SIMULATING OF THE ADMIXTURE SPREADING IN A STEADY 2D LENGTHY STREAM OF THE VISCOUS FLUID

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ABSTRACT

A problem of the passive contaminant spreading in the steady viscous fluid stream is considered; the admixture's dissipation and diffusion are taken into account. The channel is assumed to be given in horizontal plane, curvilinear and quite lengthy, that is the ratio of the stream width to its length can be regarded as a small parameter. A mathematical model of the process derived by the small parameter technique from the 2D steady Navier-Stokes equations for incompressible viscous fluid and nonsteady convection-diffusion equation of a substance in the moving medium is introduced. A finite element method is applied for numerical study of the proposed model and results of computer experiments are presented.