

國立中山大學應用數學系

學術演講

講者：鄭雅珊 博士（國立清華大學）

講題：Optimum Test Planning for Heterogeneous Wiener Processes

時間：2025/1/2 (Thursday) 10:10~11:00

地點：理 SC 4009-0 教室（線上與實體同步進行）

Google Meet Link: <https://meet.google.com/evg-ukyx-opd>

Abstract

Degradation models based on heterogeneous Wiener processes are commonly used to assess the lifetime information for highly reliable products. In general, an optimum test plan under limited resources is found by numerical methods for the heterogeneous Wiener process. However, the numerical search for optimum test plans cannot avoid the time-consuming and locally optimum issues. To overcome these difficulties, we derive an explicit expression for decision variables (such as the termination time, the number of measurements and sample size) of the D- and V -optimum test plans with cost constraints. The theoretical results not only ensure the globally optimum test plan, but also provide clear insights of decision variables affected by the model parameters and experimental costs. Some numerical examples are presented to support the efficiency and applicability of the optimum test plans. This work is a collaboration with Dr. Chien-Yu Peng from Academia Sinica.

Keywords: First passage time, Intraclass correlation coefficient, Invariance, Mean-time-to-failure, Random coefficients

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