

## Multiscale modeling filtration processes in porous media

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*The article considers a mathematical model for the multiscale process of filtration of weakly compressible liquids in periodic porous media. Computational filtration models based on the Darcy law present rule of thumb test for estimating the parameters of porous medium with a complex internal geometry. These models often use experimental data on the permeability of porous medium or approximate empirical relationships for the parameters of local flows in pores. That is why three-dimensional local problems using the method of asymptotic averaging are formulated and presented here. These are stationary problems about the flow of some fictitious linearly viscous incompressible medium. The dependence of their results and solutions on the internal pore geometry is shown. Averaging of the local equations is performed, being the basis for obtaining the global problem of unsteady filtration of weakly compressible liquids.*

**Keywords:** *filtration, porous media, asymptotic averaging method, finite element method*

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