



## Features

- Examines ongoing R&D activities in the field of MIMO systems and its associated signal processing, expected to be employed in 4G and 5G systems
  - Covers MIMO fundamentals and theory, with special interest for those needing to improve their skills, such as corporate/industrial employees or graduate students
  - Summarizes the most important enhancements related to processing of multiple-input multiple-output (MIMO) systems for 4G systems, including its evolution and future trends
- Considers various topics associated with MIMO systems and MIMO processing—from the fundamentals and basic receiver design to more advanced processing

## Summary

**MIMO Processing for 4G and Beyond: Fundamentals and Evolution** offers a cutting-edge look at multiple-input multiple-output (MIMO) signal processing, namely its detection (in both time and frequency domains) and precoding. It examines its integration with OFDM, UWB, and CDMA, along with the impact of these combinations at the system level. Massive MIMO and network coding at the physical layer are very recent topics which are also addressed, and which are expected to play an important role in 5G systems.

The book brings together contributing authors from first-class institutions who have been working in international research and development (R&D) projects and are highly cited in the MIMO field. These experts examine ongoing R&D activities in the field of MIMO systems and its associated signal processing that is expected to be employed in 4G and 5G systems.

- Covers the various wireless communication standards that make use of MIMO systems
- Explains the receiver processing associated with MIMO signal detection (including the case of massive MIMO systems) and presents the optimal precoding techniques
- Considers optimized MIMO schemes and processing for block transmission techniques, for orthogonal frequency division multiplexing (OFDM) transmission techniques, and for single carrier-frequency domain equalization
- Examines MIMO processing and optimization for wideband code division multiple access (WCDMA)
- Describes the ultra-wideband (UWB) transmission technique and the corresponding MIMO processing and optimizations
- Explains physical layer network coding techniques

From basic receiver design to more advanced processing, the book covers the spectrum of topics associated with MIMO systems and MIMO processing. It provides a comprehensive description of MIMO fundamentals and theory that is ideal for anyone looking to sharpen their skills on the subject, such as corporate/industrial employees or graduate students.

The book summarizes the most important enhancements related to the processing of MIMO systems for 4G systems, including its evolution and future trends. It also supplies a performance analysis of the various combinations of MIMO schemes for 4G systems to help you select the combination best suited for your particular needs.