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反应堆工程

双参数威布尔分布在核电站数据处理中的应用

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摘要 核电站设备可靠性数据的处理是电站进行以可靠性为中心的维修（RCM）和寿期管理（LCM）的基础。在核电站失效数据的实际处理过程中，常会面临失效样本少、维修导致数据分布不独立等问题。为解决上述问题，本文提出以双参数威布尔分布作为寿命模型、采用贝叶斯方法来处理小样本失效数据的方法，并结合核电站运行数据进行验证。结果表明，本方法在处理样本较少以及存在维修老化问题时，具有更好的适用性和准确度。

关键词 威布尔分布 小样本 定时截尾 贝叶斯方法

分类号

Application of Two-Parameter Weibull Distribution in Nuclear Power Plant Data Processing

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Abstract The equipment reliability data processing is the basis of reliability centered maintenance (RCM) and life cycle management (LCM) in nuclear power plant. However, in actual failure data processing, the problems such as small-sample and non-independent data caused by maintenance are put forward. To resolve the problems, a processing method combined double-parameter Weibull distribution as the life model and Bayesian method for small samples was proposed, and was validated using actual nuclear power plant operating data. The results show that the processing method has better applicability and accuracy to deal with the situation of small samples and the problems of repairing and aging in nuclear power plant.

Key words

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