

## **Chris H. Kim / Seoul National University**

### **"Compact, Efficient, and Precise Characterization of Circuit Aging Using Silicon Odometers"**

Since 2006, my group has been developing specialized circuits called "Silicon Odometers" for accurately characterizing circuit aging effects. The aging and noise mechanisms we target range include bias temperature instability, hot carrier injection, time-dependent dielectric breakdown, random telegraph noise, and electromigration. In the first part of this talk, I will give an overview of our past odometer designs and introduce odometer circuits currently being designed in my group. Radiation effects in logic gates and flip-flops have not received adequate attention due to the difficulty in collecting high-quality radiation data. In the second part of this talk, I will introduce test circuits designed by my group in FinFET technology for characterizing soft errors in logic circuits.

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**Chris H. Kim** received his B.S. and M.S. degrees from Seoul National University and a Ph.D. degree from Purdue University. He started his academic career in 2004 at the University of Minnesota and is currently a faculty at Seoul National University. Prof. Kim is the recipient of the University of Minnesota Taylor Award for Distinguished Research, Semiconductor Research Corporation (SRC) Technical Excellence Award for his "Silicon Odometer" research, Council of Graduate Students Outstanding Faculty Award, NSF CAREER Award, McKnight Foundation Land-Grant Professorship, 3M Non-Tenured Faculty Award, DAC/ISSCC Student Design Contest Award (2 times), IBM Faculty Partnership Award (3 times), IEEE Circuits and Systems Society Outstanding Young Author Award, the ICCAD Ten Year Retrospective Most Influential Paper Award, ISLPED Low Power Design Contest Award (4 times), and ISLPED Best Paper Award (2 times). His group has expertise in digital, mixed-signal, and memory IC design, with special emphasis on circuit reliability, hardware security, memory circuits, radiation effects, time-based circuits, and beyond-CMOS computing. He is an IEEE fellow.