An Efficient Resource Allocation Algorithm for Traffic of Content Streaming in Non-Standalone OFDM Based 5G NR

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***Abstract*— The 5G NR network provides support for a wide range of service types, including content traffic through large number of wireless connections. To ensure efficient resource allocation for specific service types, such as video streaming, a Traffic Differentiator stage is implemented at the user level. This stage segregates content queues from active users into distinct service queues, enabling tailored resource allocation. In order to investigate the performance of differentiated resource allocation in a content delivery scenario, this research paper focuses on the physical and cross-layer resource allocation of the non-standalone 5G NR network. The paper introduces a Pseudo-Inverse-based Traffic Differentiator algorithm in the TD Scheduler stage, which aims to allocate optimal radio resources to real-time and non-real-time services, while allocating the remaining resources to background services. By segregating users based on their requested services and prioritizing them differently within the service priority-specific queues, the Traffic Differentiator algorithm enhances throughput fairness among all users using Pseudo-Inverse learning. Additionally, the FD Scheduler stage utilizes our proposed optimal Channel Quality Indicator (CQI) selection algorithm to leverage Frequency Domain (FD) Multi-User (MU) diversity for resource allocation.**

***Keyword*— Non-standalone 5G NR, Resource Allocation, Physical and Cross layer, Traffic, Content Delivering.**

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