

Special Issue on Advances in Antenna Array Processing for Radar 2014

Call for Papers

Antenna arrays are now an established technology for radar, communication, and sonar equipment. However, the links between the different techniques are often not recognized. Processing of array data is done digitally as close to the element as possible. This has created a realm of possibilities of building array hardware structures and of multichannel processing schemes. Examples are not only many algorithms of nonlinear wave parameter estimation and adaptive interference suppression but also array configurations with sparse arrays and various types of subarrays. These configurations constitute special solutions of a hardware compromise between analog and digital processing. Furthermore, we have methods involving higher order statistics and methods of compressed sensing, which both lead to virtual arrays of larger sizes and potentially better resolution properties. Additionally, there can be combinations of spatial and temporal processing (in particular space-time adaptive processing, STAP).

The purpose of this special issue is to bring together these antenna and processing related aspects, linking the theoretical possibilities with the operational aspects and hardware constraints. Potential topics include, but are not limited to:

- Array pattern synthesis and sidelobe reduction
- Adaptive interference suppression and sidelobe blanking
- Slow- and fast-time STAP
- Direction finding, monopulse, and superresolution methods
- Detection with adaptive array
- Array configurations and subarray concepts
- Array processing for SAR, MIMO radar, passive radar, and ECM/ESM sensors
- Array processing for conformal array
- Autocalibration and compensation of antenna array
- Emerging techniques and innovative concepts

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