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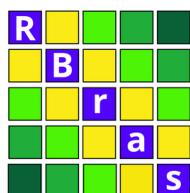
LIVRO DE RESUMOS

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Modified imperfect repair model and power law process parameterization

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Resumo

The Arithmetic Reduction of Age (ARA) class of models has been widely used in modeling equipment maintenance data. However, for the use of these models the condition that the system must wear out continuously between failures must be satisfied. This condition implies $\beta > 1$ in the Power Law Process (PLP) often used to fit these data. However, there are several cases where there may be a system improvement between failures, i.e. PLP with $\beta < 1$. In this context, the aim of this paper is to introduce and study a new model of Imperfect Repair (IR) in Reliability, we propose the modified ARA1 model (ARAM1), which enables model systems in the process of reduction or degradation. We also propose a new PLP reparameterization as time truncation to incorporate it into the new model and thus preserve the original interpretation of the PLP parameters. The estimators of the proposed model were obtained using the maximum likelihood method. We evaluated the performance of the parameter estimators through Monte Carlo (MC) simulations. For illustration purposes, we consider the failure times of nine sugarcane harvesters. We compare the fit of the standard model with the ARA1 model. The results indicated the superiority of the ARAM1 model compared to the ARA1 in several situations, which illustrates the importance of the proposed approach.

Palavras-chave: Imperfect Repair; Non-Homogeneous Poisson Process; Power Law Process.

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