Skew normal degradation models: a Bayesian approach

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Abstract

In a degradation model, one or a few coefficients are assumed random to capture the stochastic property or the unit-to-unit variations, and it is conventional to assume that the vector of the coefficients follows a multivariate normal distribution or after a transforation. However, the normality assumption can sometimes be inappropriate. Instead of seeking for a suitable transformation, in this work, we use a larger distribution family, the multivariate skew normal distributions, for the specification of the distribution of the random coefficients. We use a Bayesian approach for statistical inferences. Finally, we analyze GaAs lasers data to demonstrate the approach.

Keywords: Bayesian, degradation analysis, skew normal