Power Allocation in NOMA

The key idea of NOMA is to use the power domain for multiple access, whereas the previous generations of mobile networks have been relying on the time/frequency/code domain. Take the conventional orthogonal frequency-division multiple access (OFDMA) used by 3GPP-LTE as an example. A main issue with this orthogonal multiple access (OMA) technique is that its spectral efficiency is low when some bandwidth resources, such as subcarrier channels, are allocated to users with poor channel state information (CSI). On the other hand, the use of NOMA enables each user to have access to all the subcarrier channels, and hence the bandwidth resources allocated to the users with poor CSI can still be accessed by the users with strong CSI, which significantly improves the spectral efficiency.[1]

NOMA is expected to achieve high spectral efficiencies over Orthogonal Multiple Access (OMA) by combining superposition coding at the transmitter with Successive Interference Cancellation (SIC) at the receivers.[2]

REFERENCES

# [1] [Zhiguo Ding](https://arxiv.org/search/cs?searchtype=author&query=Ding%2C+Z), [Yuanwei Liu](https://arxiv.org/search/cs?searchtype=author&query=Liu%2C+Y), [Jinho Choi](https://arxiv.org/search/cs?searchtype=author&query=Choi%2C+J), [Qi Sun](https://arxiv.org/search/cs?searchtype=author&query=Sun%2C+Q), [Maged Elkashlan](https://arxiv.org/search/cs?searchtype=author&query=Elkashlan%2C+M), [Chih-Lin I](https://arxiv.org/search/cs?searchtype=author&query=I%2C+C), [H. Vincent Poor](https://arxiv.org/search/cs?searchtype=author&query=Poor%2C+H+V): Application of Non-orthogonal Multiple Access in LTE and 5G Networks. (Submitted on 27 Nov 2015 ([v1](https://arxiv.org/abs/1511.08610v1)), last revised 31 Oct 2016 (this version, v2)).

# [2] Y. Saito, A. Benjebbour, Y. Kishiyama, T. Nakamura, "System level performance evaluation of downlink non-orthogonal multiple access (NOMA)", Proc. IEEE Personal Indoor and Mobile Radio Communications (PIMRC), pp. 611-615, Sept. 2013.