 V operational transconductance amplifiers and their robust biasing are discussed. These building blocks are combined for the realization of active varactor-tuned RC filters and continuous-time sigma delta modulators operating from 0.5 V using standard devices with a $|V_T|$ of 0.5 V in a standard 0.18 μm CMOS technology.

***Peter R. Kinget** received the engineering degree (Summa cum Laude) in electrical and mechanical engineering and the Ph.D. (Summa cum Laude with Congratulations of the Jury) in electrical engineering from the Katholieke Universiteit Leuven, Belgium, in 1990 and 1996, respectively. From 1991 to 1995, he received a graduate fellowship from the Belgian National Fund for Scientific Research (NFWO) to work as a Research Assistant at the ESAT-MICAS Laboratory of the Katholieke Universiteit Leuven. From 1996 to 1999 he was at Bell Laboratories, Lucent Technologies, in Murray Hill, NJ, as a Member of Technical Staff in the Design Principles Department. From 1999 to 2002 he held various technical and management positions in IC design and development at Broadcom, CeLight and MultiLink. In the summer of 2002 he joined the faculty of the Department of Electrical Engineering, Columbia University, NY. He is also a consultant to industry. His research interests are in analog and RF integrated circuits and signal processing. He has published over 50 papers in journals and conferences and holds 3 US patents with several applications under review. His research group has received funding from the National Science Foundation, the Semiconductor Research Corporation, an IBM Faculty Award, and several grants from semiconductor companies. Dr. Kinget is a Senior Member of the IEEE and an Associate Editor of the IEEE Journal of Solid State Circuits (2003-). He has served as a member of the Technical Program Committee of the IEEE Custom Integrated Circuits Conference (CICC) (2000-2005) and currently serves on the Technical Program Committees of the Symposium on VLSI Circuits (2003-); the International Solid-State Circuits Conference (2006-); and the European Solid-State Circuits Conference (2006-).*

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