

**Duration: 08:30 – 17:50**

**Room:**

**WF-06**

**Advanced Solutions for Near-field and Far-field Wireless Charging**

**Organisers:**

Alessandra Costanzo<sup>1</sup>, Diego Masotti<sup>1</sup>

<sup>1</sup>University of Bologna

**Abstract**

Many researchers are currently focusing their activities on the challenging task of wireless recharging the inexpensive and wherever distributed computing devices, representing the so-called “pervasive intelligence”.

This full-day workshop is aimed at providing an overview of the most recent promising approaches that have been developed to enhance both the near- and the far-field Wireless Power Transfer performances. Signal, circuit and system design solutions will be considered and their possible integration will be discussed. Engineering requirements and design challenges for making wireless power a reliable solution for pervasive distributed sensors are deeply investigated.

The investigation will be carried out in a twofold manner: (i) from the RF source point of view, by properly synthesizing the transferred signal shape for RF-to-dc efficiency maximization (e.g. multi-sine or delayed-pulsed signals) or by resorting to advanced radiating architectures, such as leaky-wave antennas, and to specific optimization rules in their design; (ii) from the receiving antenna/coil point of view, by considering realistic and unconventional scenarios (e.g. sliding coils).

All the talks will be enriched with the most recent results on the prototyping and experimentation, in the wide range of areas covered by the workshop spanning sensors and devices, RF design for wireless power and wireless communications.

Lecturers presentations will be alternated with periods of open discussions to engage the audience and to discuss next exploitable research areas in this field.

***Programme***

**Communications and Signal Design Advances in Wireless Power Transmission**

Bruno Clercx<sup>1</sup>

<sup>1</sup>Imperial College (London)

**How to Optimize the Overall Efficiency in Far Field Wireless Power Transmission**

Nuno Borges Carvalho<sup>1</sup>

<sup>1</sup>Instituto de Telecomunicações, Universidade de Aveiro

**Increasing Received Power Levels in Near- and Far-field WPT**

Huib Visser<sup>1</sup>

<sup>1</sup>Imec/ Holst Centre, Eindhoven

**Dynamic Far-field Wireless Charging in Wireless Sensor Networks using Frequency-scanning Beaming**

José Luis Gómez Tornero<sup>1</sup>

<sup>1</sup>Technical University of Cartagena

**Array Antenna Designs for Radio-Waves Wireless Power Transfer**

Andrea Massa<sup>1</sup>, Paolo Rocca<sup>1</sup>

<sup>1</sup>University of Trento

**Battery-free IoT Sensor Network Field Experiment in Japan**

Naoki Shinohara<sup>1</sup>

<sup>1</sup>Kyoto University

**Energizing UHF-RFID Passive Tags in Unconventional Scenarios**

Andrea Michel<sup>1</sup>, Marcos R. Pino<sup>2</sup>, Manuel Arrebola<sup>2</sup>, Paolo Nepa<sup>1</sup>

<sup>1</sup>University of Pisa, <sup>2</sup>Universidad de Oviedo

**Position-independent Wireless Power Transfer in Sliding Inductive Links**

Alessandra Costanzo<sup>1</sup>, Diego Masotti<sup>1</sup>, Alex Pacini<sup>1</sup>

<sup>1</sup>University of Bologna