**Optimality criteria without constraint qualifications for linear semidefinite problems**

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**Abstract:** We consider two closely related optimization problems: a problem of convex semi-infinite programming with multidimensional index set and a linear problem of semi-definite programming. In the study of these problems we apply the approach suggested in our recent paper [14] and based on the notions of immobile indices and their immobility orders. For the linear semi-definite problem, we define the subspace of immobile indices and formulate the first-order optimality conditions in terms of a basic matrix of this subspace. These conditions are explicit, do not use constraint qualifications, and have the form of a criterion. An algorithm determining a basis of the subspace of immobile indices in a finite number of steps is suggested. The optimality conditions obtained are compared with other known optimality conditions. Translated from Sovremennaya Matematika i Ee Prilozheniya (Contemporary Mathematics and Its Applications), Vol. 71, Algebraic Techniques in Graph Theory and Optimization, 2011.

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1. BSUIR [↑](#footnote-ref-1)
2. Foreign [↑](#footnote-ref-2)