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Thermal Hydraulic Simulation Analysis of Liquid Metal Neutron Generating Target

In order to explore the fluid flow and heat transfer process in the liquid metal neutron production target and provide theoretical basis for the design of the liquid metal neutron production target, the 2.5MeV 1mA particle beam was taken as an example to carry out theoretical analysis on the flow and heat transfer process of the liquid metal neutron production target, and the system design of the entire liquid metal neutron production target is established, and the thermal and hydraulic simulation is carried out by using fluid software, and the theoretical and engineering analysis is carried out. The results show that the thermal hydraulic design parameters can meet the requirements of fluid flow and heat transfer when the particle beam bombards the liquid metal neutron generation target is feasible in theory and engineering. The above results provide a theoretical basis for the thermal-hydraulic design of liquid metal neutron production targets and fill the research gap in related fields in China.

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