

Special Issue on
**Coding and Modulation Techniques for
Beyond 5G**

CALL FOR PAPERS

5G cellular networks have been conceived to meet changing demands and requirements for speed, throughput, latency, and reliability across a variety of scenarios. For example, enhanced mobile broadband (eMBB) is likely to see major performance enhancements in terms of data rate, throughput, and capacity in comparison to 4G LTE. In other scenarios, such as ultrareliable low-latency communications (URLLC) and massive machine-type communications (mMTC), 5G will be able to provide the required short-block, low-complexity, and power-efficient physical layer techniques.

In this context, several physical layer enabling technologies are currently being investigated. For example, millimeter wave communications facilitate increased bandwidth but pose a challenge in relation to the propagation characteristics in the bands of interest. Massive multiple-input and multiple-output (MIMO) enables multiple streams to use the same resources simultaneously through beamforming, while the potential of advanced channel coding schemes, such as improved low-density parity-check (LDPC) codes and polar codes, is also being explored in greater depth. In addition, data-driven coding and modulation schemes based on machine learning are also gaining momentum alongside conventional model-based approaches.

Going beyond 5G requires facing a host of challenges created by the introduction of the above techniques. These include the ambitious performance targets, the density of users in cells, the real-world models of these systems, and the interaction between the different technical solutions. If properly implemented and integrated, however, these technologies will be the basis for beyond-5G future cellular networks.

This special issue aims to publish original research articles and review articles that explore the physical layer design of New Radio cellular networks, with a particular focus on coding and modulation techniques.

Potential topics include but are not limited to the following:

- ▶ Efficient, low-latency decoders for LDPC codes
- ▶ Low-latency decoding algorithms for polar codes
- ▶ Novel coding techniques for beyond-5G cellular networks
- ▶ Massive MIMO communication schemes for New Radio
- ▶ Channel estimation for massive MIMO
- ▶ Massive MIMO systems affected by phase noise
- ▶ Beamforming schemes for beyond-5G cellular networks
- ▶ Millimeter wave communication techniques
- ▶ Channel modeling for millimeter wave communications
- ▶ Nonorthogonal multiple access (NOMA) for New Radio
- ▶ Coding and modulation based on machine learning
- ▶ Novel modulation techniques for beyond-5G cellular networks
- ▶ Network coding techniques for beyond-5G cellular networks

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/wcmc/cmt5g/>.

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

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