



## **Ana V. Alejos**

### **Associate Professor**

PhD in Telecommunication engineer

### **Education**

#### **2009 Marie Curie International Outgoing Fellowship (EU People Program 2008).**

University of Vigo – New Mexico State University.

Research topics: Adaptive noise UWB radar for propagation through dispersive media applications.

#### **2006 Ph. D. Electrical Engineering.**

Universidade de Vigo.

E.T.S.E. de Telecomunicación, Vigo, Spain.

#### **Ph. D: Thesis: Characterization and Modelling of the Radio Channel for Broadband Multimedia Systems at 40GHz.**

Research Advisor: Manuel García Sánchez, Professor at University of Vigo, Spain.

Dissertation Topic:

Along the PhD Thesis, a complete study was performed about the characteristics of the radio channel at 40GHz. In this research work all the main propagation effects that can affect the correct performance of a Multimedia Wireless System (MWS) link, which frequency band covers from 40.5 to 43.5GHz, were included.

The great objective of the PhD Thesis has been the wideband sounding of radio channel in the 40GHz band. In order to cover this point, a measurement system was developed based in the STGCC scheme, but introducing changes to the classical configuration to improve the performance of this kind of sounders. Millimetre wave propagation have been studied both in outdoor and indoor conditions.

The characterization of site shielding became another great objective of the PhD Thesis. All propagation mechanisms have been characterized: transmission through, diffraction over and around, and reflection from obstacles, but also attenuation through vegetation.

There are not many references related to any of these characterizations in the 40GHz band. So, the results achieved are of great interest.

### **2000 M.S. Electrical Engineering (Telecommunication Engineering)**

Universidade de Vigo

E.T.S.E. de Telecomunicación, Vigo, Spain

Master's Thesis: Design and development of a Digital System for Auction and Shutdown.

Research Advisor: Javier González Castaño, Professor at University of Vigo, Spain.

Ericsson Award by the Spanish Association of Electrical Engineers (COIT) in 2002 as the best Multimedia Wireless Project.

## **Employment**

### **Assistant Professor August 2004 – Present**

Responsible of the courses: Radiocomunicación, Teledetección, Radiodifusión and Radiodeterminación in the Electrical Engineering program. Escuela Técnica Superior de Ingenieros de Telecomunicación, University of Vigo (Vigo, Spain).

### **Research Engineer August 2000 – Present**

Have performed and continue to perform all kind of experiments in various frequency bands, extending from AM to 60GHz.

## **Research Projects**

- Ultrawideband complementary pseudorandom noise waveforms for image enhancement and better clutter suppression (Air Force Office of Scientific Research, 2009)
- Farm to Fork (EU, 7th Framework Programme, ICT, 2009)
- Research in ground penetrating radar based on phase binary complementary series (Golay codes).
  - Location and detection system based in Direction of Arrival estimation techniques (2006-Present).
  - Development of a location and alarm system for coastal ships (2005-Present).
  - Propagation impairments mitigation techniques for broadband WLANs (2005-Present).
  - Vegetal barriers for electromagnetic pollution reduction in sensitive areas (2005-Present).

- Measurement of quality indicators in an experimental digital FM-transmitter (2005).
- Verification of electromagnetic radiation levels and inventory of radio stations in Domaio, Spain (2005).
- Diagnosis of antennas and material characterization by means of tools of radar images formation (2005).
- Study of electromagnetic pollution levels in the surroundings of transmitter antennas: volumes of protection and time variability analysis (2004-2005).
- UMTS urban picocell (2004).
- Multidisciplinary strategies in technologies of the information and communications: collaboration in radiation measurement systems (2003-2004).
- Beamforming antennas for communication systems limited by interference (2002-2003).
- Radio access for interactive multimedia services (2001-2002).
- Measurement, characterization and emulation of impulsive noise in radiofrequency channels (2000-2001).
- Mobile disabler system installation for a court at Palma de Mallorca, Spain (2002).
- Measurement and characterization of the effects caused by the camouflage of antennas on the radiation pattern in cells of the UMTS band (2001).
- Development of value added applications on technologies of mobile communications: computerized management of auction and shutdown (1999-2000).
- Development and implementation of a disabler system of mobile telephones in the bands of 900MHz and 1800MHz (1998-1999).

## **Internships**

### **Postdoctoral Institution**

New Mexico State University.

Klipsch School of Electrical and Computer Engineering.

EMAG Department.

Advisors: Dr. Russell Jedlicka, Dr. Muhammed Dawood.

Invited Researcher for Academic year 2006/07.

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