

## 【講演概要】

Multiple access refers to the way radio resources are shared among different users. The multiple access techniques used in 2G and 3G cellular networks were time-division multiple access (TDMA) and code-division multiple access (CDMA), both being used in conjunction with single-carrier transmission. A big leap came out when WiFi and 4G cellular standards were developed. All of these networks adopted orthogonal frequency-division multiplexing (OFDM) for transmission, but they differed in the way the radio resources were shared. While WiFi continued to use conventional TDMA, WiMAX used orthogonal frequency-division multiple access (OFDMA), and 3GPP LTE used OFDMA on the downlink and single-carrier frequency-division multiple access (SC-FDMA) on the uplink. For the development of future 5G networks, the 3GPP has already adopted OFDMA for Enhanced Mobile Broadband (eMBB) and Ultra Reliable Low Latency Communications (URLLC) traffics, but still no decision has been made for Massive Machine-Type Communications (mMTC) traffic, for which there are proposals based on non-orthogonal multiple access (NOMA), that is widely recognized as a promising technology. The basic principle of NOMA is to superpose user signals and make use of serial interference cancellation at the receiver. In this talk, we review current work on NOMA, discuss the related challenges, and present a new approach which relaxes the power imbalance constraint for the superposed signals and opens up new directions.