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# System of Queuing Research with the Decomposition Technique and its Application to the Analysis of the Fiber Optic Transmission Network with the DQDB Protocol

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**Abstract:** Domain decomposition methods for queuing system are one of the fundamental lines of investigation in modern computer science computer mathematics. The mathematical transmission network model with the DQDB protocol has been studied in this paper. We analysed only two models: priority queuing system and cyclic service system.

The research of cyclic system of queuing presents considerable difficulties that is why we have done the decomposition of cyclic system of queuing with N incoming calls stream to the N single line systems of queuing.

The course-of-value function of probability distribution of number of the messages on an subscriber servers is given by.

This cyclic system of queuing has been studied by the simulation technique. The results of theoretical studies and of simulation technique show coincidence that is why we can conclude that the domain of applicability of decomposition technique for the given cyclic queuing system analysis is determined only by the correlation.

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