

Estimation of stress-strength reliability of a parallel system with active, warm and cold standby components

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Abstrak

In this paper we estimate the stress-strength reliability of a parallel system with I active components, s warm standby components, and k cold standby components. We assume perfect switching among the components from warm standby mode to active mode and from cold standby mode to warm standby mode. A reduced stress for the warm standby components is introduced and the components may fail in the warm standby mode. The reliability of the parallel system is evaluated by assuming the stress and strength of the components to be independent random variables. We derive the expression of reliability of the system by assuming both the stress and strength of the components having Exponential, Weibull, and Lomax distributions, respectively. The method of maximum likelihood estimation is used to obtain the reliability estimators. Illustrations are provided through an example using MATLAB programming.