

反应堆工程

## 用于池式快堆系统分析的钠池三维模型开发

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**摘要** 由于池式快堆钠池内的热工水力学特性对反应堆的安全运行有重要影响, 本文采用基于交错网格的SIMPLE算法开发直角坐标系和柱坐标系下钠池三维计算软件。应用CFX软件进行验证之后, 完成了三维流场分析程序与系统分析软件SAC-CFR的耦合, 并用耦合后的程序分析日本文殊快堆45%功率稳态运行工况上腔室内的流场分布, 初步验证了堆芯上腔三维化的SAC-CFR用于系统分析的有效性, 为进一步开发事故模型、非能动余热排出系统模型做准备。

关键词 [钠池](#) [SAC-CFR](#) [三维模型](#)

分类号

## Development of Three-Dimensional Sodium Pool Model for System Analysis of Pool-Type Liquid Metal Fast Breeder Reactor

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**Abstract** As the thermal-hydraulic characteristic in sodium pool is crucial for safety operation of liquid metal fast breeder reactor (LMFBR), a three-dimensional sodium pool thermal-hydraulic analysis code was developed based on SIMPLE algorithm on stagger grid under Cartesian coordinates and cylindrical coordinates. After the validation with CFX, coupling between the analysis code and SAC-CFR was completed, and then the coupled code was applied to the flow field analysis in upper plenum of Monju Plant at 45% thermal power steady-state operation condition, which preliminary shows the effectiveness of the system analysis with coupled code and makes preparations for further development of accident analysis model and passive residual heat removal system.

**Key words** [sodium](#) [pool](#) [SAC-CFR](#) [three-dimensional](#) [model](#)

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