Thursday, February 16
Scaife Hall Auditorium
Room 125 at 4:30 p.m.
Refreshments at 4:00 p.m.

Georges Gielen
Professor
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Georges G.E. Gielen received the M.S. and Ph.D. degrees in electrical engineering from Katholieke Universiteit Leuven, Leuven, Belgium, in 1986 and 1990, respectively. In 1990, he was a Post-Doctoral Research Assistant and Visiting Lecturer with the Department of Electrical Engineering and Computer Science, University of California, Berkeley. From 1991 to 1993, he was a Post-Doctoral Research Assistant with the Belgian National Fund of Scientific Research, ESAT Laboratory, Katholieke Universiteit Leuven. In 1993, he was an Assistant Professor with Katholieke Universiteit Leuven, where he was promoted to Full Professor in 2000. He has authored or co-authored two books and more than 300 papers in edited books, international journals, and conference proceedings. His current research interests include the design of analog and mixed-signal integrated circuits, and especially analog and mixed-signal computer-aided design tools and design automation (modeling, simulation and symbolic analysis, analog synthesis, analog layout generation, analog, and mixed-signal testing).

Designing Low-Power Analog/Mixed-Signal Integrated Circuits in an Uncertain World

Nanometer CMOS technologies offer large opportunities for deeply scaled digital IC implementations. At the same time, they pose huge challenges for the design of the analog and mixed-signal circuits. The reduced supply voltage limits the voltage headroom, hence jeopardizing the dynamic range. Alternative design solutions are therefore explored in recent years to design low-power sensor interfaces and data converters. These include time-based solutions that exploit the excellent timing resolution of advanced CMOS technologies, in combination with digitally assisted on-line calibration techniques. A second large problem is the increasing uncertainty due to growing variability and ageing effects, making it difficult to generate reliable circuits that have a guaranteed performance over the lifetime of a product. Solving this requires novel design techniques that exploit run-time sense-and-react mechanisms that adaptively reconfigure circuits. All introduced innovative concepts will be illustrated with practical design examples from applications such as biomedical, automotive and communications.