Abstract

In a wireless communication cellular network, call activity can be more intensive in some regions than others. In present scenario of society and city development such as metro-cities and NCR-regions in which, high speed, slow speed as well as pedestrian subscribers are available with high-density may decrease the system performance. Splitting the cell size and reduce the transmission distance is one of the effective technique. But, cell splitting technique does not provide efficient solution in the regions in which high speed, slow speed as well as pedestrian subscribers are available. Deploying the femtocell over cellular networks has recently attracted growing interests in academia, industry, and research places. Deploying femtocells over cellular networks is an attractive solution in current scenario for the improvement of cellular network’s services providing better coverage and speed. Femtocell provides attractive indoor coverage with high throughput and promising satisfaction of subscribers. Coexisting femtocells and cellular networks lead to severe interference scenarios. However, inter cell interference decreases the system performance, capacity as well as throughput. Therefore, challenge still remaining is to efficiently allocate spectrum to this
Rethinking Interference Mitigation Spectrum Efficiency Model in Femtocell Networks using FFR
technology. This paper focuses on interference mitigation techniques in femtocell/macrocell
networks and proposes a fractional frequency reuse (FFR) mechanism that leads to increase
overall system performance. In particular, the mechanism aims to maximize throughput via a
variety of combinations between inner cell radius and frequency allocation to the cellular
networks. Additionally, a position minded frequency allocation to the femtocells targets to further
reduce the cross-tier interference in femtocell networks.

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**Index Terms**

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**Keywords**

FFR mechanism, Femtocell, Cross-tier interference, Co-tier interference, OFDMA.