

KOTCHAKORN PHIMPHAHU : RADIO RESOURCE PLANNING FOR
4G FEMTOCELL NETWORKS IN MULTI-FLOOR BUILDINGS. THESIS
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4G-LTE FEMTOCELL NETWORK/RADIO RESOURCE ASSIGNMENT/
FREQUENCY ALLOCATION/INTER-CELL INTERFERENCE/LINEAR
PROGRAMMING

So far, the requirement of mobile data rate and ubiquitous network access for indoor environment has been increasing continuously. In order to satisfy the mentioned requirements, a 4G Long Term Evolution (LTE) offers Femtocell Base Stations (FBSs) which can improve not only indoor coverage but also the speed of data transmission. The FBS is a low-power home base station, which covers a small area. However, one of major challenges is an increase in Inter-Cell Interference (ICI) caused by the neighboring FBSs which share the same radio resources.

This research proposes a Linear Programming (LP) model to solve radio resource planning problem for 4G femtocell networks in multi-floor buildings. The objective of this research work is to maximize the number of Radio Resource Blocks (RRBs) assigned to each FBS. Moreover, the proposed technique can guarantee the quality of services in terms of Signal to Interference plus Noise Ratio (SINR) and signal coverage.

The experimental results illustrate that the proposed technique can achieve 100% service coverage throughout the service area. Furthermore, the proposed

technique can guarantee the quality of services in terms of the SINR and can improve maximum downlink throughput at FBS up to 86.11%.



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