

On the smoothness of a solution of nonlinear filtration problem in the presence of a point source

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Abstract

Properties of a solution of a nonlinear filtration problem in a heterogeneous porous medium in the presence of a point source for a fluid obeying a linear growth law at infinity are studied. In the generalized setting of the problem, a singularity related to the singularity of the right-hand side is determined as an additive term. The pressure field is represented as the sum of a known solution of a certain linear problem (associated with the initial one) with a point source on the right-hand side and an unknown "addition." The Hölder continuity of the latter term is proved. © 2013 Pleiades Publishing, Ltd.

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Keywords

heterogeneous medium, Hölder continuity, nonlinear filtering, point source