基于最优信息量的液体火箭发动机可靠性增长规划
无

摘要： 液体火箭发动机可靠性要求高、试验费用昂贵，有必要对其可靠性增长过程进行综合规划。提出基于最优信息量的液体火箭发动机可靠性增长规划方法，采用基于可靠性增长数据折合的指数型贝叶斯可靠性增长模型评估产品可靠性。考虑到产品本身存在一定的不确定性，采用贝叶斯风险决策方法，在考虑决策风险的情况下，对可靠性增长试验进行综合规划。算例说明了该方法的有效性及应用前景。

关键词: 运筹学； 液体火箭发动机； 可靠性增长； 信息融合； 贝叶斯风险

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参考文献:
［1］Duane J T. Learning curves approach to reliability monitoring［J］. IEEE Transactions on Aerospace, 1964,AS-2: 563-566.
［2］Crow L H. Reliability analysis for complex repairable system［R］. ADA0296, 1975.
［3］周源泉,翁朝曦.可靠性增长［M］.北京:科学出版社,1992.
ZHOU Yuan quan, WENG Zhao xi. Reliability Growth［M］. Beijing: Science Press, 1992. (in Chinese)
［4］张金槐,唐雪梅.Bayes方法［M］.长沙:国防科技大学出版社,1989:30-62.
ZHANG Jin huai, TANG Xue mei. Bayes Method［M］. Changsha: National University of Defense Technology Press, 1989: 30-62. (in Chinese)
［5］Harry P Savchuk,Harry F Martz. Bayes reliability estimation using multiple sources of prior information: Binomial sampling［J］. IEEE Transaction on Reliability, 1994, 43(1):138-144.
［6］Guida M, Calabria R, Pulcini G. Bayes inference for a non homogemeous passion process with power intensity power intensity law［J］. IEEE Transaction on Reliability, 1989, 38(4): 603-609.
［7］Erto P, Rapone M. Non informative and practical Bayesian confidence bounds for reliable life in the Weibull model［J］. Reliability Engineering, 1984,7(3):181-191.

Reliability Growth Planning for Liquid Rocket Engine Based on Optimal Information

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Abstract: Liquid rocket engine demands high reliability, but test expenditure is costly. It is necessary to plan reliability test to decide stopping time for saving test cost, shortening development cycle and reducing risk. According to the characteristics of liquid rocket engine, the reliability growth planning for liquid rocket engine based on optimal information was brought forward. An exponential Bayesian reliability growth model for reliability growth data was used to evaluate reliability. Because of the consideration of the uncertainty of reliability, a Bayesian risk method was used to optimize reliability test. Example was given to show its validity and application foreground.

Key Words: operational research; liquid rocket engine; reliability growth; information fusion; Bayesian risk

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