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Transient analysis of a Markov queueing model with feedback, discouragement and disaster.
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Summary: The transient model for a Markovian feedback queue with system disaster and customer impatient has been investigated. After service completion, dissatisfied customers can feedback to the system to get another service. During the service, the system may suffer disaster failure and consequently lose all the customers present in the system. After the occurrence of a disaster, the system immediately goes under the repair process. During the repair, the newly arriving customers may get discouraged and balk without joining the queue. Upon arrival in the down state of the system, the arriving customers activate their individual timer. A customer waiting in the queue departs and never comes back if the timer run out before the system gets repaired. The time-dependent system size distribution is formulated analytically by applying the techniques of probability generating function along with continued fractions. The computational results are presented in graphical and tabular form to examine the variation of system descriptors on various performance indices.

MSC:

[60K25](#) Queueing theory (aspects of probability theory)
[90B22](#) Queues and service in operations research

Keywords:

[transient queue](#); [system disaster](#); [balking](#); [feedback](#); [continued fraction](#)

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