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POWER COEFFICIENT CALCULATION OF A CANDU REACTOR

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ABSTRACT

The power coefficient of a CANDU reactor was calculated for natural uranium and DUPIC fuel cores using lattice parameters generated by WIMS-AECL code. The simulation was performed for the natural uranium core first and the result was compared with that of the CANDU-6 physics design manual. It was found that the power coefficient based on WIMS-AECL lattice parameters is consistently larger in magnitude compared with that of the physics design manual. The same calculation for a CANDU core loaded with the DUPIC fuel has shown that the power coefficient of the time-average DUPIC fuel core is more negative compared with that of the natural uranium core, which could be attributed to more xenon effect, less coolant density feedback and more Doppler effect.