

横摇条件下九通道系统两相流动不稳定性研究

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摘要 对横摇条件下并联多通道系统的两相流动不稳定性进行了理论研究。基于横摇条件的均匀流模型, 通过控制容积积分法建立了并联九通道系统的分析模型。用吉尔方法对系统控制方程组进行了求解。分析了在横摇条件下并联九通道系统入口段和上升段及加热功率对管间脉动不稳定性的影响, 得到了相应的不稳定性边界。在低含汽率、高含汽率及低过冷度数区域, 系统均不稳定。同时, 在高含汽率区域会出现倍增周期现象及混沌现象。

关键词 [横摇](#) [并联通道](#) [两相流动不稳定性](#) [管间脉动](#)

分类号

Two-Phase Flow Instability in Parallel Nine-Channel System Under Rolling Condition

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Abstract Two-phase flow instability in parallel multi-channel system was studied under rolling motion condition. A parallel nine-channel model was established by using the control volume integrating method based on the homogeneous flow model with considering the rolling motion condition. The gear method was used to solve the control equations. The influences of the entrance, upward sections and the heating power on the flow instability under rolling motion condition were analyzed. The marginal stability boundary (MSB) under rolling motion condition was obtained. The unstable regions occur in both low and high equilibrium quality regions. The region with low inlet sub-cooling is also unstable. In high equilibrium quality region, the multiplied period phenomenon is found and the chaotic phenomenon appears at the MSB.

Key words [rolling motion](#) [parallel channel](#) [two-phase flow instability](#) [inter-tube pulse](#)

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