

# Suggestion for a Short Course at the EUCAP 2011 in Rome

## 1: Course Header

a) Title:                    **EM Design of complex antennas**

b) ½ day course

c) Contact:

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## 2: Course Description

In the past years integration density of antennas and circuits in microwave multilayer modules reached a new level. Such integration density requires accurate full wave EM simulation techniques to create a reliable design within one or few design cycles. Due to the tremendous increase in PC hardware development and due to the enhancements of the software codes it is now possible to simulate complex antennas and large structures within short time.

This short course aims on preparing the participants to use state-of-the-art numerical EM software tools for the efficient design of antennas and multilayer modules. The course consists of lectures and interactive practical EM design work.

### Target Audience:

antenna engineers, researchers and students with basic RF knowledge

### Learning objectives:

Antenna design with respect to industrial requirements

Efficient usage of EM software for complex 3D structures

### Schedule:

#### - Lectures:

- o **Prof. Dr. Ingo Wolff:** Numerical EM Simulation using modern PC architecture: basic theory, efficient EM simulation (Multicore- and Cluster – computing)

- **Dr. Matthias Geissler:** Antenna design (antennas for mobile applications, planar antennas, phased array antennas)
- **Interactive Practical Training using EM Design Software:**
  - **W. Simon:** Efficient Array Antenna Design (basic design to realistic optimized 3D EM Model)

### **3: Instructors' biographies and competence relevant to the Short Course :**

**Prof. Dr. Ingo Wolff** studied Electrical Engineering at the Technical University Aachen, Germany. He received his Diplom-Engineer degree in 1964, his doctoral degree (Dr.-Ing.) in 1967 and his Habilitation degree in 1970, all from the Technical University in Aachen. From 1974 to 2003 he has been a full professor for Electromagnetic field Theory at the Duisburg University, Duisburg, Germany. In 1999 to 2002 he has been the elected president (rector) of the Duisburg University. Since 1992 he is (in parallel to his activities at the Duisburg University) the president of IMST GmbH, Kamp-Lintfort, Germany, a research and development company in wireless technologies.

Ingo Wolff is the author of more than 480 research publications in international journals and at international conferences. He is author of ten books on fundamental electrical engineering, electromagnetic field theory, microwave circuits and microwave techniques. He is a Life-Fellow of the IEEE, a member of the VDE/ITG (Germany) and the recipient of the Microwave Career Award of the IEEE MTT-Society. Since 2009 he is the chairman of the Information Technology Society (ITG) of the VDE.

#### **Dr. Matthias Geissler**

Matthias Geissler was born in Tauberbischofsheim, Germany in 1968. He received the M. Sc. Degree in Electrical engineering from the University of Karlsruhe, Germany, in 1995 and the Ph.D. degree from the University of Duisburg, Germany, in 2003.

In 1995 he joined IMST GmbH in Kamp-Lintfort, Germany and was engaged in the design of planar antennas and of antennas for mobile applications. His research focussed on fundamental limitations and exact characterisation of small antennas. Since 2003 he is heading the Department of Antennas & EM Modelling at IMST. His current research interests are 3D EM modelling and phased array design.

**Winfried Simon** was born in Aachen, Germany in 1970. He studied Electrical Engineering at the Duisburg University and received his Diploma Degree in 1997. He joined the IMST GmbH in Kamp-Lintfort in 1996, and is working as senior engineer in the department of Antennas & EM Modelling. His main fields of activities are 3D

electromagnetic simulations and the design of antennas, multilayer LTCC circuits, waveguide components and MEMS devices. He is author and co-author of more than 40 scientific publications and board member of the European School of Antennas (ESoA).