



**SEMINAR:**

## **Antenna Diagnostics and Inverse Scattering**

**Speaker:** Dr. Yuri Álvarez López

*(University of Oviedo, Spain)*

**Date:** 17/06/2013 @ 3:00 PM

**Location:** Room Ofek – Polo Scientifico F. Ferrari - Povo

**Note:** The seminar will be held in English

**Contact:** Dr. Paolo Rocca ([paolo.rocca@disi.unitn.it](mailto:paolo.rocca@disi.unitn.it))

The presence of electrical and/or mechanical manufacturing errors may affect seriously the antenna performance. Non-invasive techniques like the study of the near-field close to the prototype surface allow the detection and quantification of these antenna design anomalies. In the last years, different methods for antenna diagnostics developed from near field-to-near field/far field transformation techniques have been implemented. The goal of these antenna diagnostics methods is the detection of the antenna manufacturing errors from the study of the amplitude and phase distortion in the reconstructed field close to the antenna surface. The Sources Reconstruction Method (SRM) is an antenna diagnostics technique based on the integral equations relating the sources with the radiated fields jointly the electromagnetic Equivalence Principe. The SRM goal is to characterize a set of electromagnetic sources through an equivalent currents distribution so that both of them radiate the same fields outside the sources domain. The fact of being the SRM an integral-equation-based technique implies a considerable computational cost. Hence, acceleration techniques have been introduced allowing an efficient utilization of the computational resources, and consequently, the capability of solving complex problems. Finally, it will be explained how the SRM can be applied beyond antenna diagnostics for inverse scattering problems, enabling imaging capabilities.

- **About the Speaker**

**Yuri Álvarez** (S'06–M'09) was born in Langreo, Spain, in 1983. He received the M.S. and Ph.D. degrees in telecommunication engineering by the Universidad de Oviedo, Spain, in 2006 and 2009, respectively.

He was a Visiting Scholar with the Department of Electrical Engineering and Computer Science, Syracuse University, Syracuse, NY, in 2006 and 2008 and a Visiting Postdoctoral Researcher with the Gordon Center for Subsurface Sensing and Imaging Systems, Northeastern University, Boston, MA, in 2011, 2012 and 2013. He is currently an Assistant Professor with the Area of Signal Theory and Communications (TSC), Department of Electrical Engineering, University of Oviedo, Gijón, Spain. His interests and research studies are focused on the reconstruction of electromagnetic sources from field measurements, antenna measurement techniques, RF techniques for indoor location, and inverse scattering and imaging techniques.

Dr. Álvarez was the recipient of the 2006 University of Oviedo M.S. Award to the Best Telecommunication Engineer and the 2011 Regional and National Awards to the Best Ph.D. Thesis on Telecommunication Engineering ("The Sources Reconstruction Method for the Diagnostics and Characterization of Radiating Systems").

- **Related References**

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