# PHYSICAL PRINCIPLES OF THE NUCLEAR BURNING WAVE REACTOR. I

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This paper aims to make clear the physics of the processes determining the stationary wave of the nuclear burning, and also to find the effective theoretical approaches for determining of its parameters. It is shown that the diffusion equation for fluense may be used both for the stationary and unstationary processes in the nuclear burning wave. Also, the system evolution corresponding to the stationary wave passing it is useful to present as a motion along the co-ordinate of fluense $\psi$ from the initial zero value to some final value $\psi_f$. General balance conditions of the integral type determining stationary wave as a self-consistent time and spatial process are formulated firstly. There are two such conditions. The first one is the condition of equality of the total numbers of neutrons generated and absorbed at the wave passing. The second one is the coincidence condition of “the centers of weight” of the neutron generation and absorption distributions along the co-ordinate of fluense. Together with nuclei kinetic equations these two conditions determine the velocity of the wave and $\psi_f$ as the functions of control parameters of the system.