Special Issue Reprint

Waveform Design for 5G and beyond Systems

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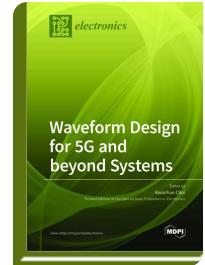
5G traffic has very diverse requirements with respect to data rate, delay, and reliability. The concept of using multiple OFDM numerologies adopted in the 5G NR standard will likely meet these multiple requirements to some extent. However, the traffic is radically accruing different characteristics and requirements when compared with the initial stage of 5G, which focused mainly on high-speed multimedia data applications. For instance, applications such as vehicular communications and robotics control require a highly reliable and ultra-low delay. In addition, various emerging M2M applications have sparse traffic with a small amount of data to be delivered. The state-of-the-art OFDM technique has some limitations when addressing the aforementioned requirements at the same time. Meanwhile, numerous waveform alternatives, such as FBMC, GFDM, and UFMC, have been explored. They also have their own pros and cons due to their intrinsic waveform properties. Hence, it is the opportune moment to come up with modification/variations/combinations to the aforementioned techniques or a new waveform design for 5G systems and beyond. The aim of this Special Issue is to provide the latest research and advances in the field of waveform design for 5G systems and beyond.

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