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Optimality Conditions and Duality for Semi-Infinite Mathematical Programming Problems with Equilibrium Constraints, Using Convexificators

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Abstract : In this paper, we consider semi-infinite mathematical programming problems with equilibrium constraints (SIMPEC). We establish necessary and sufficient optimality conditions for the SIMPEC, using convexificators. We study the Wolfe type dual problem for the SIMPEC under the $\partial*$convexity assumptions. A Mond-Weir type dual problem is also formulated and studied for the SIMPEC under the $\partial*$-convexity, $\partial*$-pseudoconvexity and $\partial*$quasiconvexity assumptions. Weak duality theorems are established to relate the SIMPEC and two dual programs in the framework of convexificators. Further, strong duality theorems are obtained under generalized standard Abadie constraint qualification (GS-ACQ).

Keywords : mathematical programming problems with equilibrium constraints, optimality conditions, semi-infinite programming, convexificators
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