

EURASIP Journal on Advances in Signal Processing

Special Issue on Advanced Distributed Wireless Communication Techniques – Theory and Practice

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In order to keep up with the continuously growing demand for high-rate wireless transmission, the last decade has witnessed extensive efforts and innovative solutions for enhancing the capacity and reliability of wireless communication systems. Concerning the physical layer, multiple-antenna techniques were shown to offer both diversity and multiplexing gains and were thus readily adopted by standardization bodies and by the wireless industry. In addition, relaying techniques bear the potential of increasing the coverage area of wireless networks and alleviating the impact of link failures. In distributed wireless communication systems these techniques have been merged, as multiple antennas are no longer colocated, but distributed over several network nodes. By this means, even single-antenna nodes with small form factors can potentially enjoy the benefits of multiple antennas – in addition to the benefits of conventional relaying. Recently, novel ideas from wired networks have started to blend into these concepts in the form of physical-layer network coding schemes. Here, encoding functions are realized by cooperating wireless nodes rather than by a single encoder, as traditionally employed in point-to-point links. By this means, the reliability and throughput of wireless networks can be further improved. This special issue aims to capture the current state of the art of advanced distributed wireless communication techniques with special focus on physical-layer and implementation aspects. Topics of interest include, but are not limited to

- ▶ Distributed antenna schemes, e.g.,
 - ▶ Distributed space-time coding schemes
 - ▶ Distributed beamforming, precoding, and multiuser schemes
 - ▶ Distributed spatial multiplexing schemes
 - ▶ Coordinated multipoint, multi-cell, and interference alignment schemes
- ▶ Cooperative schemes, e.g.,
 - ▶ Distributed space-time coding schemes
 - ▶ One-way, two-way, and full-duplex relaying schemes
 - ▶ Multi-antenna relaying schemes
 - ▶ Physical-layer network coding schemes
 - ▶ Energy-harvesting relaying schemes

All submissions related to one or more of the above topics will receive consideration for publication in this Special Issue. Submissions concentrating on

- ▶ Design issues for the above techniques (physical layer, MAC-layer, and cross-layer design)
- ▶ Scalable algorithms (e.g., for different SINR regimes or varying numbers of wireless nodes)
- ▶ Analytical investigations (e.g., performance prediction or fundamental limits)
- ▶ Energy/ cost analyses (e.g., trade-off between gains through distributed processing and costs in terms of computation, deployment, signaling overhead, etc.)
- ▶ Aspects of non-perfect channel knowledge and non-perfect feedback information (e.g., robust designs, advanced error models, etc.)
- ▶ Implementation aspects (e.g., impact of practical imperfections, applicability of schemes in the context of existing wireless standards such as WiMAX or LTE, etc.)
- ▶ Performance evaluation of practical schemes (e.g., in laboratory testbeds or in field trials)

are particularly encouraged.

Submission Schedule

- ▶ **Submission Deadline:**
May 1, 2012
- ▶ **First decision on manuscripts:** August 1, 2012
- ▶ **Tentative publication date:**
November 1, 2012

Submission Instructions:

Before submission authors should carefully read over the Instructions for Authors, which are located at asp.eurasipjournals.com/authors/instructions. Prospective authors should submit an electronic copy of their complete manuscript through the SpringerOpen submission system at asp.eurasipjournals.com/manuscript according to the submission schedule. They should choose the correct Special Issue in the “sections” box upon submitting. In addition, they should specify the manuscript as a submission to the “Special Issue on Advanced Distributed Wireless Communication Techniques – Theory and Practice” in the cover letter. All submissions will undergo initial screening by the Guest Editors for fit to the theme of the Special Issue and prospects for successfully negotiating the review.

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