UMEMA 2015
Clermont - Ferrand
Saint - Nectaire
June 29th - July 1st

Uncertainty Modeling
for ElectroMagnetic Applications
Workshop sur la modélisation des incertidudes
pour les applications électromagnétiques

David Thomas (University of Nottingham, UK)

The characterisation and propagation of stochastic fields from printed circuit boards

The noisy electromagnetic emissions from high density circuit devices can be very complex. Efficient methods for characterising the emissions and their propagation are required. The challenge of measuring and characterizing the emissions is discussed and compared with traditional frequency domain methods. It is shown that radiated emissions from circuits can be very complex in both the time and frequency domain. A new numerical method for calculating the propagation of the stochastic fields based on ideas from wave chaos theory using Wigner-Weyl transformation and phase-space propagation techniques is discussed. It makes use of the connections between wave correlation functions and phase space densities and can directly provide statistical measures such as averages and field correlations. From analysis of propagation using the Wigner-Weyl transformation it is shown that new insights into the requirements for emission characterisation can be extracted.