

Fall 2015 Seminar Series

DESIGN-FOR-MANUFACTURABILITY-AWARE AUTOMATED LAYOUT RETARGETING FOR ANALOG AND RF ICs

FRIDAY OCTOBER 30, 2015

10:30 AM – HEC 450

Since many of new integrated circuits (ICs) need to directly interact with the external continuous-valued world, analog circuits have become an indispensable component in the modern system-on-chips. The digital part of mixed-signal designs can be tackled by using cell-based tools for synthesis, mapping, and physical design. The analog portion, however, is still routinely designed by hand or poorly supported by computer-aided design (CAD) tools. Unlike digital circuits aided by available intellectual properties (IPs), analog counterparts have to be manually redesigned as a given chip migrates from one fabrication process to another (process migration) or from one set of performance specifications to another (performance retargeting). In this technical talk, a survey on analog and radio frequency (RF) automated layout generation methodologies is first given. The manufacturability challenges imposed by the advanced technologies are also discussed. The talk is focused on some new research results of innovative template-based symbolic layout retargeting and optimization methodologies for process migration and performance retargeting. Some design-for-manufacturability (DFM) techniques are considered in the automated layout retargeting process. Emerging research thrusts will be also discussed at the end of the talk.

DR. LIHONG ZHANG

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Dr. Lihong Zhang received the M.Sc. degree from Huazhong University of Science and Technology (China) in 1997 and Ph.D. degree from Otto-von-Guericke University of Magdeburg (Germany) in 2002 both in electrical engineering. He was a Postdoctoral Research Associate with Concordia University (Montreal, Canada), Dalhousie University (Halifax, Canada), and University of Washington (Seattle, USA) from 2003 to 2006. In Oct. 2006, Dr. Zhang joined the Faculty of Engineering and Applied Science at Memorial University of Newfoundland, St. John's, Canada, where he is currently an Associate Professor with the Department of Electrical and Computer Engineering. He founded and is now leading Computer-Aided Design Laboratory for Analog and Mixed-Signal VLSI Systems at Memorial University, which is the first and only one in Atlantic Canada. In 2008 he was awarded Leaders Opportunity Fund from Canada Foundation for Innovation (CFI), which is granted to the recognized leaders who strengthen Canada's capacity for world-class research and technology development. His research interests include very large scale integration (VLSI) computer-aided design, analog and mixed-signal integrated circuit design, digital system and circuit design, MEMS design and design automation, computer-based instrumentation, microelectronics and computer applications in ocean and biomedical engineering, and computer peripherals. Dr. Zhang founded and currently chairs the IEEE Newfoundland-Labrador Section Computer Society, Communication Society, and Circuits & Systems Joint Societies Chapter.

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