

Call for Papers: MIMO for Next-Generation Wireless Networks

Over the past decade, MIMO technology has evolved in significance from an academic research area to an inherent component of all next-generation wireless standards, including EV-DO Rev C, UMTS LTE and the IEEE 802.xx family of standards. Early proposals for IMT Advanced are also considering the use of MIMO. As the field has evolved, research has shifted from single links to multi-user systems where interference and interactions with higher layers become important. In particular, for cellular systems transmitting packet data, the MIMO physical layer design should account for inter-cellular interference and scheduling effects. Wireless systems have also evolved to wider bandwidths to support higher data rates and consequently OFDM has replaced CDMA as the dominant air interface. In parallel with this theoretical development, MIMO research is also considering practical aspects that relate to implementation and account for impairments found in real-world systems. The evolution of MIMO technologies has been influenced by channel measurements, prototypes, and field trials, and the experience derived from these systems have provided considerable insight on MIMO gains in practical networks.

Motivated by this real-world context, the emphasis is on performance/implementation of MIMO in next-generation wireless networks. We plan to explore the theoretical aspects of new techniques for multi-cell, multi-user, wideband (OFDM) systems in the presence of real-world impairments. Prototypes and field trials will shed light on implementation issues and identify key challenges to wide-spread adoption of MIMO.

Original contributions, unpublished and not currently under review in another journal are sought in the following areas including, but not limited, to the following:

MIMO performance in multi-cellular environments: Impact of other cell interference, mobility, and imperfect channel knowledge; interference mitigation and network coordination techniques; performance in microcell/nomadic environments.

Multi-user MIMO techniques: Transmit techniques: multiplexing, diversity, scheduling, and generalized beamforming; techniques for wideband channels and OFDM systems; complexity, performance, and fairness tradeoffs.

MIMO prototypes and field trials: Prototypes for cellular, indoor, hybrid, and adhoc networks; MIMO channel models/field measurements; impact of CSI feedback and channel reciprocity on performance; algorithm complexity and implementation.

Prospective authors should follow the JSAC manuscript format given in the invitation for authors. All papers should be submitted in PDF format via email to Mansoor Shafi (alternate email :Mansoor.shafi@canterbury.ac.nz) as per the following schedule:

Manuscript submission: July 1, 2007	Acceptance notification: December 1, 2007
Final Manuscript due: March 1, 2008	Publication: Third Quarter, 2008

Guest Editors:

Mansoor Shafi Telecom New Zealand P O Box 293, Wellington New Zealand mansoor.shafi@telecom.co.nz	Peter J Smith ECE, University of Canterbury, Bag 4800, Christchurch, New Zealand peter@elec.canterbury.ac.nz	Ari Hottinen Nokia Research Center P O Box 407, FI-00045 Nokia Group, Finland ari.hottinen@nokia.com
Reinaldo A Valenzuela Director, Wireless Communications Research, Alcatel-Lucent, 791 Holmdel-Keyport Rd, Holmdel, NJ 07733, USA rav@alcatel-lucent.com	Howard Huang Wireless Communications Research, Alcatel-Lucent, 791 Holmdel-Keyport Rd, Holmdel, NJ 07733, USA hchuang@alcatel-lucent.com	

