

Preliminary Analysis on the Temperature Profile of Blanket Rod for HYPER

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Abstract

The in-reactor performance analysis in fuel design is essential to assure adequate fuel performance and integrity under irradiation conditions. TRU-55%Zr alloy is used as blanket fuel of HYPER system. In this paper, modeling efforts of fuel temperature prediction scheme for TRU-55%Zr fuel rod have been made to formulate an estimated temperature profile of the blanket pin. The fuel temperature prediction scheme is incorporated into the MACSIS code. The thermal conductivity and temperature profile of the blanket rod for HYPER are preliminarily analyzed by the modified MACSIS-H code with the models of TRU-55%Zr rod.

Probabilistic Cumulative Damage Estimation of LMR Fuel Cladding under Transient Conditions

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Abstract

The objectives of this study are to propose the design criteria for LMR(Liquid Metal Reactor) fuel cladding under the transient condition based on the data analysis and estimation. In this study, cumulative damage evaluation and its probabilistic interpretation by using Weibull distribution with experimental data are carried out. For cumulative damage calculation, probabilistic approach is used to determine the effective thickness reduction of eutectic penetration depth. Through this study, it is found that 100% cladding reduction of eutectic penetration depth is conservative and thus more thorough study is recommended to be continued.