



The Journal of China Universities of Posts and
Telecommunications

Volume 19, Issue 1, February 2012, Pages 44-49, 123

Resource scheduling in downlink LTE-advanced system with
carrier aggregation

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[https://doi.org/10.1016/S1005-8885\(11\)60226-4](https://doi.org/10.1016/S1005-8885(11)60226-4)

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Abstract

In this paper, we focus on the resource scheduling in the downlink of long term evolution advanced (LTE-A) assuming equal power allocation among subcarriers. Considering the backward compatibility, the LTE-A system serves LTE-A and long term evolution (LTE) users together with carrier aggregation (CA) technology. When CA is applied, a well-designed resource scheduling scheme is essential to the LTE-A system. Joint scheduling (JS) and independent scheduling (INS) are two resource scheduling schemes. JS is optimal in performance but with high complexity. Whereas INS is applied, the LTE users will acquire few resources because they can not support CA technology. And the system fairness is disappointing. In order to improve the system fairness without bringing high complexity to the system, an improved proportional fair (PF) scheduling algorithm base on INS is proposed. In this algorithm, we design a weigh factor which is related with the number of the carriers and the percentage of LTE users.

Simulation result shows that the proposed algorithm can effectively enhance the throughput of LTE users and improve the system fairness.



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Keywords

LTE-advanced system; resource allocation; carrier aggregation; proportional fairness

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