

Special Transients in EMC- Measurements, Simulations and Protection Concepts

Abstract:

In the field of electromagnetic compatibility (EMC), the understanding and management of transients have become crucial for the reliability and functionality of electronic systems. These transient phenomena, which include (among others) Electrostatic Discharge (ESD) effects and High Power Electromagnetic (HPEM) threats, pose significant challenges to both the integrity and performance of electronic devices. This short lecture aims to provide an overview of some concepts and methodologies involved in the analysis and mitigation of transients within the EMC domain. Beginning with a foundational understanding of transient phenomena, we also explore measurement techniques and the benefit of simulation models and their application. The lecture further examines some protection concepts against ESD effects and HPEM threats. The attendees will gain some practical insights about the “handling” of these challenging transients.



Prof. Dr.-Ing. Florian Brauer studied electrical engineering at the Hamburg University of Technology (TUHH) and subsequently completed his doctorate at the Institute for Measurement Technology and Electromagnetic Compatibility (EMC) at TUHH, focusing his research on protection concepts for complex systems against extreme electromagnetic disturbances (HPEM). Starting in 2011, he worked in industry, with positions at Jenoptik AG and Jungheinrich AG & Co. KG as a development engineer in the field of power electronics and EMC. At Jungheinrich, starting in 2016, Florian Brauer established an EMC laboratory for power electronic components and took over the responsibility for EMC Testing, Support and Consulting. Since February 2021, he has been a professor of the fundamentals of electrical engineering and high-frequency technology at the Kiel University of Applied Sciences (FH Kiel), where his actual research continues to focus on the field of EMC.