

Electromagnetic Compatibility / Vehicular Technology / Antennas & Propagation Chapter of the IEEE New Jersey Coast Section

PRESENTS

An Overview of Chip Level EMC Problem

By **Dr. Sergiu Radu**
IEEE Distinguished Lecturer
Principal Engineer at Sun Microsystems

April 22 from 6:00 to 7:30 pm at Eatontown Public Library
33 Broad Street, Eatontown, NJ 07724, (732) 389-2665

Presentation for Professional, Technical, Military, Students, Professors and the Public.
Free Admission. Pizza will be provided for registered attendees

Register at: <http://ewh.ieee.org/r1/njcoast/register.htm>

Abstract

The CPUs and the VLSI chips are the primary sources of electromagnetic noise in all electronic equipments. Reducing the electromagnetic noise at source level is usually the best and the most economical solution. The presentation discusses typical interference mechanisms associated with CPU/VLSI, as well as mitigation methods at die-level and package level. Among the aspects discussed are some power distribution issues, on-die decoupling, package capacitors, routing aspects, the impact of back-bias and forward-bias, and the impact of die-shrinks on the EMI performance of the VLSI chips.

Outline:

1. Introduction. EMI mechanisms for VLSI chips. 2. Heatsink effect for large VLSI chips. 3. Back-bias impact on EMI. 4. Integrated and separated power distribution. 5. Noise injection into the PCB. 6. Package level improvements for EMI. 7. Die level improvements for EMI. 8. Second harmonic emissions. 9. Power distribution issues. 10. Spread Spectrum Clock Generation. 11. Die-shrink impact on EMI. 12. Conclusions.

About the Speaker

Dr. Sergiu Radu is currently Principal Engineer at Sun Microsystems, leading the EMC Design group in Menlo Park, California. His role at Sun includes the development and implementation of architectural frameworks for EMC Design through design guidelines and best practices, and to provide forward looking solutions, root cause analysis of significant EMC problems, design methodologies involving software simulations and better prediction techniques. Sergiu Radu received a M.S. and a Ph.D. in Electrical Engineering (Electronics) from Technical University of Iasi, Romania, and until 1996 he was an Associate Professor at the same university, involved in Electromagnetic Compatibility teaching and research. From 1996 until 1998 he was a Visiting Scholar, as part of the Electromagnetic Compatibility Laboratory, at the University of Missouri-Rolla, currently Missouri University of Science and Technology. In 1998 he joined the EMC Engineering group at Sun Microsystems. Sergiu holds seven US patents for EMI reduction techniques in electronic systems and has many papers published in research journals, symposia, and magazines. He is a reviewer for IEEE Transactions on EMC. He is also a Distinguished Lecturer for the IEEE EMC Society.



Point of Contact Information:

Dr. Wei Su, Chairperson, (732) 427-6332
Frank Laslo, Treasurer, (732) 583-9194

Filomena Citarella, Vice-Chairperson, (732) 868-9130
Amit Mukhopadhyay, Secretary, (908) 582-2911