Outer limit of subdifferentials and calmness moduli in linear and nonlinear programming*

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Abstract

With a common background and motivation, the main contributions of this talk are developed in two different directions. Firstly, we are concerned with functions which are the maximum of a finite amount of continuously differentiable functions of n real variables, paying attention to the case of polyhedral functions. For these max-functions, we obtain some results about outer limits of subdifferentials, which are applied to derive an upper bound for the calmness modulus of nonlinear systems. When confined to the convex case, in addition, a lower bound on this modulus is also obtained. Secondly, by means of a KKT index set approach, we are also able to provide a point-based formula for the calmness modulus of the argmin mapping of linear programming problems without any uniqueness assumption on the optimal set. This formula still provides a lower bound in linear semi-infinite programming. Illustrative examples are given.

Key words. Calmness, local error bounds, variational analysis, linear programming, argmin mapping.

Mathematics Subject Classification: 90C31, 49J53, 94K40, 90C25, 90C05.

*This research has been partially supported by Grants MTM2011-29064-C03 (02-03) from MINECO, Spain.

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