

Improving Throughput by Integrated Power Allocation and Rate Selection in IEEE 802.11ac Downlink Multi-User MIMO

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Abstract—In order to cope with the ever-increasing demand for high throughput WLANs, IEEE 802.11ac standard will support a wide range of new features, including downlink multi-user MIMO and higher order modulation in its physical layer. This paper addresses the design of the rate selection and transmission power allocation in downlink multi-user mode of this standard. The suggested integrated scheme utilizes the channel state information to determine the most appropriate transmission power and rate of each downlink stream so that the air time utilization in each multi-user transmission is maximized, and accordingly the throughput is improved. The simulation results generated by the IEEE 802.11ac channel and physical layer models show a significant gain with the suggested scheme in terms of the goodput achieved in the MAC layer.

Keyword—IEEE 802.11ac, DL-MU-MIMO, rate selection, power allocation



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