

## IHPC Computational Science and Engineering Seminar

<b>Seminar Title:</b>	Antenna Array Synthesis - Innovative Methods and New-Generation Architectures
<b>Speaker:</b>	Prof. Andrea MASSA, Professor of ELEDIA Research Center@DISI, University of Trento; Digiteo Chair at Laboratoire des Signaux et Systèmes
<b>Date&amp;Time:</b>	Tuesday, 6 January 2015, 10:00 am to 12.00 pm
<b>Venue:</b>	Connexis North Tower, Level 15, Seminar Room
<b>Host in IHPC:</b>	Dr Zhong Yu, 6419 1158
<b>Abstract:</b>	<p>Antenna arrays are a key-technology in several Electromagnetics applicative scenarios, including satellite and ground wireless communications, MIMO systems, remote sensing, biomedical imaging, radar, and radio-astronomy.</p> <p>Because of their wide range of application, the large number of degrees of freedom at hand (e.g., type, position, and excitation of each radiating element), the available architectures (fully populated, thinned, clustered, etc.), and the possible objectives (maximum directivity, minimum sidelobes, maximum beam efficiency, etc.), the synthesis of arrays turns out to be a complex task which cannot be tackled by a single methodology. Despite a wide heterogeneity, most of the synthesis approaches share a common theoretical framework which is of paramount importance for all engineers and students interested in such a topic.</p> <p>The objective of the seminar is therefore to provide the attendees some indications on the fundamentals of Antenna Array synthesis, starting from intuitive explanations to rigorous mathematical and methodological insights about their behavior and design. Recent synthesis methodologies will be finally reviewed with particular emphasis on innovative architectures for large arrays.</p>
<b>Biography:</b>	<p>Andrea Massa received the “laurea” degree in Electronic Engineering from the University of Genoa, Genoa, Italy, in 1992 and Ph.D. degree in EECS from the same university in 1996. From 1997 to 1999, he was an Assistant Professor of Electromagnetic Fields at the Department of Biophysical and Electronic Engineering (University of Genoa). From 2001 to 2004, he was an Associate Professor at the University of Trento. Since 2005, he has been a Full Professor of Electromagnetic Fields at the University of Trento, where he currently teaches electromagnetic fields, inverse scattering techniques, antennas and wireless communications, wireless services and devices, and optimization techniques. At present, Prof. Massa is the director of the ELEDIA Research Center at the University of Trento with a staff of more than 25 researchers. Moreover, he is Adjunct Professor at Penn State University (USA) and holder of a Senior DigiTEo Chair at SUPELEC (Paris – France) and he has been Visiting Professor at the Missouri University of Science and Technology (USA), the Nagasaki University (Japan), the University of Paris Sud (France), and the Kumamoto University (Japan).</p> <p>Prof. Massa serves as Associate Editor of the “IEEE Transaction on Antennas and Propagation” and Associate Editor of the “International Journal of Microwave and Wireless Technologies” and he is member of the Editorial Board of the “Journal of Electromagnetic Waves and Applications”, a permanent member of the “PIERS Technical Committee” and of the “EuMW Technical Committee”, and a ESoA member. He has been appointed in the Scientific Board of the “Società Italiana di Elettromagnetismo (SIEm)” and elected in the Scientific Board of the Interuniversity National Center for Telecommunications (CNIT). Recently Prof. Massa has been appointed by the National Agency for the Evaluation of the University System and National Research (ANVUR) as a member of the Recognized Expert Evaluation Group (Area 09, ‘Industrial and Information Engineering’) for the evaluation of the researches at the Italian University and Research Center. Moreover, he has been appointed as the Italian Member of the Management Committee of the COST Action TU1208 “Civil Engineering Applications of Ground Penetrating Radar”. His research</p>

activities are mainly concerned with direct and inverse scattering problems, propagation in complex and random media, analysis/synthesis of antenna systems and large arrays, design/applications of WSNs, cross-layer optimization and planning of wireless/RF systems, semantic wireless technologies, material-by-design (metamaterials and reconfigurable-materials), and theory/applications of optimization techniques to engineering problems (telecommunications, medicine, and biology).

Prof. Massa published more than 500 scientific publications among which about 250 on international journals and more than 270 in international conferences where he presented more than 50 invited contributions. He has organized 45 scientific sessions in international conferences and has participated to several technological projects in the European framework (20 EU Projects) as well as at the national and local level with national agencies (75 Projects/Grants).

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