



統計科學研究所

INSTITUTE OF
STATISTICAL SCIENCE



統計所學術演講



中研院統計所

Seminar

Title : Optimizing Two-Variable Gamma Accelerated Degradation Tests with a Semi-Analytical Approach

Speaker : Prof. Hung-Ping Tung (董弘平 教授)

(Department of Industrial Engineering and

Management, National Yang Ming Chiao Tung

University)

Time : 10:30 ~ 12:00, Monday, January 22, 2024

Place : Auditorium, B1F, Institute of Statistical Science

Abstract

Gamma accelerated degradation tests are widely used to assess timely lifetime information of highly reliable products when the degradation path of quality characteristic of products follows a monotonic process. In this talk, a semi-analytical approach is proposed to determine the optimal designs for two-variable gamma accelerated degradation tests under three criteria: D-optimality, A-optimality and V-optimality. We first use general equivalence theorem to prove that the optimal approximate designs only allocate test units at the four vertices of a rectangular design region, and the corresponding optimal proportion of total number of measurements at each stress level is derived. Next, we apply the concept of prescribed accuracy level and total experimental cost to further determine optimal integer designs. More specifically, a numerical approach is used to resolve the number of test units and number of measurements at each stress level.

※ Tea reception starts at 10 : 10.

※ Online live streaming through Cisco Webex will be available.