

短文与研究通讯

OFDMA上行无线网络中资源块和功率的分配

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摘要:

正交频分复用多址接入(OFDMA)技术已经广泛应用于宽带无线网络,比如IEEE 802.16(WiMAX)和3GPP长期演进(LTE)。现有的提高系统吞吐量的主要方法是增加消耗移动台的能量为代价来提高移动台的传输速率。本文研究了在OFDMA无线网络上行传输中的资源块和功率联合分配问题。目标是满足传输目标前提下减少移动台的功率损耗。由于优化方程是NP-hard模型,所以本文利用注水技术的优势提出了一个启发式算法。仿真结果表明启发式算法性能接近最优解。特别是网络处于非饱和条件下。

关键词: 第三代合作伙伴计划长期演进技术; 能源节约; 正交频分多址; 资源管理; 全球微波互联接入

On resource-and-energy allocation in uplink OFDMA wireless networks

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Abstract:

The Orthogonal frequency division multiple access (OFDMA) technology has been widely applied to broadband wireless network, such as the IEEE 802.16 (WiMAX) and 3GPP long term evolution (LTE). Existing studies have targeted at improving network throughput by increasing the transmission rates of mobile stations. In the letter, we consider the tile-and-energy joint allocation problem for uplink transmissions in an OFDMA wireless network. The goal is to reduce the power consumption of mobile station subject to satisfying their traffic demands. Because the optimization equation is an NP-hard model, We develop a heuristic algorithm taking advantage of the water-filling technique. The simulation results show that the heuristic algorithm performance is close to the optimal solution, especially when the network is under unsaturated condition.

Keywords: 3rd Generation Partnership Project Long Term Evolution; energy conservation; Orthogonal Frequency-Division Multiple Access resource management; Worldwide Interoperability for Microwave Access

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