
SEMINAR

Self-Adapting Phased-Arrays Antennas for Strongly Deformed Surfaces

Speaker: Dr. Giulia Mansutti
(University of Padova, Italy)

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Note: The seminar will be held in English

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Phased-array antennas placed on complex surfaces have been gaining more and more attention in recent years as a method to increase coverage of modern wireless communication systems (e.g., millimeter waves antennas used for wearable devices or vehicle-to-vehicle communications and many other novel 5G applications). These antennas must be capable of adapting to surfaces that change shape in time, thus raising the issue of keeping the radiation pattern undistorted when the surface on which the array is placed is deformed. A technique called “the projection method” provides a powerful, simple and cheap solution to achieve adaptability, i.e., to recover the radiation pattern of the deformed array.

In our work we have proved the effectiveness of the projection method by exploiting it in order to recover the pattern of various array antennas placed on different complex surfaces: a 1x4 and a 1x6 patch antennas arrays working at 2.45GHz placed on an S- and Z-shaped surfaces, a 4x4 patch antennas array placed on a strongly deformed surface (i.e. a doubly curved surface). The projection method has proved to be effective as a pattern recovery tool, especially with respect to its capability of restoring the main lobe direction and full width at half maximum and in suppressing side lobe levels. Throughout our work analytical results are shown to be in excellent agreement with those obtained through full-wave numerical simulations and measurements.

• About the Speaker

Giulia Mansutti has just started the second year of her Ph.D. in Information Engineering at the University of Padova, Italy. Her research is mainly focused on antennas and electromagnetic propagation with a particular interest in self-adapting conformal phased-array antennas and plasma antennas. In 2015 she received the M.Sc. in Telecommunications Engineering cum laude from the University of Padova (Italy) with a thesis on self-adapting phased-array antennas. During the second year of her Master of Science (2014) she spent six months as an Erasmus student at the Polytechnic University of Catalonia (UPC) in Barcelona, Spain. In 2013 she received the B.Sc. in Information Engineering cum laude from the University of Padova (Italy), with a thesis on energy management policies in Energy Harvesting Devices.