ON EXISTENCE OF SOLUTIONS TO DEGENERATE NONLINEAR OPTIMIZATION PROBLEMS

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Abstract

We investigate the existence of the solution to the following problem

\[
\min \varphi(x) \text{ subject to } G(x) = 0,
\]

where \( \varphi : X \to \mathbb{R}, \) \( G : X \to Y \) and \( X, Y \) are Banach spaces. The question of existence is considered in a neighborhood of such point \( x_0 \) that the Hessian of the Lagrange function is degenerate. There was obtained an approximation for the distance of solution \( x^* \) to the initial point \( x_0 \).

Keywords: Lagrange function, necessary condition of optimality, \( p \)-regularity, contracting mapping, \( p \)-factor operator.

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References


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