GROUP ANALYSIS OF THE RELACSATIONAL PARAMETERS OF FILTRATION

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The approaches acquire the especially meaning among the methods of mathematics design of theoretical and applied tasks of different nature sing the apparat theory Ly(1). The tasks of theory filtration aren't excluded and these approaches are extended. It is arise necessity in reliable analysis entering by virtue of nonenyuton laws of filtration for cultivation oil and gas coal-fields and so in the numerous investigations of problems of the underground productive layers, that is appearing of the unequal effects, making conditional on project of the cultivation productive oil coal fields by means of the different tehnology of the intensification and the influence with secondary and thirdly methods, iteration of the speed, infrexion of the gradient of pressure and it/ s relacsation. The inflexion of the property of liquides contacting with the tehnology factors char acterizes by structurally mechanical indexes both in capillaries and in the pore midst. It is arise necessity in the investigation entering by virtue of nonenyuton laws of filtration, that is appearing of the unequal effects, making conditional iteration of the speed, the measuring of gradient of the pressure and its relacsation. For filtration in the unhomogeneous pore midst is to be excepted of the presence of many simultaneously going on prosseses with different times of the relacsation (3) corresponding molecular interaction of the different scales and unhomogenesity of geometry pore. Let / s descry the filtration of three phases (oil, gas and water) in the unhomogeneous on pervious layer, taking into consideration that in bottomhole zone, in the field of the large speeds, its possible the appearance of operation effects, which the linear law wasn't taken into consideration by Darcy. The equalization of movement can be noticed as the general equalization of Eyler-Jukovskiy .The factor of belated speed or the pressure p in the reological equalizations is taken into consideration by means of their substitution as $\nu + \lambda_\nu \nu$ and $\rho + \lambda_\rho \rho$,where λ_ν and λ_ρ -the time of relacsation of the speed and pressure. Then instead of the law Darcy the equalization will be in the linear approximate: $\nu + \lambda_\nu \frac{\partial \nu}{\partial \tau} = -\frac{k}{\mu}\left(\frac{\partial p}{\partial x} + \lambda_p \frac{\partial^2 p}{\partial x \partial t}\right)$,analogous for the equalization of liquid of Frelix and Sakka. Nonelinear of the filtrational law constraine with the beginning of viscous layer nonennyuton properties of liquids in the fields of little gradients of pressure.

Let / s descry shaftsimmerical filtration of three phase mixture to the well

$$\frac{\partial}{\partial t}(\rho_в m S_в) - \frac{1}{R}\frac{\partial}{\partial R}\left(\frac{RKK_в}{\mu_в}\rho_в \frac{\partial P}{\partial R}\right) = 0$$

$$\frac{\partial}{\partial t}(\rho_Г m S_Г) - \frac{1}{R}\frac{\partial}{\partial R}\left(\frac{RKK_Г}{\mu_Г}\rho_Г \frac{\partial P}{\partial R}\right) = 0$$

$$\frac{\partial}{\partial t}(\rho_н m S_н) - \frac{1}{R}\frac{\partial}{\partial R}\left(\frac{RKK_н}{\mu_н}\rho_н \frac{\partial P}{\partial R}\right) = 0$$

For conditions:

$$t = 0; p = p^0; s = s^0$$

$$R \to 0; 2\pi\left(-\rho_1 \frac{K_1}{\mu_1} - \frac{\rho_2 K_2}{\mu_2}\right) KHR \frac{\partial P}{\partial R} = G(t)$$

$$R = R_x; \frac{\partial P}{\partial R} = 0$$

Here P is pressure; s_i is volumetric saturation pores with *i*-phase, $s = s_1; \mu$ is viscosity; $\boldsymbol{\rho}$ is compactness, *K* is pervisity; *m* is porosity; *K*(*S*) is phase pervisity; *H* is capasity of layer; *G* is mass expenses of mixture on the wall of well; R_x is radius of the contour of the layer. Appling the theory Ly we will find the group of the permissible transformation for our task, where it is possible to detach the definite classes of decisions , it is easier to find their than to find the general decision.
Infinitezimal operator shows as:

$$X = \alpha^1 \frac{\partial}{\partial t} + \alpha^2 \frac{\partial}{\partial r} + \alpha^3 \frac{\partial}{\partial p} + \beta_1 \frac{\partial}{\partial p_t} + \beta_2 \frac{\partial}{\partial p_r} + \beta_{11} \frac{\partial}{\partial p_{tt}} + \beta_{12} \frac{\partial}{\partial p_{tr}} +$$
$$\beta_{22} \frac{\partial}{\partial p_{rr}} + \beta_{111} \frac{\partial}{\partial p_{ttt}} + \beta_{112} \frac{\partial}{\partial p_{ttr}} + \beta_{122} \frac{\partial}{\partial p_{trr}} + \beta_{222} \frac{\partial}{\partial p_{rrr}}$$

Appling the infinitezimal operator to this task and taking into consideration that the pressure and its derivatives are independent variables in the prolonged area of algebra Ly, it can be excerpt the following system, allowing to define the analytical form of the quanity co-ordinat;

$$2a_2\alpha^2 - \lambda_2\alpha^3_{pt} + 2\lambda_2\alpha^2_{rt} - a_2\alpha^3_p - a_2^{/}\alpha^3 = 0$$
$$\lambda_2\alpha^2_{rr} - 2\lambda_1\alpha^2_t - 2\lambda_2\alpha^3_{pr} = 0$$
$$-\lambda_2\alpha^3_{rp} - \lambda_1\alpha^{/}_{tt} - 2\lambda_1\alpha^3_{tp} + \alpha^{4'}_p - \alpha^{/}_t = 0$$
$$\lambda_1^{/}\alpha^1 - 2\lambda_1\alpha^{/}_t + \lambda\alpha^3_p = 0$$
$$-a_2^{//}\alpha^3 - a_2^{/}\alpha^3_p + a_2\alpha^2_r - \alpha^2_t - \lambda_1\alpha^2_{tt} - 2a_2\alpha^3_{pr} + \lambda_2\alpha^2_{rrt} - 2\lambda_2\alpha^3_{prt} = 0$$
$$a_2\varphi^3_p - a_2^{/}\varphi^3 = 0$$
$$-\lambda_2^{/}\alpha^{/} + \lambda_2\alpha^3_p - 2\lambda_2\alpha^2_r = 0$$
$$\alpha^{/}_p = 0 \qquad \alpha^2_p = 0 \qquad \alpha^3_p = 0 \qquad \alpha^3_{pp} = 0 \qquad \alpha^{/}_r = 0 \qquad \alpha^2_{rr} = 0$$

For definition the form of function its necessary to value the equalization which differencial concerning quanity co–ordinat;

If don't use with infinitezimal criteria of invariancy of differencial equalizations to substitute into the equalization of formula transformation then receiving system and the task finding of group can be sufficiently heavy and cumbersome.

The definition equalizations are always linear, that is appling of infinitezimal criteria of invariancy actually linearize the task for finding of transformation group, permissible this system of differencial equalizations. criteria of invariancy of system concerning operator allows to define:

$$\alpha^1 = c_1 t + c_2$$
$$\alpha^2 = c_3 t + c_4 r + f(t)$$
$$\alpha^3 = (c_1 + c_5)p + f^{/}(t)$$

Where f(t) is arbitrary sleek function , c_i is constant. We received infinitemasure area of algebra Ly. For parameters of relacsation we will define the classificational system:

$$(c_5 - c_1)\lambda_i(t) + (c_1 t + c_2)\frac{d\lambda_i(t)}{dt} = 0$$

drea Ly, creating with the groups of passing and lengthening allows to detach the definite classes for functions λ_1, λ_2, it is necessary to take into consideration the transformation of equivalents (1).The chance $\lambda_1 = \lambda_2 = const$ conforms to equilibrium system with nonenyuton properties. When $c_i \neq 0$ we descry more general chance, corresponding real process. The meanings for parameters of relacsation define from the class of degree functions;

$$\lambda_i(t) = t^{s_i} \; (S_i \neq 0)$$

The group theory of the differential equalizations allowed to define the permissible classes for classification of the function of relactions, it is have of no small importance meaning for definition the invariance decisions for studding of nonequilibrium systems.

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