反应堆工程

中国先进研究堆自然循环两相流动不稳定性分析

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摘要　　应用均相流模型对中国先进研究堆自然循环两相流动不稳定性进行数值分析计算，获得了自然循环不稳定性边界，分析了流量、压降、壁温、流体温度以及沸腾边界等参数在不稳定工况下的变化。研究结果为中国先进研究堆的安全运行和事故分析提供了重要参考。
关键词　不稳定性；自然循环；中国先进研究堆
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Two-Phase Instability Analysis in Natural Circulation Loops of China Advanced Research Reactor

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Abstract　Two-Phase flow instability in natural circulation loops of China Advanced Research Reactor was investigated. The homogeneous flow model is used to establish the system control equations. Gear method is employed to solve the system equations documented in form of ordinary differential equations numerically. The boundaries of the instability of natural circulation loops were obtained. The variations of flux, pressure difference, wall temperature, fluid temperature and the boiling boundary were analyzed. Especially, the phase space trajectory of boiling boundary at various flux was   discussed. The calculated results have great significance for the safety operation of China Advanced Research Reactor and its accident analysis.

Key words　instability；　natural　circulation；China　Advanced　Research　Reactor

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