

反应堆工程

# 板型燃料组件内部温度场数值模拟

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**摘要** 以板型燃料组件为研究对象, 采用商用流体力学计算程序CFX5对板型燃料组件内部温度场进行数值模拟。数值计算结果表明: 燃料组件不同流道的流速分布和温度分布均较均匀, 单一流道的流速分布和温度分布也较均匀。燃料板所构成的各流道从外到内流速变化不太大, 在中间流道内流速稍小一些, 但差值很小; 燃料组件单一流道内的流速在壁面附近快速减小, 壁面上流速为0。燃料板和定位梳的温度最高, 侧板温度与板间流体温度相近, 侧板外侧的流体温度较低。

**关键词** [板型燃料组件](#); [数值模拟](#); [计算流体力学](#); [温度场](#)

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## Numerical Simulation of Temperature Fields in Planar Fuel Assembly

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**Abstract** The temperature fields in planar fuel assemblies are simulated numerically by Computational Fluid Dynamics(CFD) program CFX5. The results are useful in optimizing the design of a planar fuel assembly. The results indicate the velocity and temperature in different flow channels of a planar fuel assembly are relatively uniform, and the velocity and temperature in the same flow channel are also uniform. The variation of the flow velocity between different flow channels from outside to inside is small, and the flow velocity in the middle flow channel is relatively smaller than in other channels. The velocity becomes low when the flow is approaching the wall boundary, and the velocity at the wall boundary is zero. The temperature of the fuel plates and pectinate localizers is high, and the temperature of the side panels is close to the temperature of the flows between fuel plates, and the temperature of the flow outside of the side panels is low.

**Key words** [planar fuel assembly](#); [numerical simulation](#); [computational fluid dynamics](#); [temperature field](#)

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