

反应堆工程

摇摆条件下圆管内的摩擦阻力模型

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收稿日期 修回日期 网络版发布日期:

摘要 对摇摆条件下的层流和湍流流体的受力特性进行了分析。从Navier-Stokes方程出发建立了摇摆条件下层流和湍流流体的流动模型, 推导出了摇摆条件下圆管内层流和湍流流体的速度表达式和摩擦阻力系数表达式。分析了摇摆条件对流体流动特性的影响机理。将理论模型与实验结果进行了比较验证, 两者较为吻合。

关键词 [摇摆](#) [圆管](#) [摩擦阻力](#)

分类号

Models of Frictional Resistance for Circular Tubes in Rolling Motion

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Abstract

The forces affected on the laminar and turbulent flows in rolling motion were analyzed. The flowing models of laminar and turbulent flows were established on the basis of Navier-Stokes equation. The correlations of velocity and frictional resistance coefficient of laminar and turbulent flows in rolling motion were derived. The influence mechanism of rolling motion on the flowing characteristics of these flows was also investigated. The theoretical models were validated with experimental results. The theoretical results are consistent with experimental results.

Key words [rolling](#) [circular](#) [tube](#) [frictional](#) [resistance](#)

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