PHYSICAL PRINCIPLES OF NUCLEAR BURNING WAVE REACTOR. II. THE MODELS

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In this paper the reactor based on a nuclear burning wave propagation under the presence of the absorber which does not burn out is studied. The possibility to regulate the wave velocity and thus the power of the reactor by means of a small deviation of the absorber concentration is demonstrated. Starting from the general equilibrium conditions of the wave obtained in the previous paper [1] the perturbation approach is developed providing possibility to determine the wave velocity (reactor power) and the final fluence (fuel burn out) at a given absorber concentration. Dimensionless velocity of the wave which turns out to be small for any real reactor is proved to be the expansion parameter in this perturbation theory. The effect of higher isotopes of plutonium and of fission products (for the U-Pu cycle) on the wave properties is also considered.