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临界反应堆阶跃正反应性输入时中子密度响应的近似修正解

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摘要 通过修正单组缓发中子先驱核衰变常量λ值，使点堆中子动力学方程单组缓发中子模型在正反应性阶跃输入时的数值计算结果趋近于六组缓发中子模型数值计算结果。在此基础上，用修正后的单组模型解析方法进行计算。结果表明：采用修正后的单组解析方法计算阶跃正反应性输入的中子密度响应，计算结果与六组的接近，满足工程计算精度要求，同时计算简便，避免了刚性问题，可以实现快速计算。

关键词 点堆 中子动力学方程 反应性

分类号 TL31

Approximately Amended Solution of Neutron Kinetics Equations for Critical Reactor Introduced Step-Changed Reactivity

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Abstract In the paper, a way of amending λ was introduced to solve the point reactor neutron kinetics equations so that the numerical solution of single group delayed neutron model is closed to that of six groups delayed neutron model when a positive step changed reactivity was introduced. Based on this, a resolution was gotten for single group delayed neutron model. The analysis shows that when λ is amended the resolution of single group delayed neutron model is approximately equal to the numerical solution of six groups delayed neutron model, which meets engineering accuracy. At the same time, the course of equations' resolving is simple, avoiding the stiffness of numerical computation. In this way, the fast calculation can be achieved.

Key words point reactor neutron kinetics equations reactivity

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