

The Different Faces of Variability

An IEEE Distinguished Lecture jointly organised by IME and IEEE Solid-State Circuits Society Singapore Chapter

GUEST SPEAKER

Dr. Marcel Pelgrom
NXP Semiconductors

When: **13th October 2010, 4.30 p.m. to 5.30 p.m.**

Where: **Institute of Microelectronics, Singapore**
11 Science Park Road Singapore Science Park II Singapore 117685

Abstract

Integrated Circuit (IC) design greatly depends on the ability to control and reproduce transistor and process parameters. Variation in processing was countered in the past by defining process corners: boundaries in parameter variation that accounted for process tolerances. With the improved control over processing, this batch-to-batch variation is largely under control.

However, now a new class of phenomena has appeared: statistical variations. In conventional ICs, analog circuits with a differential operation were already affected by this random parameter spread. The variation between otherwise identical components is generally described by "mismatch" parameters. Next to these static random phenomena, time-dependent variations play an increasingly important role: variations in supply voltage and temperature and interference (supply and substrate noise, cross-talk, etc) are of major importance to optimize circuit performance. Understanding and mitigating these effects requires more and more statistical means.

This talk will review some of the statistical effects and discuss the various techniques that analog designers in the past used to mitigate statistical issues. Lessons from the analog domain can provide a starting point for the application in the digital domain.

About the Speaker



Dr. Marcel Pelgrom received his B.EE, M.Sc and Ph.D from Twente University, Enschede, The Netherlands. In 1979 he joined Philips Research Laboratories, where his research has covered topics such as Charge Coupled Devices, MOS matching properties, analog-to-digital conversion, digital image correlation, and various analog building block techniques. He has headed several project teams and was a team leader for high-speed analog-to-digital conversion.

From 1996 till 2003 he was a Department Head for mixed-signal electronics. Next to various activities concerning industry-academic relations, he is also involved as a research fellow in research on the cutting edge of design and technology. In 2003 he spent a sabbatical in Stanford University where he was appointed as a consulting professor. Since 2007, he has been a Member of the Technical Staff of NXP Semiconductors.

Dr. Pelgrom is an IEEE Distinguished Lecturer and has written over 40 publications, five book chapters and holds 30 US patents. He is lecturing at Twente and Delft Universities, and for MEAD Inc. In August 2010, Springer published Dr. Pelgrom's lecture notes as a book: "Analog-to-Digital Conversion".

Registration

Pre-registration is required. Closing date is 11th October 2010. To register, please log on:
http://easstar.eventshub.sg/ems_wb_Details.aspx?CallID=28&EventID=138120

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