

Special Issue on Advanced Antenna Technologies in the Beyond IMT-Advanced Systems

Call for Papers

The IMT-advanced and beyond systems shall support multiple-input multiple-output (MIMO) and beamforming including features to support multiantenna capabilities at both the base station and at the mobile terminal. To improve the capacity, extend the coverage, and decrease the antenna deployment complexity, many advanced antenna technologies have been proposed recently, such as the large-scale array antenna and the small-scale smart antenna.

The large-scale array antenna system, also known as massive MIMO, or three-dimension antenna, is a new research field in antenna systems, electronics, communication theory, and embedded software. It is often utilized in the frequency division duplex (FDD)-based IMT-advanced and beyond systems, and its performance gain over classical array antenna, which use few antennas fed via coaxial cables from a high-power amplifier, is thus significant. The antenna size is too large, resulting in a large frontal area.

The miniaturization of smart antenna (also named as the small-scale smart antenna) is often designed for the time division duplex (TDD) systems and can effectively decrease the antenna size when guarantying the capacity and coverage performances, which facilitates the utilization of smart antenna both in the base station and user equipment.

To fully realize the potential of advanced antenna technologies and to solve the problems of antenna application, there is a need to draw the attention of the research community for developing advanced and innovative methodologies and techniques of antenna-related fields. Potential topics include, but are not limited to:

- Radio channel models for large-scale array antenna or small-scale smart antenna
- Proceeding mechanisms and algorithms for large-scale array antenna
- Capacity analysis of large-scale array antenna or small-scale smart antenna
- Channel estimation or detection for advanced array antenna
- Advanced antenna-based interference control

- Scheduling mechanism and algorithms for advanced array antenna
- Evaluation methodology of antenna quality
- Multisystem antenna
- Indoor distributed antenna system
- Antenna test fields and equipment requirement and standardization

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