

Performance Analysis of Heterogeneous Cellular Networks with Multiple Connectivity

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Abstract : Future mobile networks following 5th generation will be characterized by one thousand times higher gains in capacity; connections for at least one hundred billion devices; user experience capable of extremely low latency and response times. To be close to the capacity requirements and higher reliability, advanced technologies have been studied, such as multiple connectivity, small cell enhancement, heterogeneous networking, and advanced interference and mobility management. This paper is focused on the multiple connectivity in heterogeneous cellular networks. We investigate the performance of coverage and user throughput in several deployment scenarios. Using the stochastic geometry approach, the SINR distributions and the coverage probabilities are derived in case of dual connection. Also, to compare the user throughput enhancement among the deployment scenarios, we calculate the spectral efficiency and discuss our results.

Keywords : heterogeneous networks, multiple connectivity, small cell enhancement, stochastic geometry

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