ITERATIVE METHOD OF A SOLUTION OF THE NONLINEAR OPERATOR EQUATION WITH PERTURBATION.

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We consider the case with some conditions on an input equation with a perturbation by small nonlinear term. Then the branching equation for input equation contains the quasilinear principal part. This allows to prove the existence theorem of the solution for input equation, to construct the iterative formulas for its determination and to select an initial approximation.

Let's E_1, E_2 - the Banach spaces. We consider the equation

$$Bx = b + \varepsilon R(x),$$

where B - closed Fredholm operator, from E_1 in E_2 with dense in E_1 by definition domain, $\{\varphi_i\}_1^n$ - the base in $N(B)$, $\{\psi_i\}_1^n$ - the base in $N(B^*)$, $\dim N(B) = n > 1$; $R(x) = \sum R_i(x)$, here R_i - i - degree operators. The right member of input equation is defined in neighbourhood

$$\Omega = \{x \in E_1, \varepsilon \in R^1 : \|x\| < r, |\varepsilon| < \rho\}.$$

The task of searching of small solution is consider.

For the class of the equations with quasilinear principal part can be investigated all solutions with the preassigned rate of growth - both - bounded, and peculiar (unbounded).

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