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基于 **cosSUBC** 子通道程序的三维弹棒事故改进研究

摘要

在弹棒事故的计算中，与传统的一维分析方法相比，三维分析方法避免了一维分析方法中的部分保守假设，可以获得更为现实但依然保守的分析结果。随着计算机硬件的快速发展以及分析方法的改进，具备了采用更精确的方法进行分析的条件，可以合理地获得安全分析裕量。因此有必要采用三维方法进行弹棒事故分析，在保证安全分析具有足够裕量的前提下合理地释放部分保守性。本研究通过改进子通道程序的临界后换热模块、与中子动力学耦合模块，实现三维弹棒的事故分析功能，然后通过抽取耦合程序热棒文件的三维弹棒结果的热工参数，开展后续的 DNBR 分析与焓分析。

关键词

cosSUBC；三维弹棒；DNBR 分析；焓分析

Abstract

In the calculation of rod ejection accidents, compared with the traditional one-dimensional analysis method, the three-dimensional analysis method avoids some conservative assumptions and can obtain more realistic but still conservative analysis results. With the rapid development of computer hardware and the improvement of analysis methods, the conditions for more accurate analysis methods are available, which can reasonably obtain safety analysis margins. Therefore, it is necessary to use the three-dimensional method for rod ejection accident analysis to reasonably release some conservatism on the premise of ensuring that the safety analysis has sufficient margin. In this study, by coupling the core subchannel software and the neutron kinetics software in COSINE software package, and then extracting the thermal parameters of the three-dimensional rod ejection result of the hot rod file, the subsequent DNBR analysis and enthalpy analysis are carried out to realize the research on the accident analysis function of three-dimensional rod ejection.

Keywords

cosSUBC; Three-dimensional rod ejection; DNBR analysis; Enthalpyanalysis

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