

Fuel Rod Dimension Sensitivity Analysis for DUPIC Fuel Design

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Abstract

Sensitivity of fuel rod dimension for DUPIC fuel design has been analyzed. Analysis was done using two-dimensional transport theory based computer code HELIOS. For lattice calculations, 190-group adjusted library was used. DUPIC fuel material was used in these calculations. It is found that system reactivity increase in this case is about 8.24 mk. The discharge burnup decrease is about 80 MWD/T compared with the standard DUPIC lattice. In this case amount of heavy metal is also reduced up to about 32%, which will ultimately reduce the radioactive waste and this will enhance the major attraction of DUPIC fuel. The effects on Doppler, Moderator temperature and Void coefficient have also been studied.