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IEEE Journal of Selected Topics in Signal processing

Special Issue on Advances in Time/Frequency Modulated Array Signal Processing

Aims and Scope

In recent years, time/frequency modulated array techniques have developed beyond the focus of antenna design to address promising applications in radar, navigation, communications, microwave imaging, and biomedical engineering. Specifically, a time modulated array (TMA), by connecting and disconnecting the elements from the feed network, can create a beampattern with low sidelobes. Two typical frequency modulated arrays are the frequency diverse array (FDA) and multiple-input multiple-output (MIMO). The former produces a range-dependent pattern, whereas the latter provides increased degrees-of-freedom.

There are still many technical challenges for time/frequency modulated arrays, which include: (a) optimization of array parameters involving waveform design is required to further assess their affects on performance; (b) although linear array geometry is predominantly considered in the literature, theoretical analysis and applications of time/frequency modulated arrays should expose possible benefits of alternative geometries, and direct further studies toward advanced concepts for novel array structures; and (c) optimal time/frequency modulated array signal processing algorithms should be devised to address the issues of range, time, angle, and frequency dependent responses for target localization and dimensionality reduction. There is thus a huge demand for developing innovative, effective and efficient signal processing algorithms for time/frequency modulated array techniques and systems.

This special issue will touch on a wide variety of signal processing topics for optimal time/frequency modulated array design and their potential applications. It aims to compile relevant research contributions from various disciplines including signal processing, radar, wireless communications, antenna array design, geophysics, biomedical engineering, and applied mathematics to foster future research in this emerging area.

Topics of Interest include (but not limited to):

Signal Processing for Optimal Array Design	**Potential Applications**
- Space, time / range and frequency signal processing	- Cognitive radar / communications
- Dimensionality reduction algorithms	- Physical security communications
- Range-coupled adaptive signal processing	- Low probability of identification (LPI) radar
- Biomimetic spatial processing	- Adaptive interference/clutter suppression
- Array manifold analysis	- Ground moving target indication
- Low-sidelobe beampattern synthesis	- Microwave imaging
- Array parameter optimization and design	- Source detection and estimation
- Multidimensional waveform design / optimization	- Target localization and tracking
- Information fusion and knowledge extraction	- MIMO / hybrid array / stealth radar
- Array calibration and diagnosis	- Biomedical engineering

Important Dates:

Manuscript submission due: 15 April 2016 (extended)
First review completed: 30 June 2016
Revised manuscript due: 15 August 2016
Second review completed: 1 October 2016
Final manuscript due: 15 November 2016
Publication: March 2017

Prospective authors should visit http://www.signalprocessingsociety.org/publications/periodicals/jstsp/ for information on paper submission. Manuscripts should be submitted at http://mc.manuscriptcentral.com/jstsp-ieee.

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