

Impact of Fuel Element Shape on Material Testing Reactor using OpenMC Code

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This study investigates the impact of simulating different fuel shapes for a material testing reactor (MTR) using the OpenMC code. Two 2-dimensional bare fuel element models were constructed: one with a curved fuel element shape to represent the actual dimensions of the MTR, and another with a simplified flat fuel element shape with the same amount of fuel as the curved model. The neutron distribution and k-eigenvalue were calculated and compared between the two models. The neutron distribution and k-eigenvalue showed only slight differences due to shape changes. The results indicate that simulating the MTR fuel as flat elements provides a satisfactory approximation of the real shape. However, it may introduce discrepancies for in-depth simulation studies.

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