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COMPARATIVE STUDY OF CUMULATIVE DAMAGE LAWS: CASE OF LOADING BLOCKS LOW-HIGH AND HIGH-LOW

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Abstract

The study deals with the comparison of the laws of cumulation of damage compared to the oldest one of Palmgreen-Miner. Two laws are retained, the cumulation laws of Lemaitre-Chaboche and Mesmacque who dream to take into account the history of the loading. Three types of loadings are selected for this purpose, the loadings in low-high-low (A), low-high (B) and high-low (C) blocks. These types of loadings are chosen to account for the effects of anteriority of loads that are often observed in the reality of parts in service. The results show an agreement with the experimental results for the two laws of accumulation, that of Lemaitre-Chaboche and that of Mesmacque, this for the three types of loadings compared to that of Palmgreen-Miner. Their results are better for the first two types of loading A and B, very marked for the law of Mesmacque. For the type of load C, it is the law of Lemaitre-Chaboche marks the step on that of Mesmacque.

Keywords : fatigue of materials, law of cumulation of damage, lifetime, loading in block.

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