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ANALYSIS OF TRANSIENT BEHAVIOR M/M/1 QUEUEING MODEL WITH CATASTROPHICAL EVENTS

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Abstract

In this paper, we illustrate how generating function technique can be used to obtain analysis the transient bahavior of M/M/1 queueing model with catastrophical events. We provide the steady state probabilities of the queueing model M/M/1 and certain performance measures are deduced. We introduce the cost connected with the busy period idle periods of the queueing system and present a random motion associated with the cost structure. An elaborate procedure is used to derive partial differential equations governing the joint probability density function associated with catastrophe. Numerical illustrations are provided to see the effect of parameters on system performance measures.

Key Words : *M/M/1 queue, Catastrophes, Transient analysis, Steady state analysis, Busy period analysis.*