



Bayesian method approach for fatigue life distribution estimation of rubber components

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Résumé en anglais The constantly increasing market requirements of high-quality vehicles compel automotive manufacturers to perform lifetime testing to verify the reliability levels of new products. A common problem is that only a small number of samples of a system's component can be tested. In automotive applications, mechanical components subjected to cyclic loading have to be designed against fatigue. In this paper, the Bayesian estimation of lognormal distribution parameters (usually used to define the fatigue lifetime of rubber components) is studied to improve the accuracy of estimation while incorporating the available knowledge on the product. In particular, the finite element results and experts' opinions are considered prior knowledge. For lifetime prediction by Finite Element Method (FEM), a model based on the Brown-Miller law was developed for the rubberlike boot seal material.

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