

软件、算法与仿真

仿真系统校核中的动态AHP网研究

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摘要:

传统的层次分析法(analytic hierarchy process, AHP)不能解决仿真系统校核中存在的 uncertainty 问题。为此在明确了 uncertainty 问题的主因是AHP的静态特性后,建立了AHP网的概念和数学基础。针对传统静态AHP网的缺陷,进一步提出了动态AHP网及相关定义、图例等;在网络定义的基础上,给出了动态AHP网的计算式和评估节点的优先级算法。提供了一个应用动态AHP网的仿真校核实例,获取了量化的评估结果并进行了分析,针对传统AHP的评估结果进行了比较。计算结果表明,动态AHP网能够解决仿真校核中的 uncertainty 问题。

关键词: 层次分析法 仿真系统校核 uncertainty 问题 优先级

Dynamic AHP net for simulation systems verification

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Abstract:

Analytic hierarchy process (AHP) is widely applied to simulation systems verification, but the traditional AHP cannot solve the uncertainty problem of verification. In order to resolve this problem, the main cause of the uncertainty problem is pointed out to be the static characteristics of AHP. The AHP net concept and mathematical basis are proposed. Aiming at the defect of the traditional static AHP nets, the dynamic AHP net, correlative definitions and illustrations are established. Based on the net definitions, the dynamic AHP net formulas and evaluation node priority algorithm are proposed. A simulation verification example is given and the numeric evaluation result is analyzed. The result is compared with that calculated by the traditional AHP. The result shows that the proposed dynamic AHP net can resolve the uncertainty problem caused by simulation verification.

Keywords: analytic hierarchy process (AHP) simulation systems verification uncertainty problem priority

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