



20th International Zurich Symposium on Electromagnetic Compatibility

Topical Session on Tuesday, January 13, 13:00-18:00

Title **EMC Design, Optimization, Modeling and Simulation of Automotive Components**

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Abstract: Electronic control units for automotive applications require a high electromagnetic reliability with respect to low emission and high immunity. On the other hand, safety and engine management need increasing computation power which is based on continuous transistor miniaturization and bigger systems on chip, resulting in higher emission and lower immunity. The emerging design challenges can no more be solved by trial and error or believing in previous design methodologies. Electromagnetic models and simulation tools for ICs and complete systems are becoming mandatory, based on profound knowledge of physical effects. This topical session discusses advanced chip, package, system design and simulation methodologies for improved electromagnetic reliability.

Table of Contributions

Time	Title	Authors
13:00	Introduction	T.Steinecke, R.Weigel
13:20	Radiation reducing power supply configuration of microprocessors	G.Schubert
13:40	Derivation of design rules for application of low-cost two-layer packages for automotive IC-application	C.Maiello, P.Beeckman
14:00	Application of Circuit/Field Co-optimization Techniques to IEC 61967/62132 Test Boards	D.V.Ginste, H.Rogier, D. De Zutter, H.Pues
14:20	Scalable Equivalent Circuit Modelling of the EM Field Coupling to Microstrips in the TEM Cell	F.Vanhee, J.Catrysse, R.Gillon, G.Gielen
14:40	Coffee Break	
14:50	Inclusion of VHDL-AMS Models in Circuit-Based Automotive EMC Simulations Using Efficient Model Conversion Techniques	F.Frank, R.Weigel
15:10	Correlation of IC emission model size, accuracy and coverage of various noise coupling paths	J.Kruppa, T.Steinecke
15:30	Application of Order Reduction to Emission Models of Automotive Controllers	S.Ludwig, L.Radic-Weissenfeld, W.Mathis, W.John
15:50	Susceptibility of PMOS Transistors under High RF Excitations at Source Pin	O.Jovic, U.Stuermer, W.Wilkening, A.Baric, C.Maier
16:10	A novel EMI-immune Current Mirror Topology obtained by Genetic Evolution	J.Loecx, T.Deman, T.McConaghy, G.Gielen
16:30	Coffee Break	
16:40	Electromagnetic Immunity of Microcontrollers	T.Su, M.Unger, T.Steinecke, R.Weigel
17:00	Modeling of Substrate Coupling for DPI in Integrated Circuits	A.Alaeldine, R.Perdriau, M.Ramdani
17:20	Simulation Methodology for Bulk Current Injection	V.Geneiss, S.Palm
17:40	Comparison of Bulk Current Injection models	M.Deobarro, B.Vrignon, S.BenDhia, J.Shepherd