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Improving the performance of the FPBA algorithm using random transmitter power levels (Conference Paper)

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Abstract

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To enhance the throughput of the framed pseudo-Bayesian ALOHA (FPBA) algorithm used for reservation in wireless ATM, a scheme is described in which multiple power levels are used at the transmitters. One of the simultaneously sent packets can often be successfully received due to the power capture effect. The authors consider a capture model in which the transmitter captures the channel only if its signal-to-interference ratio is above some threshold when received at the central station. Rayleigh fading, shadowing and path loss all contribute to the capture effect in conjunction with the new physically induced random transmission power levels. Throughput equations of the algorithm are derived and the performance of the algorithm waiting time and throughput in the presence of the wireless channel is illustrated. Results show significant improvement in the throughput and low stable access delay for a wide range of traffic conditions.

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Engineering controlled terms:

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Rayleigh fading Signal interference Telecommunication traffic Transmitters
Wireless telecommunication systems

Engineering uncontrolled terms:

Wireless communication channels

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