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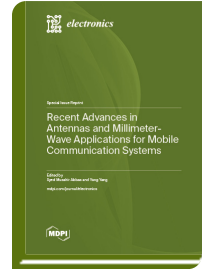
*Special Issue Reprint*

## **Recent Advances in Antennas and Millimeter-Wave Applications for Mobile Communication Systems**

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This reprint focuses on the latest research regarding millimeter-wave (mmWave) communications and multiple-antenna technology, delving into the critical role of mmWave communication systems in addressing the challenges of high data rate demands. It provides a detailed analysis of signal processing in mmWave bands and their tremendous potential in delivering wireless services with high rates, ultra-reliability, and low latency. At the same time, it also highlights the challenges faced in designing mmWave communication, including its unique physical characteristics (such as wide bandwidth, large path loss, and penetration loss) and hardware constraints. Furthermore, this reprint explores the significant potential of mmWave massive multiple-input-multiple-output (massive MIMO) systems, which can achieve high multiplexing gains using large-scale antenna arrays. These systems are expected to significantly increase user throughput, spectral and energy efficiency, and mobile network capacity. However, realizing the full potential of mmWave massive MIMO requires innovative techniques in transceiver architecture, precoding and antenna array design, channel estimation and feedback, multiple access schemes, and resource allocation.

By compiling a series of the latest research findings, this reprint aims to provide effective ideas and insights to peers in related fields, further driving the development of mmWave communications and multiple-antenna technology.



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