**Convex SIP Problems with Finitely Representable Compact Index Sets: Immobile Indices and the Properties of the Auxiliary NLP Problem**

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**Abstract:** In the paper, we consider a problem of convex Semi-Infinite Programming with a compact index set defined by a finite number of nonlinear inequalities. While studying this problem, we apply the approach developed in our previous works and based on the notions of immobile indices, the corresponding immobility orders and the properties of a specially constructed auxiliary nonlinear problem. The main results of the paper consist in the formulation of sufficient optimality conditions for a feasible solution of the original SIP problem in terms of the optimality conditions for this solution in a specially constructed auxiliary nonlinear programming problem and in study of certain useful properties of this finite problem

**Keywords:** Semi-Infinite Programming, optimality conditions, index set, immobile indices

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