

Title:**Millimeter-waves wireless communications****Speaker:****Dajana Cassioli**, Università degli Studi dell'Aquila, L'Aquila, Italy**Abstract:**

Millimeter-waves wireless technologies are nowadays valuable candidates for multi-Gbps wireless systems for both short range indoor communications, vehicular communications and 5G cellular mobile systems. At 60 GHz, up to 7 GHz unlicensed spectrum is available in many countries. Several emerging wireless standards will exploit 60 GHz to provide high data rate media streaming and rapid data transfer. The *ERC Starting Grant VISION* is investigating the potential of ultra-wideband (UWB) 60 GHz radios when used in the context of Wireless *Multimedia* Sensor Networks (WMSNs). Targeting WMSNs based on UWB 60 GHz radios entails different challenges than other systems and networks due to differences in the channel, circuits, antennas, algorithms, and protocols. VISION's objectives range from the definition of a comprehensive and unified model for 60 GHz communication channels, to the design of novel architectures for WMSNs based on UWB 60 GHz radios and IP technology, to the development of innovative middleware and techniques providing full system's context-awareness and adaptability to guarantee quality of service (QoS) for different applications and optimal usage of resources (e.g., low-power operation).

This talk will provide an overview of 60 GHz wireless communication systems, including several commercial standards, like, e.g., IEEE 802.15.3c and IEEE 802.11ad, and will show how the VISION project will exploit the broadband capacity, miniaturized devices and reduced interference operation offered by 60 GHz radios to provide real-time 3D video sensing. It will discuss recent VISION's results concurring to the definition of the unified 60 GHz channel model. The extensive propagation measurement campaign performed within VISION at the University of L'Aquila in different environments over the bands 54-59 GHz and 61-66 GHz will be presented and the most recent findings about the characteristics of the 60 GHz channel will be discussed. Finally, the challenges ahead along the path towards the future high-frequency communications scenario will be highlighted.

Speaker Bio:

Dajana Cassioli is currently *Assistant Professor* at the Department of Information Engineering, Computer Science and Mathematics of the University of L'Aquila, Italy. Her main research interests are in the field of *wireless communication technologies, UWB and 60 GHz radios, wireless multimedia sensor networks, and IP networking*. In 2010 she was awarded one of the *European Research Council (ERC) Starting Grants* in the domain of Physical Sciences and Engineering for the project VISION (Video-oriented UWB-based Intelligent Ubiquitous Sensing). She participated in numerous European Projects since 2002. Since 2009 she serves as an *Expert* for the *Review and Evaluation of IST Fp7 European Projects* of the *European Commission*. She is the *Chair of the IEEE Joint VT06/COM19 Italy Chapter*. She is a *Senior Member of IEEE*, a Member of Communications Society and Computer Society, and a Member of the ACM. She is author and co-author of several of publications on prestigious International Journals and Conferences. She served as a member of the Technical Program Committee of many International Conferences, like *ICC, PIMRC, VTC, GLOBECOM*. In 2000, she was a Summer Manager with the *Wireless Systems Research Dep. at AT&T Labs-Research, NJ, USA*, working on statistical models for UWB channels. She contributed to the *IEEE 802.15.4 standard channel model* in 2005.