

# NUCLEAR BURNING WAVE REACTOR: WAVE PARAMETER CONTROL

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The purpose is to find the ways to regulate parameters of the stationary wave in the nuclear burning wave reactor changing its initial composition. One-dimensional model of an infinite reactor is used in one-group approximation. We show that the wave velocity can be regulated within wide range due to the tuning of the initial absorber concentration or of the side neutron leakage. 20 - 30 per cent increase of the final fluence and of the depth of fuel burnup is achieved due to the use of absorber which burns out. Final fluence decreases substantially if fuel is enriched with fissile nuclides which are  $^{239}\text{Pu}$  or  $^{235}\text{U}$  for fuel on the basis of  $^{238}\text{U}$ . Enriching leads to considerable expansion of the range of absorber concentrations for which the stationary wave exists. Qualitative analysis based on analytical theory confirms the general character of these results obtained by means of numeral calculations. The stationary wave also exists in the media corresponding to a spent reactor fuel though the range of possible absorber concentrations is reduced, comparing to  $^{238}\text{U}$  fuel.

*Keywords:* nuclear burning wave, inner safety, fast reactor, one-group approximation.