

DBC02: Signal Processing Antenna

Thursday, August 21 13:40-15:40, Room #21

Session Chairs: Yvan Duroc, Alexander Yarovoy, Yuan Yao

For many RF designers, the antenna is the most important device and its performance will determine the overall characteristics of systems. With the huge development of wireless communication systems and their applications in many domains, the evolution of the concept of the antenna, both in terms of usage and model, becomes necessary. This session will focus on the evolution of the antenna function, which increasingly integrates active elements, electronics, sensors and signal processing. These new capabilities are transforming the original passive antenna to signal processing antenna (SPA). Signal processing antennas combine a complex-antenna-structure, e.g., an array with signal-processing capabilities or controlled reconfigurable antenna system in order to enable adaptive and knowledge aided processing in space and time. By sensing the spatial and spectral properties of the electromagnetic environment SPAs can adaptively optimize the spatial and temporal signal processing operations in order to enhance system relevant performance metrics like the spectral efficiency in wireless communication systems, the probability of detection in radar or the enhancement of wireless security. Furthermore, limits of adaptive SPAs can be overcome by combining prior knowledge with measured data (knowledge-aided processing) and using novel approaches from automatic control theory.

13:40 DBC02.1 ROBUST MINIMUM VARIANCE BEAMFORMING

Q. Gao¹, W. Shi², S. Sun¹

¹China Academy of Telecommunication Technology, Beijing, China

²Automation, Tsinghua University, Beijing, China

14:00 DBC02.2 RANGE-ANGLE PERFORMANCES OF COHERENT MIMO LONG-RANGE RADARS

F. Le Chevalier

Delft University of Technology, Delft, Netherlands

14:20 DBC02.3 AUTO-FOCUSING UWB ARRAY RADAR IMAGING OF A TARGET IN UNKNOWN MOTION USING MULLER AND BUFFINGTON METRICS AND CROSS-RANGE BLURRING

T. Sakamoto¹, T. Sato¹, P. Aubry², A. Yarovoy²

¹Graduate School of Informatics, Kyoto University, Kyoto, Japan

²Microwave Sensing, Signals and Systems, Delft University of Technology, Delft, the Netherlands

14:40 DBC02.4 INTERFERENCE CANCELLATION AND POLARIZATION SUPPRESSION METHOD BASED ON THE PATTERN DIFFERENCE BETWEEN SUM-AND-DIFFERENCE BEAMS IN MONO-PULSE RADAR

H. Dai, Z. Huang, H. Lei, L. Wang

State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System, luoyang, Henan, China

15:00 DBC02.5 MODELING AND EVALUATION ON MULTI ANTENNA CHARACTERISTICS OF MOBILE TERMINAL

C. Wang, S. Xiao, R. Cai, R. Meng, J. Chen, W. Wang

Beijing University of Posts & Telecommunications, Beijing, China

15:20 DBC02.6  MINIMUM REDUNDANCY MIMO ARRAY DESIGN USING CYCLIC PERMUTATION OF PERMUTATION OF PERFECT DISTANCE (CPPD)

J. Dong, F. Liu, Y. Jiang, B. Hu, R. Shi

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