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Neutron Thermalization in the FASt TEST Reactor

Over the past couple years Argonne National Laboratory has been developing a FASt TEST Reactor as part of the DOE-NE Advanced Reactor Campaign in order to address the growing needs for fast neutron irradiation capabilities. A unique feature of FASTER is that it not only offers very high fast fluxes and large irradiation volumes, but it can also offer very high thermal fluxes by making use of the large neutron leakage probability.

The thermalization of leaking neutrons to achieve a high thermal flux is discussed in this paper. In order to meet this objective, a number of materials could be used. The performance characteristics, relative to the thermal flux level, are compared for the various thermalizing materials envisioned. Approaches used to mitigate the risk for a large peaking power to occur when thermal neutrons are re-entering the fuel region are also discussed in this paper.

Country/Int. Organization

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