火工品可靠性试验数据的综合分析方法

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摘要　　升降法试验数据和固定刺激量下的成败型试验数据,

是两种最常见的火工品可靠性试验数据.我们应用Markov链,

研究了升降法试验数据下,感度分布参数的极大似然估计的特性.在此基础上,

应用Bootstrap方法和Bayes方法,

给出了综合分析两种试验数据的方法.最后,将该方法应用于520底火的

可靠性鉴定,得出了有益的结论.

关键词　　升降法试验,Markov链,Bootstrap方法,极大似然估计,可靠度下限

分类号

The Synthetically Analytical Method For Data Sets On Pyrotechnics Reliability Test

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Abstract　Two types of data sets from an up-and-down test and a success-and-failure test at a specified stimulus level are the most commonly used data sets in pyrotechnics reliability tests. Based on a data set from an up-and-down test, we use a Markov chain to study the characteristics of the maximum likelihood estimators for the parameters in a response distribution. This leads to the development of a method which can analyze two types of data sets synthetically by using the Bayes method and the Bootstrap method. Finally, we apply the proposed method to appraise the reliability of a type of primer numbered as 520 and obtain the useful results.

Key words　Up-and-down test　Markov chains　Bootstrap method　maximum likelihood estimator lower confidence limit of reliability

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