Abstract

In recent years, the eyes of scholars has been on the road to an proficient allocation scheme of signalling dimension between users in both uplink and downlink channels, since bandwidth is usually limited and/or very expensive. This paper covensants with the rate adaptive MIMO-OFDMA (Multiple Input Multiple Output-Orthogonal Frequency Division Multiplexing) downlink resource allocation scheme. It has an objective of maximizing the total system capacity subject to constraints on total power, bit error rate and proportional fairness. The proposed algorithm determines the number of subcarriers for each user and then handing over the subcarrier to each user. Two optimization methods, one based on Subcarrier Allocation (SA) and the other, based on Genetic Algorithm (GA) are used for resource allocation. In the optimization technique based on SA, using SVD (Singular Value Decomposition), the MIMO fading channel of each subcarrier is transformed into an equivalent bank of parallel SISO (Single Input Single Output) subchannels, which leads to a better trade-off strategy among system capacity, computational complexity and proportional fairness. Paralleled to static allocation schemes, the new algorithm has significantly lower complexity and in simulation fruitages higher system capacity. Simulation results show that the subcarrier allocation based on GA can provide capacity improvement with the reduction in fairness.
References

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