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ON THE APPLICATION OF THE QUASISOLUTION METHOD TO THE CORRECTION OF IMPROPER CONVEX PROGRAMS

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We consider a class of improper convex programs with a possibly inconsistent system of constraints, which is important from the viewpoint of applications. Such problems are characterized as improper problems of convex optimization. Since improper problems are rather frequent, it is important to develop the theory and numerical methods of their correction (approximation). The correction is understood as the construction of solvable models that are close to the original problems in a certain sense. Solutions of these models are taken as generalized solutions of the original improper problems. In the present paper the correcting problems are constructed based on the minimization of a certain penalty function depending on the constraints. Since the information about the functions of the original model may be inexact, we apply for the corrected problem the quasisolution method, which is a standard regularization method for ill-posed optimization problems. Convergence conditions are formulated for the proposed methods and convergence rates are established.

Keywords: convex programming, improper problem, optimal correction, penalty function methods, quasisolution method.

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