國立中山大學應用數學系
學術演講

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講　題：Optimum Design for Accelerated Degradation Tests for a Class of Exponential Dispersion Degradation Models

時　間：2016/11/10（星期四）14:10 ~ 15:00

地　點：理學院四樓理 SC 4009-1 室

茶　會：15:00 於理 SC 4010 室 (系辦公室)

摘 要

The optimum design for accelerated degradation tests (ADTs) is an important task for reliability analysts. Several researchers have attempted to address the optimum design on the sample size allocation problem, but their results have been based only on specific degradation models. Therefore, they lack a unified approach toward general degradation models. This study proposes a class of exponential dispersion (ED) degradation models to overcome this difficulty. Assuming that the underlying degradation path comes from the ED class, we analytically derive the optimum allocation rules (by minimizing the asymptotic variance of the estimated q quantile of product's lifetime) for two-level and three-level ADT allocation problems whether the testing stress levels are prefixed or not. For a three-level allocation problem, we show that all test units should be allocated into two out of three stresses, depending on certain specific conditions. A real examples are used to illustrate the proposed procedure. Finally, the penalties of using non-optimum allocation rules are also addressed.

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