Development of 3-D FBR Heterogeneous Core Calculation Method Based on Characteristics Method

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Abstract

A new 3-D transport calculation method taking into account the heterogeneity of fuel assemblies has been developed by combining the characteristics method and the nodal transport method.

In the axial direction the nodal transport method is applied, and the characteristics method is applied to take into account the radial heterogeneity of fuel assemblies.

The numerical calculations have been performed to verify 2-D radial calculations of FBR assemblies and partial core calculations. Results are compared with the reference Monte-Carlo calculations. A good agreement has been achieved. It is shown that the present method has an advantage in calculating reaction rates in a small region.