Prediction of MTBF Using the Modulated Power Law Process

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Abstract

The Renewal process and the Non-homogeneous Poisson process (NHPP) process are probably the most popular models for describing the failure pattern of repairable systems. But both these models are based on too restrictive assumptions on the eect of the repair action. For these reasons, several authors have recently proposed point process models which incorporate both renewal type behavior and time trend.

One of these models is the Modulated Power Law Process (MPLP).

The Modulated Power Law Process is a suitable model for describing the failure pattern of repairable systems when both renewal-type behavior and time trend are present.

In this paper we propose estimation of the next failure time after the system has experienced some failures, that is, Mean Time Between Failure for the MPLP model. Numerical examples illustrate the estimation procedure.

KEY WORDS: NHPP; Modulated Power Law Process; Mean Time Between Failure