

## 基于合作中继的OFDM蜂窝网络的QoS感知资源调度算法

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## QoS-Aware Resource Allocation Algorithm for Cooperative Relay-based OFDM Cellular Networks

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摘要

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**摘要** 针对基于中继的OFDM蜂窝网络, 该文考虑具有不同QoS要求的混合业务场景, 引入合作传输机制, 提出了一种基于合作中继的QoS感知资源调度算法, 解决了合作中继节点选取, 子载波分配以及功率控制等问题。以最大化系统效用为目标, 在考虑QoS业务的速率要求与基站功率约束的同时, 针对中继结构引入了中继节点的功率约束。为降低计算复杂度, 将原非线性组合优化问题分解为子载波分配与功率控制两个子问题。仿真结果表明, 该文所提算法在能量节约、系统效用, 吞吐量等性能方面都有显著优势。

**关键词:** 无线通信 合作中继 子载波分配 功率控制 服务质量

**Abstract:** This paper propose a QoS-aware resource allocation algorithm for cooperative relay-based OFDM cellular network with mixed services of different QoS requirements. The proposed algorithm solves relay selection, subcarrier allocation and power control issues. The design of resource allocation is formulated as a non-linear combinatorial optimization problem, which aims at maximizing the system sum utility while considering the data rate requirements of QoS users and the transmit power constrains for the base station as well as each relay station. To reduce the computational complexity, the global optimization issue is decomposed into subcarrier allocation and power control sub-issues. Numerical results demonstrate that the proposed algorithm is able to improve significantly the network performance in terms of power saving, system utility and system throughput.

**Keywords:** Wireless communication Cooperative relay Subcarrier allocation Power control Quality-Of-Service (QoS)

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