论文

无线网络中平均功率受限的延时确保调度机制的最优化研究

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摘要
该文研究了在高斯信道下平均发射功率受限的延时确保调度器的最优化问题。文章首先证明了对于延时确保条件下平均发射功率最优的时不变调度器，其最优的平均发射功率为延时确保界D_{max}的单调递减函数，并根据其单调性给出了平均发射功率最优调度器和延时确保最优调度器之间的对偶关系。基于该关系，给出了到达过程未知条件下平均功率受限的延时确保最优调度器的实现形式。该实现形式中参数的确定方法也在给定到达过程分布的条件下给出，并以泊松到达为例进行了分析。文章的最后还给出了该调度器的一种实际实现方案并进行了仿真，仿真结果表明该方案能够达到调度器的最优。

关键词　　调度　　延时确保　　功率控制

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The Optimization of Delay-Guarantee Scheduler with Power Constraint in Wireless Networks

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Abstract
In this paper, packet scheduling with average transmit power constraint over Gaussian channels is considered with the objective to minimize the maximum delay constraint. It is proved that the optimal average transmit power is decreased with the maximum delay constraint for non-time-varying schedulers with maximum delay constraint. Then the equivalence between the optimal scheduler for average transmit power and for maximum delay constraint is proved according to the decreasing property. Then, the form of non-time-varying optimal scheduler based on this equivalence is given. The scheduler's parameter, which also reflects the performance, is determined under some certain arrival process, with an example of Poisson arrival. A practical design for this scheduler is presented and simulations show that this design can realize the optimal scheduler.

Key words　 Scheduling　 Delay guarantee constraint　 Power control

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