A Non Markovian Retrial Queueing System

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Abstract

Researches on retrial queues with non-geometrical retrial times is motivated by real computers and telecommunication networks, where retrial times can hardly be geometrical distributed. The inherent difficulty with non-geometrical retrial times is caused by the fact that queueing models must keep track of the elapsed retrial time for each of possibly a very large number of customers in the orbit. This paper analyses a discrete-time Geo/G/1 retrial queue with general retrial times in which the arriving customers may opt to follow a LCFS-PR discipline or to join the orbit. The Markov chain underlying the system has been studied, the generating functions of the number of customers in the orbit and in the system as well as its expected values are derived. The stochastic decomposition law and, as an application, bounds for the proximity between the steady-state distribution for the system under study and its corresponding standard system has been derived.

References

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