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# 中国先进研究堆导流箱流场的数值模拟

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摘要 采用目前国内普遍使用的计算流体力学 (CFD)软件PHOENICS 3 2对中国先进研究堆不同结构的导流箱的三维流场进行数值模拟计算。结果表明 :导流箱入口导流板和导流筒能显著改善导流箱入口冷却剂的流动状况 ,获得入口冷却剂沿周向均匀分流的效果 ,达到显著减缓入口冷却剂对垂直辐照孔道导管及安全棒导管直接的横向水力冲刷的设计目的

关键词 中国先进研究堆 导流箱 流场 计算流体力学 流致振动

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## Numerical Simulation of Flow Field in the China Advanced Research Reactor Flow-guide Tank

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**Abstract** The flow guide tank in China advanced research reactor (CARR) acts as a reactor inlet coolant distributor and play an important role in reducing the flow induced vibration of the internal components of the reactor core. Numerical simulations of the flow field in the flow guide tank under different conceptual designing configurations are carried out using the PHOENICS3.2. It is seen that the inlet coolant is well distributed circumferentially into the flow guide tank with the inlet buffer plate and the flow distributor barrel. The maximum cross flow velocity within the flow guide tank is reduced significantly, and the reduction of flow induced vibration of reactor internals is expected.

**Key words** China advanced research reactor flow guide tank flow field computational fluid dynamics flow induced vibration

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