Exact solution for problem of compression (expansion) of tube made from incompressible viscoplastic material stepped in incompressible viscous liquid, under external dynamical loading

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In paper present precise exact analytical solution for one-dimensional problem of compression (expansion) of cylindrical tube made from incompressible viscoplastic material Sokolovsky-Perzina type, stepped in incompressible viscous fluid Navier-Stocks type, under external dynamical loading, arbitrary depending from time. The problem deals with investigation of tube reaction, building under water, on short-term intensive action. An action may have, in particular, seismic character, explosion of ammunition and etc. Solution was obtained in Lagrange variables, which made possible to obtained exact solution, a not approximate, asymptotic, as in case of used Euler variables, which used in majority investigations of similar problems.

Earlier author of this presentation obtained exact solutions for some similar dynamical problems with spherical and cylindrical symmetry [1-7].

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