Wireless Communications and Mobile Computing

Special Issue on

Efficient Spectrum Usage for Wireless Communications

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Wireless technologies have reached an impressive popularity in the last years. However, the radio spectrum is very limited, and therefore as wireless communications have become more and more widespread, problems related to spectrum scarcity have arisen. Radio spectrum, as the physical support for wireless communication, both for fixed applications and especially for mobile broadband, is becoming an extremely strategic, valued, and demanded resource. Therefore, technologies and techniques enabling a more flexible access for service providers and clients and a more efficient and effective usage are needed.

Spectrum scarcity can be addressed from many different perspectives. For instance, from the point of view of signal processing, we can look for higher spectral efficiency in modulations and better algorithms for error detection and correction. Cognitive radio takes a more active approach, making the devices responsible of efficient spectrum utilization by sensing spectrum usage and adjusting transmission parameters to accommodate communications in unused resources. On a higher level, coordination may happen in a centralized or distributed manner, by establishing protocols allowing base stations and clients to increase spectrum utilization while avoiding interferences. Optimization techniques, artificial intelligence approaches, or economic paradigms may contribute greatly to this endeavor.

The purpose of this special issue is to provide readers with original research articles as well as review articles that present the-state-of-the-art research results and technologies enabling effective and efficient spectrum usage in wireless networks.

Potential topics include but are not limited to the following:

- Signal processing techniques for efficient spectrum usage
- Cognitive radio approaches
- Frequency assignment problems
- Coordination mechanisms for spectrum allocation
- Regulatory frameworks for spectrum management and dynamic access
- Optimization techniques for spectrum scarcity problems
- Software-defined radio technologies
- Network densification and offloading techniques in 5G networks
- Economic paradigms applied to spectrum usage
- Spatial spectrum sharing
- Optimized antenna deployment
- Artificial intelligence techniques applied to spectrum management

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Papers are published upon acceptance, regardless of the Special Issue publication date.

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