**PAPER (A)**

**MIXED TYPE SYMMETRIC AND SELF DUALITY FOR MULTIOBJECTIVE VARIATIONAL PROBLEMS WITH SUPPORT FUNCTIONS**

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**ABSTRACT**

In this paper, a pair of mixed type symmetric dual multiobjective variational problems containing support functions is formulated. This mixed formulation unifies two existing pairs Wolfe and Mond-Weir type symmetric dual multiobjective variational problems containing support functions. For this pair of mixed type nondifferentiable multiobjective variational problems, various duality theorems are established under convexity-concavity and pseudoconvexity-pseudoconcavity of certain combination of functionals appearing in the formulation. A self duality theorem under additional assumptions on the kernel functions that occur in the problems is validated. A pair of mixed type nondifferentiable multiobjective variational problem with natural boundary values is also formulated to investigate various duality theorems. It is also pointed that our duality theorems can be viewed as dynamic generalizations of the corresponding (static) symmetric and self duality of multiobjective nonlinear programming with support functions.

**PAPER (B)**

**CONSTRAINED DYNAMIC GAME AND SYMMETRIC DUALITY FOR**

**VARIATIONAL PROBLEMS**

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**ABSTRACT**

A certain constrained dynamic game is shown to be equivalent to a pair of symmetric dual variational problems which have more general formulation than those already existing in the literature. Various duality results are proved under convexity and generalized convexity assumptions on the appropriate functional. The dynamic game is also viewed as equivalent to a pair of dual variational problem without the condition of fixed points. It is also indicated that our equivalent formulation of a pair of symmetric dual variational problems as dynamic generalization of those already studied in the literature.