**A study of one class of NLP problems arising in parametric Semi-Infinite Programming**

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**Abstract.** The paper deals with a nonlinear programming (NLP) problem that depends on a finite number of integers (parameters). This problem has a special form, and arises as an auxiliary problem in study of solutions' properties of parametric semi-infinite programming (SIP) problems with finitely representable compact index sets. Therefore, it is important to provide a deep study of this NLP problem and its properties w.r.t. the values of the parameters. We are especially interested in the case when optimal solutions of the NLP problem satisfy certain properties due to some specific requirements arising in parametric SIP. We establish the values of the parameters for which optimal solutions of the corresponding NLP problem fulfil the needed properties, and suggest an algorithm that determines the right values of the parameters. An example is proposed to illustrate the application of the algorithm.

**Keywords:** Nonlinear Programming (NLP), Semi-infinite Programming (SIP), Quadratic Programming (QP), parametric problems, optimality conditions, constraint qualification.

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