Analytic Function Expansion Nodal Method in R-Z Coordinates for Analysis of PBMR Cores

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Abstract

In this paper, we extend the analytic function expansion nodal (AFEN) method to the cylindrical nodes by introducing analytic basis functions in R-Z coordinates and report the results of two benchmark problems, one of which is a PBMR core containing a truncated cone.

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Development of Three Dimensional Kinetic Code for Real-Time Simulator

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Abstract

A new three-dimensional diffusion kinetic code CORE3D has been developed for PWR real-time simulator. A kinetic calculation is based on the modified quasi-static method. For three-dimensional neutron flux distribution calculation, the modified one-group method is applied to increase calculation speed. We have incorporated CORE3D into our real-time simulator and verified its performance. The calculation speed is sufficient for real-time simulation. And the calculation accuracy has been verified by comparing with our nuclear design code ANC. Both codes have a good agreement in various reactor characteristics calculation. We have confirmed the validity of CORE3D.