Development of an Adaptive Hybrid Technique to Mitigate Cross-Tier Interference in a Femto-Macro Heterogeneous Network

Abstract

The deployment of small cell node such as femto-cell within macro area coverage has been considered a promising solution to provide better throughput and Quality of Experience (QoE) to users. However, co-channel deployment of femto-cell operating in a closed access mode (CSG) causes severe cross-tier interference. In this paper we have develop an adaptive Hybrid Power control and Time domain Technique (aHPTT) to mitigate cross-tier interference in HetNet. The hybrid technique was developed to handle limitations associated with using a single interference mitigation technique such as Power Control (PC) and Time Domain (TD). aHPTT integrate PC and TD to mitigate interference simultaneously depending on the position of the user in the network. The hybrid technique was implemented in a Graphical User Interface (GUI) using MATLAB R2013a. System level simulation was carried out to evaluate the performance of the hybrid technique in terms of user’s throughput. The aHPTT was validated with the 3rd Generation Partnership Project (3GPP) enhance Inter-cell Interference Coordination (eICIC) technique, results obtained showed that the aHPTT performs better than PC technique by 2.90% and TD technique by 82.60%.
References

18. 18. Deb, S., et al., Algorithms for enhanced inter-cell interference coordination (eICIC) in
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Index Terms

Computer Science  Signal Processing

Keywords