

CFP of Special Issue on Evolution of Air-Interface Technologies for 4G Wireless Communications IEEE Vehicular Technology Magazine

The future 4G wireless systems are widely expected to deliver a much higher data transmission rate and much richer multi-media contents than current 2-3G systems. All-IP wireless architectures have been emerging as the most preferred architecture for B3G wireless. The necessity to support high-speed burst-type traffic in wireless channels has already posed a great challenge to all existing air-interface technologies based on either TDMA or CDMA. Many research initiatives have been underway to investigate the issues on which type of air-interface technologies will be most suitable for 4G wireless. It has been indicated that the current CDMA-based air-interface technologies (for both 2G and 3G) are suited only for slow-speed continuous-transmission applications such as voice, but not a good choice for high-speed burst-type traffic. Therefore, more research initiatives are required to study next generation air-interface technologies that should effectively address all the constraints and problems existing in the current TDMA- and CDMA-based air-interface technologies, such as low bandwidth efficiency, strictly interference-limited capacity, difficulties in performing rate-matching algorithms, lack of flexibility to implement adaptive transceivers (for cross-layer network architecture), etc. The research on the air-interface technologies for 4G wireless involves many cutting-edge topics, such as novel CDMA codes/sequences design, time-frequency-space coding, interference-free CDMA architecture, multi-dimensional spreading, MIMO systems, OFDMA technologies, etc. This special issue will serve as a stimulus to accelerate technological evolution of next generation air-interface technologies for 4G wireless communications.

Topics

The papers in this Special Issue will focus on state-of-the-art research in various physical-layer aspects of next generation air-interface technologies suitable for 4G wireless. We solicit papers covering a variety of topics that include, but not limited to, the following subjects:

- Innovative SS/CDMA techniques
- All-IP wireless air-interface
- ST-coded TDMA/CDMA/OFDMA systems
- Air-interface Integration for WWAN/WMAN/WLAN/WPAN
- OFDM/OFDMA techniques
- Adaptive antennas, MIMO, and beam forming
- Hybrid OFDMA, CDMA, TDMA and FDMA
- Orthogonal codes/sequences design
- Complementary coded CDMA/M-ary CDMA
- Link adaptation and adaptive equalization
- UWB and pulse radio techniques
- WiMax technologies
- Cognitive radio/frequency agile radio
- Pilot-added CDMA/TDMA/OFDMA signaling design
- Transmission synchronization control
- Air-interface standardization issues

Papers should be of tutorial nature and contain state-of-the-art research and development materials. Authors must follow the IEEE Vehicular Technology Magazine guidelines regarding the manuscript format. For further information, please refer to IEEE Vehicular Technology Magazine website at <http://www.ieeevtc.org/vtmagazine/>. All papers should be submitted with email attachment (in PDF format) to one of the Guest Editors listed below.

Important Dates

Manuscript Submission Due: April 15, 2006
Acceptance Notification: July 1, 2006
Final Manuscript Due: August 1, 2006
Publication: September 2006

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