

IEEE Journal of Selected Areas in Communications (IEEE JSAC)
Call for Papers for a Special Issue on
Fundamental Approaches to Network Coding in Wireless Communication Systems

There has been a growing interest from both academia and industry to better understand fundamental aspects of network coding as a promising technique in wireless communication networks to enhance key system performance metrics such as data throughput, reliability, quality of service (QoS), security and delay. Important features of wireless communication systems such as frequent fluctuations in the channel quality and network connectivity, high packet loss rate, and resource limitations pose serious challenges in the design of efficient network coding schemes. On the other hand, unavoidable interference due to the broadcast nature of the wireless medium has been exploited by network coding to significantly enhance data throughput. However, there is still much to be done towards constructing more efficient and robust wireless network coded systems to enable delivering high data rate and low delay services that are affordable, reliable and seamless for a very large number of users in current and future wireless communication systems.

Many parameters and choices in optimization, design and validation of wireless network coded systems impact one another in ways that are often very hard to model and characterize. For example, the following aspects can be intertwined in non-trivial ways: network coding method (e.g., random, opportunistic, deterministic), placement across communication protocol layers, placement across information flows, induced overheads, and the considered utility or cost function (e.g., throughput, delay, reliability, fairness, QoS). In addition, the type of communication session (e.g., unicast, multicast, broadcast), wireless channel model, availability and reliability of control/feedback channels, centralized or decentralized service provision, and network topology and type (e.g., single-hop, multi-hop, satellite, cellular, sensor networks, WLAN) will have significant impact on the performance of network coding.

While a fully comprehensive treatment of all the above is not expected or even possible in one issue, we are particularly seeking original research papers that holistically incorporate such aspects in the following areas of wireless network coding:

- Cross-layer design and optimization
- Security and secrecy
- Throughput-delay analysis
- Opportunistic network coding
- Cooperative data exchange and device-to-device communications
- Video streaming and multimedia broadcast/multicast services (MBMS)
- Wireless data storage systems
- Physical layer network coding
- Network monitoring and inference
- Show-cases of network coding

Submission Information

Prospective authors should follow the submission guidelines specified in the Information for Authors section of the JSAC at <http://www.jsac.ucsd.edu/Guidelines/info.html>. Authors should submit a PDF version of their complete manuscript to <http://edas.info> according to the following schedule:

- Paper Submission Deadline: 1 April 2014
- Revised Paper Due: 1 August 2014
- Final Paper Due: 1 October 2014
- First Notification: 1 July 2014
- Final Notification: 1 September 2014
- Publication: 1st Quarter of 2015

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