

# Modulated Metasurface Antennas

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10 April 2014 – 09:00 – 10:40

Room Oceania

The new concept of *metasurface antennas* is based on the idea to control the field supported and radiated by an artificial surface excited by a coplanar feed by properly modulating the equivalent surface impedance. At microwave frequencies, metasurfaces can be realized by printing a dense periodic texture of electrically small elements on a grounded slab, or by etching electrically small slots on a ground plane. A modulated metasurface can be obtained by gradually changing the geometry of contiguous cells, while maintaining the period unchanged; due to the small dimensions of the unit cell, the equivalent impedance variation can be assumed to be almost continuous. By adjusting the modulation it is possible to control the propagation constant of the electromagnetic wave supported by the metasurface so as to tailor the radiation pattern. This way, a high degree of flexibility is obtained in the design of simple, low profile and low cost antennas.

The workshop will be based on a number of contributions and on an open discussion with the aim of:

- Defining the motivations and the background;
- Providing an overview of the current state of the art along with applicative examples;
- Discussing future perspectives, perceived needs and possible ways forward.
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## Organisers:

Stefano Maci (University of Siena) - Chairman

E. Martini (University of Siena)

A. Freni (University of Florence)

P. De Vita (Ingegneria Dei Sistemi, IDS)

## Programme:

Enrica Martini, University of Siena and Wave Up Srl  
“Working principles and design criteria”

Marco Sabbadini, European Space Agency  
“Potential for space applications”

Paolo De Vita, Ingegneria dei Sistemi (IDS)  
“Efficient analysis of modulated metasurface antennas”

Professor Angelo Freni, University of Florence  
“New design approach for RLSA antennas: from classic array to metasurface”

Open discussion