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反应堆工程

中子倍增理论应用于碘坑仿真研究

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摘要 采用中子倍增理论对碘坑仿真进行研究：首先，建立碘坑仿真模型；然后，将碘坑仿真模型对不同初始功率下反应堆突然停堆后的氙毒反应性变化进行计算，并将所得结果与点堆模型进行比较，计算结果表明，碘坑深度和初始功率呈线性关系；最后，将碘坑仿真模型应用于反应堆碘坑内机动性研究。本工作所得结论对反应堆安全分析和控制运行有一定的理论意义和参考价值。

关键词 碘坑 中子倍增 船用反应堆 氙毒

分类号

Application of Neutron Multiplication Theory in Simulation of Iodine Well

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Abstract The simulation of the iodine well was studied by the neutron multiplication theory. Firstly, the model of simulation for the iodine well was established. Then, the reactivity worth of xenon poisoning in different initial neutron densities was studied by this model, and the result was compared with result of the point reactor model. The result shows that the relationship between the depth of iodine well and the initial neutron density was linearity. In the end, the maneuverability of the reactor in iodine well was studied by this model. The conclusions are very important to the safety analysis and operation of ship nuclear reactors.

Key words iodine well neutron multiplication ship nuclear reactor xenon poisoning

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