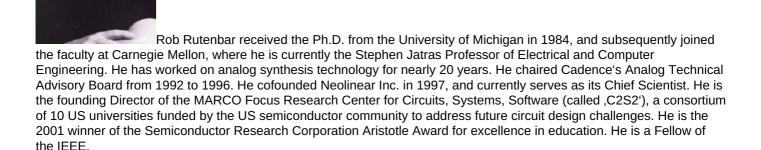# Analog EDA and the Path to Practical Analog IP

Rob Rutenbar, Stephen Jatras Professor of Electrical and Computer Engineering Carnegie Mellon University

Abstract

Most modern System-on-Chip (SoC) designs will soon be mixed-signal designs. This should come as no surprise: a few million gates worth of fast digital computation on a chip is much more useful if it can communicate with the external world, and the world is a continuous-valued analog place. Since analog circuits exploit rather than avoid the low-level physics of the fabrication process, they remain painful to design, to validate, and to reuse. Classical analog design (one transistor at a time) is incompatible with our desire to integrate more analog on chip, and to design each chip quickly. This talk describes the evolution of practical analog synthesis tools, which are now poised to give analog designers the same producivity boosts that logic synthesis gave digital designers. We will also describe how synthesis enables reuse, and gives us the first practical approach to analog intellectual property (IP).

Curriculum Vitae

Rob Rutenbar received the Ph.D. from the University of Michigan in 1984, and subsequently joined the faculty at Carnegie Mellon, where he is currently the Stephen Jatras Professor of Electrical and Computer Engineering. He has worked on analog synthesis technology for nearly 20 years. He chaired Cadence's Analog Technical Advisory Board from 1992 to 1996. He cofounded Neolinear Inc. in 1997, and currently serves as its Chief Scientist. He is the founding Director of the MARCO Focus Research Center for Circuits, Systems, Software (called ‚C2S2'), a consortium of 10 US universities funded by the US semiconductor community to address future circuit design challenges. He is the 2001 winner of the Semiconductor Research Corporation Aristotle Award for excellence in education. He is a Fellow of the IEEE.