Chair of Communications Engineering
TUM Department of Electrical and Computer Engineering
Technical University of Munich

TUM

Master's Thesis

Simulations on 3GPP NR Downlink Resource Allocation

The new radio (NR) radio access technology standardized by 3GPP shall meet the various requirements set by the ITU to be a IMT-2020 technology better known as 5G. Those requirements, quantified by Key Performance Indicators (KPIs) are manifold, e.g. data throughput, reliability, latency and number of supported users. To fulfill the different requirements various parameters and combinations on the physical layer are allowed, e.g. different bandwidth, subcarrier distance, modulation, number of layers and beamforming. When setting the parameters of the NR system not all KPIs are proportionally enhanced but some rather have an inverse proportion. Hence, each parameter set is a trade-off of different KPIs. As the physical layer specification of 3GPP Rel-15 is about to be completed in June 2018, the possible parameters are available now. This master thesis shall:

- provide a simulation of the 3GPP NR physical layer DL resource allocation.
- offer the option to adjust different parameters and provide the results analytically and graphically.
- investigate extreme cases, e.g. maximum throughput, and analyze their effect on other KPIs.
- assess and compare the results with regard to the system limitations.

Advisors

Delcho Donev
M.Sc. Mithlesh Kumar Sinha and Dr.-Ing. Sandra Merkel (Rhode und Schwarz)