

CALL FOR PAPERS

ELMAR 2011 Special Session on New Frontiers in Antenna System Design

Summary:

Mobile and wireless communications today represent an important part of modern everyday life and as such play one of the key roles in the economic development and wellbeing of citizens. Performances of these wireless systems and networks are dependant on many technologies working together. Among them, antenna technologies are present at the very basic physical layer ensuring the quality of the radio link. Historically, antennas were very simple elements connected directly through coaxial or waveguide connections to the radio equipment, with the exception of large and expensive military radars. Antenna technologies have developed significantly from those simple elements and today they include and allow:

- active antennas, i.e. array antennas with amplifiers connected to each radiator
- integrated antennas, i.e. the active circuits are directly integrated in the radiator
- adaptive antennas, i.e. antennas that can change their antenna pattern adaptively
- diversity, i.e. the antenna can produce two or more independent links
- digital beamforming, i.e. the signals to/from each element are digitised before combination.

Increasing demands placed before antenna systems, imposed by new applications and the congestion of the frequency spectrum, continuously push antenna technology forward and increase its capabilities. However, increasing complexity of the antenna systems has significantly increased its value, whilst active microwave circuits and digital hardware have become cheaper and thus a smaller part in the overall equipment cost. Due to this, and in order for the antenna technology to keep up with still increasing demands of the communications market, radically new technologies and ideas need to be developed.

The topics for this special session should cover:

1. New electromagnetic structures suitable for advanced antenna design
2. New modeling techniques in electromagnetic theory used for the analysis, synthesis and optimization of advanced antenna systems
3. New measurement and benchmarking techniques in antennas
4. Promotion of research mobility.

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