

Queueing Modeling of M/G/1 Fault Tolerant System with Threshold Recovery and Imperfect Coverage

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Abstract : This paper investigates a finite M/G/1 fault tolerant multi-component machining system. The system incorporates the features such as standby support, threshold recovery and imperfect coverage make the study closer to real time systems. The performance prediction of M/G/1 fault tolerant system is carried out using recursive approach by treating remaining service time as a supplementary variable. The numerical results are presented to illustrate the computational tractability of analytical results by taking three different service time distributions viz. exponential, 3-stage Erlang and deterministic. Moreover, the cost function is constructed to determine the optimal choice of system descriptors to upgrading the system.

Keywords : fault tolerant, machine repair, threshold recovery policy, imperfect coverage, supplementary variable technique

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