

Algorithmic determination of immobile indices in convex SIP problems with polyhedral index sets

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Abstract: The concepts of immobile indices and their immobility orders are objective and important characteristics of feasible sets of semi-infinite programming (SIP) problems. They can be used for the formulation of new efficient optimality conditions without constraint qualifications. Given a class of convex SIP problems with polyhedral index sets, we describe and justify a finite constructive algorithm (algorithm DIIPS) that allows to find in a finite number of steps all immobile indices and the corresponding immobility orders along the feasible directions. This

algorithm is based on a representation of the cones of feasible directions in the polyhedral index sets in the form of linear combinations of extremal rays and on the approach proposed in our previous papers for the cases of immobile indices' sets of simpler structures. A constructive procedure of determination of the extremal rays is described, and an example illustrating the application of the DIIPS algorithm is provided.

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