

Resource allocation for licensed/unlicensed carrier aggregation MIMO systems

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Abstract

In this paper a novel Carrier Aggregation (CA) scheme is proposed for downlink MIMO LTE-A Systems. The proposed approach achieves increased transmission rates by establishing the communication links via both licensed and unlicensed bands without generating or experiencing interference to/from the users of the latter bands. To that end, a rate optimization problem is defined and solved subject to the previous zero interference constraints, a total power constraint and a maximum number of aggregated bands constraint. It turns out that the previous problem is a Mixed Integer Non Linear Programming (MINLP) one that requires an exhaustive search procedure in order to be solved. To tackle this, an optimal low complexity method is proposed based on the Lagrange dual decomposition. The performance of the original (MINLP) and the low-complexity proposed techniques is verified via indicative simulations.

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