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Mathematical Model of Hydraulic Fracturing of a Bed

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Abstract

© 2016, Springer Science+Business Media New York. A study has been made of the problem on the process of formation of a zone of higher-than-average permeability with a moving boundary in an initially low-permeability porous medium (problem on hydraulic fracturing of a bed) in a three-dimensional formulation. A characteristic feature of the three-dimensional problem was the taking into account the existence of two zones (zone with a regular permeability and the destruction zone) in the porous medium, whose contact region was determined using the condition of mass balance on the moving boundary. Special features fundamental to the process of mass transfer in such filtration-inhomogeneous porous media have been revealed and analyzed.

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Keywords

bed, filtration inhomogeneity, hydraulic fracturing, permeability