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反应堆工程

低干度自然循环两相流动系统的静态分岔特性

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摘要 基于一维两相四方程漂移流模型，采用数值模拟的方法对5MW低温核供热堆热工模拟回路（HTRL-5）的自然循环进行模拟，分析在自然循环系统中存在的分岔特性及其参数效应。结果表明：在一定条件下低干度自然循环两相流动系统存在静态分岔现象，并且静态分岔点出现在特征曲线的切点上；当压力高到一定程度或热流密度小到一定程度系统的分岔点消失。

关键词 分岔 自然循环 两相流动

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Bifurcation Characteristic of Two-Phase Flow in Natural Circulation System With Low Steam Quality

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Abstract Based on the one-dimension two-phase drift flow model, the simulation of system characteristic under HTRL-5 condition was performed. The bifurcation characteristic of two-phase flow system under natural circulation condition was analyzed. The parameter effect on the bifurcation characteristic was also analyzed. The results show that the bifurcation phenomenon will occur under certain conditions and the bifurcation phenomenon will occur at the tangent point of the characteristic curve of the system. The bifurcation phenomenon will disappear while the system pressure increases or the heat flux decreases to some extent.

Key words bifurcation _ natural circulation _ two-phase flow

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