

## Call for Papers

### IEEE Signal Processing Society

#### Special Issue on Adaptive Waveform Design for Agile Sensing and Communication

With the available EM spectrum becoming increasingly scarce, a crucial need in sensing applications is one of multiple sensing, multi-modal sensor operation, and multi-function processing from diverse platforms. Specific application areas of interest include sensing, communications, countermeasures, and network centric warfare. End-to-end optimization for sensor, communication or intelligence gathering system using diverse waveforms includes selection of waveforms in real-time using all available information. Waveform diverse systems must exploit information pertaining to the propagation/scattering environment, transmit and receive antennas/arrays and their motion, targets and clutter, and communication signals. Several aspects of this information evolve with time. Therefore, waveform generation resources have to be optimally and adaptively integrated with electromagnetic phenomenology and other available knowledge sources using physical, experimental, and data-dependent approaches. Sensor fusion has a potential for enhanced performance in difficult operational scenarios. However, this potential was not fully realized in the past. In this context, it becomes imperative to associate data from multiple sensors with suitable models. The association problem becomes especially difficult when multiple platforms are used and when strong clutter precludes the detection of targets by individual sensors. Concurrent detection and tracking, or concurrent detection, tracking and fusion have to be employed. These problems are the focus of a number of supported research efforts worldwide.

The goal of this special issue is to feature recent advances in the area of adaptive waveform design for agile sensing and communication as well as remaining challenges. The advances can include novel physical, mathematical, and computational methods to combat important signal processing challenges arising on account of large system dimensionality and stressful conditions of sample support and onerous computational requirements. We invite original research contributions in all areas relevant to the field. In particular, paper submissions are encouraged on topics for adaptive waveform design, diversity and configuration in:

- Radar/sonar systems, dispersive environments with clutter
- Target tracking/detection, countermeasures, bi-static/multi-static operations, multiuser detection
- Optimization techniques
- Passive sensing operations, target-adaptive matched filtering
- Interferometry, optical systems, multi-function operations, impulsive systems, tomography and SAR
- Polarimetry, net-centric laser systems, band sharing, STAP
- MIMO systems, channel estimation/equalization, interference suppression, ultra-wideband, modulation and multiple-access schemes
- Emerging computational methods

#### Submission procedure

This special issue is slated to appear in a new publication currently in the IEEE approval stages. In the event approval is delayed, the special issue will not be delayed. The Society has agreed to publish this special issue timely and in a manner befitting its topical importance, as a separate issue with its own covers, that would be mailed polybagged with an issue of the *IEEE Transactions on Signal Processing*. Prospective authors can find submission information at <http://www.ece.byu.edu/jstsp>. Submitted manuscripts should not have been previously published nor be currently under consideration for publication elsewhere. The manuscripts will undergo peer review process.

Manuscript submissions due:	September 1, 2006
First round of reviews completed:	November 15, 2006
Revised manuscripts due:	January 1, 2007
Second round of reviews completed:	February 15, 2007
Final manuscripts due:	March 1, 2007

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