



System Reliability of Ailamujia Model and Additive Failure Rate Models

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Abstract: Dynamic and non-dynamic reliability systems play an important role in industry, manufacturing, safety engineering and quality. The most commonly used models in the parametric statistical reliability analysis are the exponential, Weibull, inverted Weibull, lognormal, Lindley and Raleigh ones as well as their generalizations. In certain engineering applications such as the distribution of repair time and the distribution of delay time, it is found that the Ailamujia model is a suitable alternative compared to other models. This work considers system reliability analysis of the Ailamujia model, in which different reliability measures were computed. The combinations of additive failure rate models associated with the Ailamujia distribution were derived, they include the exponential, Weibull, Frechet and Raleigh distributions.

Keywords: *Ailamujia distribution; stress strength model; reliability; additive rate model.*

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1 Introduction

The lifetime of equipment or apparatus is a random time from the beginning of the operation until the appearance of a complete failure. Reliability is the ability of a system to perform its stated purpose adequately for a specified period of time under specified operational conditions. The system defined here could be an electronic or mechanical hardware product, a software product, a manufacturing process or even a service. For example, in case of a mechanical system, a failure is a breakdown of some of its parts or an increase in vibration above the permitted level. One of the most dangerous failures

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