Abstract

Efficient power and subchannel allocation methods are required for orthogonal frequency division multiple access (OFDMA) based femtocell networks to improve the capacity of the system. This paper considers a joint subchannel and power allocation algorithm with capacity maximization for downlink of an OFDMA based femtocell networks. In the proposed algorithm subchannel allocation is first performed based on signal to interference plus noise ratio (SINR) of the channel with equal power distribution. Then for enhancing capacity with optimal power allocation, successive convex approximation (SCA) based power optimization is adopted. The effect of Arithmetic geometric mean (AGM) approximation with SCA on power optimization is also investigated. The optimal power is subsequently distributed by water-filling algorithm.

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Capacity enhancement, Convex optimization, Femtocell, Power allocation, SINR, Subchannel assignment, Successive convex approximation