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AN ANALYSIS OF MACHINE REPAIR PROBLEM WITH SERVICE AND REPAIR TIMES FOLLOWS PHASE-TYPE DISTRIBUTION

M. RENI SAGAYA RAJ[1] AND B. CHANDRASEKAR[2]
[1,2] Department of Mathematics,
Sacred Heart College(Autonomous),
Tirupattur - 635601, Vellore District, Tamil Nadu, India

Abstract

In this paper, we study a machine repair problem and present N system with one working and the other in standby. When the machine fails it goes to repair and instantaneously a standby unit becomes the working one. The repair time of the machine and service time of the machine are assumed to be of discrete phase-type distribution. We show the process that governs the system is a quasi-birth and death process, we perform steady state analysis of this model. The time spent by a failed machine in service and the total time in the repair facility are shown to be of phase-type. Server performance measures are evaluated.

Key Words : *Machine Repair problem, Discrete Phase-type distribution, Quasi-birth and death process, Conditional probability of failure, Stationary distribution.*