

## 反应堆工程

# 起伏因素影响自然循环流动的机理分析

姜胜耀; 杨星团\*; 宫厚军; 刘志勇; 郝文涛; 李军; 葛裴

清华大学 核能与新能源技术研究院 先进反应堆工程与安全教育部重点实验室, 北京100084

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**摘要** 以一体化全功率自然循环反应堆模拟实验回路为物理原型, 建立了起伏条件下自然循环流动的理论分析模型, 并通过编制程序进行离散求解, 分析了起伏对自然循环的影响机理。结果表明: 1) 起伏对自然循环具有重要影响, 起伏幅度越大, 或起伏周期越长, 流量波动越大; 2) 起伏条件下的自然循环是交变力场和密度分布变化综合作用的结果; 3) 起伏对自然循环的影响在一定参数条件下可能比摇摆更显著, 从而可能引起更加严重的后果, 需要引起关注。

**关键词** [起伏](#) [自然循环](#) [一体化自然循环反应堆](#)

分类号

## Mechanism of Natural Circulation Taking Account Into Heaving Movement

JIANG Sheng-yao; YANG Xing-tuan\*; GONG Hou-jun; LIU Zhi-yong; HAO Wen-tao, LI Jun, GE Pei

Key Lab of Advanced Nuclear Engineering and Safety of Ministry of Education, Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing 100084, China

**Abstract** According to the simulation loop of full power natural circulation integrated-type reactor, the mathematical model taking account into heaving movement was established. By means of programming to solve the conservation equations, the mechanism of heaving on natural circulation was analyzed. The results show that heaving plays an important role on the natural circulation. Larger amplitude or longer period will result in more wide-coverage fluctuation. Natural circulation flow under heaving conditions ensues from both the alternating force and the alteration of density distribution. Under some certain conditions, heaving is likely to lead more serious consequence than rolling, and need to pay more attention.

**Key words** [heaving](#) [natural circulation](#) [full power natural circulation integrated-type reactor](#)

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