



SEMINAIRE EXCEPTIONNEL
(de 14 h à 15 h, amphithéâtre PHELMA, Bât. INP, Minatec,
ouvert à tous : enseignants, étudiants, chercheurs, administratifs, techniciens)

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“Prospect and Outlook of Electrostatic Discharge (ESD) Protection in
Emerging Technologies”

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Abstract: Electrostatic discharge (ESD) is one of the most prevalent threats to electronic components. It is an event in which a finite amount of charge is transferred from one object (i.e., human body) to the other (i.e., microchip). This process can result in a very high current passing through the microchip within a very short period of time, and hence more than 35% of chip damages can be attributed to the ESD event. As such, designing on-chip ESD structures to protect integrated circuits against the ESD stress is a high priority in the semiconductor industry. The continuing advancement in semiconductor technology makes the ESD-induced failures even more prominent. In fact, many semiconductor companies worldwide are having difficulties in meeting the increasingly stringent ESD protection requirements for various electronics applications, and one can predict with certainty that the availability of effective and robust ESD protection solutions will become a critical and essential component to the well-being and commercialization of next-generation electronics.

An overview on the ESD sources, models, protection schemes, and testing will first be given in this talk. This is followed by the exploration and evaluation of ESD protection solutions in emerging Si nanowire, organic, and GaN technologies. Challenges and difficulties associated with the ESD design and optimization for these technologies will be addressed.

Jun J. Liou received the B.S. (honors), M.S., and Ph.D. degrees in electrical engineering from the University of Florida, Gainesville, in 1982, 1983, and 1987, respectively. In 1987, he joined the Department of Electrical and Computer Engineering at the University of Central Florida (UCF), Orlando, Florida where he is now the UCF Pegasus Distinguished Professor and Lockheed Martin St. Laurent Professor of Engineering. His current research interests are Micro/nanoelectronics computer-aided design, RF device modeling and simulation, and electrostatic discharge (ESD) protection design and simulation.

Dr. Liou holds 8 U.S. patents (4 more filed and pending), and has published 10 books (3 more under preparation), more than 270 journal papers (including 18 invited review articles), and more than 220 papers (including more than 90 keynote and invited papers) in international and national conference proceedings. He has been awarded more than \$14.0 million of research contracts and grants from federal agencies (i.e., NSF, DARPA, Navy, Air Force, NASA, NIST), state government, and industry (i.e., Semiconductor Research Corp., Intel Corp., Intersil Corp., Lucent Technologies, Alcatel Space, Conexant Systems, Texas Instruments, Fairchild Semiconductor, National Semiconductor, Analog Devices...) and has held consulting positions with research laboratories and companies in the United States, China, Japan, Taiwan, and Singapore. In addition, Dr. Liou has served as general chair or technical program chair for a large number of international conferences, regional editor (in USA, Canada and South America) of the Microelectronics Reliability journal, and guest editor of 7 special issues in the IEEE Journal of Emerging and Selected Topics in Circuits and Systems, Microelectronics Reliability, Solid-State Electronics, World Scientific Journal, and International Journal of Antennas and Propagation.

Dr. Liou received ten different awards on excellence in teaching and research from the University of Central Florida (UCF) and six different awards from the IEEE. He holds several honorary professorships. He has served as the IEEE EDS Vice-President of Regions/Chapters, IEEE EDS Treasurer, IEEE EDS Finance Committee Chair, Member of IEEE EDS Board of Governors, and Member of IEEE EDS Educational Activities Committee.

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