

ON VARIATIONAL-LIKE INEQUALITIES AND GLOBAL MINIMIZATION PROBLEM

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Abstract. In this paper, we obtain necessary and sufficient conditions, which ensure that all pairs of the solution sets of Stampacchia variational-like inequality, Minty variational-like inequality and global minimization problem coincide.

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1. Introduction

Variational inequalities have been in scope of interests of the authors for the last four decades. Stampacchia variational inequality of differentiable type was developed in Stampacchia [12] and some subsequent works. The necessary optimality condition characterizes the connection between optimization problems and Stampacchia variational inequality. The study of Minty variational inequality originated from Minty [7].

Invex functions were introduced by Hanson [2] in 1981. A lot of papers appeared since then. The book [8] is a comprehensive survey of their properties and application in optimization, economics, and engineering. The notion of invariant pseudomonotonicity was introduced in Yang *et al* [13]. Invariant pseudomonotonicity was generalized to locally Lipschitz functions in term of the Clarke subgradient by Jabarootian and Zafarani [4], but it was not proved in [4] that pseudoinvexity of a function implies invariant pseudomonotonicity of the respective subgradient map. It was found by Ivanov [3] which are the largest classes of functions such that the solution sets of each pair of the following problems coincide: Stampacchia variational inequality, Minty variational inequality, and the global minimization