

反应堆工程

中国实验快堆新燃料组件装载机的抗震分析

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**摘要** 中国实验快堆新燃料组件装载机是一机构部件, 结构复杂, 装载机的许多运动件和传动件难以用有限元进行精细模拟。本文引入了一种简化有限元计算的思路, 即针对装载机主要部件的主体框架建立简化的有限元模型, 通过反应谱分析, 计算出各个主要部件在地震条件下的加速度响应。采用手算方法对主要的连接螺栓进行力学计算, 并根据相关法规对螺栓进行评价, 以确保总体结构的完整性。

**关键词** [燃料组件装载机](#); [有限元分析](#); [抗震计算](#)

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Seismic Analysis of New Fuel Assembly Loading Machine for China Experiment Fast Reactor

fuel assembly loading machine; finite element analysis; seismic analysis

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**Abstract** New fuel assembly loading machine of China Experiment Fast Reactor is a kind of kinetic equipment with very complex structure. Many of its motional and driving components can not be simulated exactly by finite element model (FEM). A simplified FEM analysis method was introduced in the paper, and the main frame of the equipment was simulated by a simplified FEM model. Response spectrum  $[KG*2]$  analysis method was used to obtain the acceleration response of the main components of the equipment under seismic condition. Theoretical analysis method was used to calculate the stresses of the main connecting bolts, and these bolts were evaluated based the regulations of nuclear codes to ensure the structure integrity of the equipment.

**Key words** [fuel](#) [assembly](#) [loading](#) [machine](#) [\\_](#) [finite](#) [element](#) [analysis](#) [\\_](#) [seismic](#) [analysis](#)

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