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# Scheduling Enhancements and Performance Evaluation of Downlink 5G Time-Sensitive Communications

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**Abstract**

In 5G Release, the support for ultra-reliable low-latency communications (URLLC) as introduced ,guaranteeing a one-way message delivery delay of less than one millisecond with five nines of reliability In , resource allocation is optimized for reducing the packet loss probability for bursty URL traffic, while scheduling with neighbors cells interference is not considered. The problem however is still open for SPS where slow link adaptation is applied, i.e. the modulation and coding schemes (MCS) is not adjusted for every transmission, but is instead selected for a longer time period per user. The selected MCS should be as high as possible to reduce radio resource consumption and correspondingly increase the number of supported users in the system, subject to fulfilling the strict outage requirements. Interference-aware technique for SPS resource block(RB) allocation is presented, targeting to minimize the experienced inter-cell interference, which is a major problem in the considered dense indoor scenario .Finally, by taking into account control channel non idealities a detailed comparison of dynamic packet scheduling(DPS) and semi-persistent scheduling(SPS)methods is presented, highlighting the benefits of the proposed solutions. It is shown that the network capacity in terms of number of supported Time-sensitive communications (TSC) flows can be more than doubled compared to scheduling approaches typically assumed for URLLC applications.