

## Workshop Proposal for the EuMC 2009

**Title:** Recent Advances on Microwave Applications of Metamaterial Concepts

**Organizers:**

- Prof. Ferran Martín, Universitat Autònoma de Barcelona, Spain (Ferran.Martin@uab.es)
- Prof. Lucio Vegni, University of “Roma Tre”, Italy (vegni@uniroma3.it).

**Duration:** Whole Day

### Abstract

The purpose of this Workshop is to point out and highlight the recent advances on the applications of Metamaterials and related concepts to Microwave Engineering. Since the “big-bang” of Metamaterials in 2000, there has been an intensive research activity towards the application of novel ideas inspired on the unique properties of Metamaterials in the field of microwave engineering and telecommunications. Thus, in the recent years, we have seen significant progress concerning microwave circuit, device and antenna design in terms of miniaturization, performance improvement, multi-functionality, efficiency, etc, and Metamaterial’s Technology is progressively achieving a level of maturity in Microwave Engineering that “real-life” applications and “penetration” to the market may be envisaged. The workshop will cover the fundamental aspects concerning the design of microwave circuits, devices and antennas based on Metamaterials and related concepts, with special emphasis on the novel achievements by the speakers and their respective Groups in the field. Novel artificial lines and their microwave applications, transmission line Metamaterials, Metamaterial analog signal processing, tunable components, filters, electrically small antennas and impedance surfaces, among others, are the main topics. All the Invited Speakers have significantly contributed to the progress of Metamaterial’s Technology applied to Microwave Engineering, and have international recognition at the highest level. Five books related to Metamaterials and complex media have been authored or co-authored by several of the workshop contributors. It is also the purpose of this workshop to discuss future trends and directions in the field.

### List of Invited Speakers (all have confirmed acceptance) and talk titles

- **Recent advances in composite right/left-handed Metamaterial structures**  
Tatsuo Itoh, University of California Los Angeles (UCLA), USA
- **Recent advances in transmission-line Metamaterials (TL-MTMs) and their applications**  
George V. Eleftheriades, University of Toronto, Canada
- **Metamaterial analog signal processing**  
Christophe Caloz, École Polytechnique Montréal, Canada.
- **Recent advances on resonant type metamaterial transmission lines and applications**  
Ferran Martín and Jordi Bonache, Universitat Autònoma de Barcelona, Spain.
- **Tunable multi-band microwave resonators and filters based on cascaded artificial transmission lines with positive and negative dispersion.**  
Irina Vendik, St.-Petersburg Electrotechnical University, Russia
- **Passive and active Metamaterial constructs and their impact on achieving high efficiency, large bandwidth, electrically small antennas**  
Richard Ziolkowski, University of Arizona, USA
- **Miniaturized and multifunctional microwave antennas based on metamaterials**  
Filiberto Bilotti and Lucio Vegni, University “Roma Tre”, Italy
- **Recent advances in artificial high impedance surfaces and applications**  
Olli Luukkonen, Constantin Simovski, and Sergei Tretyakov, Helsinki University of Technology, Finland

**Expected attendance:** 60-70 persons, on account of the increasing number of researchers involved in the field worldwide, and the experience of one of the organizers (F. Martín), who has organized similar workshops in the 2005 and 2007 IEEE-MTT-S Int’l Microwave Symp.