Contribution ID: **2**   Type: **not specified**

Acceleration Invariance Principle for Hougaard Processes in Degradation Analysis

Wednesday, 18 September 2024 09:00 (20 minutes)

Accelerated degradation tests (ADTs) are widely used to assess lifetime information under normal use conditions for highly reliable products. For the accelerated tests, two basic assumptions are that changing stress levels does not affect the underlying distribution family and that there is stochastic ordering for the life distributions at different stress levels. The acceleration invariance (AI) principle for ADTs is proposed to study these fundamental assumptions. Using the AI principle, a theoretical connection between the model parameters and the accelerating variables is developed for Hougaard processes. This concept can be extended to heterogeneous gamma and inverse Gaussian processes. Simulation studies are presented to support the applicability and flexibility of the Hougaard process using the AI principle for ADTs. A real data analysis using the derived relationship is used to validate the AI principle for accelerated degradation analysis.

Type of presentation

Talk

Classification

Both methodology and application

Keywords

acceleration factor, random effects, stochastic ordering

Primary author: PENG, Chien-Yu (Academia Sinica)

Presenter: PENG, Chien-Yu (Academia Sinica)

Session Classification: Reliability and Safety

Track Classification: Reliability and Safety