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Methods of numerical solution of the basic cavitation equation

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Abstract.
In this paper, we developed a mathematical model that allows us to study the process of homogeneous cavitation in liquids, interfacial mass transfer and the dynamics of cavitation cavities with a change in fluid pressure. A numerical simulation was performed, which made it possible to determine the dependence on time and spatial coordinates of the parameters of the liquid phase, temperature and pressure of the vapor phase, concentration and size of bubbles. A program is proposed that allows the described numerical simulation. A number of conclusions were made about the effect of the frequency of external influence on the liquid on the intensity of the formation of cavities in the liquid and calculated the amplitudes of oscillations of cavitation cavities.

Keywords: homogeneous cavitation, numerical solution, Rayleigh equation

MSC numbers: 65K05

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