

Special Issue on  
**Advanced Wireless Technology for  
Ultrahigh Data Rate Communication**

# CALL FOR PAPERS

According to a strong demand for high-speed services in various 5G deployment scenarios, the key performance requirements for IMT-2020 (5G technical specification) include the peak data rate of 20 Gbps in downlink and 10 Gbps in uplink as well as the user experienced data rate of 100 Mbps in downlink and 50 Mbps in uplink, and then a greatly higher target performance can be intuitively expected for beyond 5G. The main challenges to realize such high data rate are to fully exploit the radio resources (e.g., time, frequency, space, power, and polarization), fully cooperate with other transmitters or receivers, and fully utilize microwave and millimeter-wave spectrum. In practice, these challenges may be restricted by the availability of radio resources and collaborative transmitters or receivers, the capability of the transceiver, the accuracy of the available channel state information, and so forth.

For the past decade, attractive wireless technologies have been presented to fulfil high data rates. The representative technologies involve digital/analog beamforming, multihop transmission, coordinated multipoint transmission/reception, nonorthogonal multiple access, massive MIMO, cognitive radio, millimeter wave, and so forth. However, an independent use of these technologies has induced a limit to improvement in achievable data rates, which has encouraged many researchers to focus on combining and optimizing the wireless technologies so as to extremely enhance the data rate. Although numerous combined technologies for further performance improvement have been proposed up till now, more innovative combination and optimization should be consistently studied as the target performance for the next-generation communication becomes continuously improved. Furthermore, real wireless communication environments, in particular, regarding 5G new radio and beyond 5G, introduce new practical issues in implementing the combined and optimized wireless technologies as follows: channel estimation capability with the associated reference signal design, transmission/reception collaboration capability, transmitter/receiver complexity, channel state information feedback, MIMO beamforming codebook design, new waveforms, wireless channel characteristics, and so forth. Hence, the practical issues in the implementation of technology need to be addressed with the research on advanced wireless technology.

This special issue focuses on the research on combining and/or optimizing the wireless technologies to enhance the achievable data rate. Moreover, this special issue will widely accept work considering an ideal system model as well as partially practical system models.

Potential topics include but are not limited to the following:

- ▶ Digital/analog beamforming for ultrahigh data rate communication
- ▶ Millimeter-wave transmission and reception technology for considerable improvement in data rates
- ▶ Wireless collaboration technology for ultrahigh data rate communication
- ▶ Multiuser massive MIMO to enhance user data rates
- ▶ Multiple access technology for ultrahigh data rate communication
- ▶ Advanced reference signal design and channel/noise estimation to support ultrahigh data rate communication
- ▶ Advanced channel state information reporting to support ultrahigh data rate communication
- ▶ Performance analysis considering channel estimation error or channel state information feedback delay

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/wcmc/awbc/>.

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

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