

Differential Stability Analysis via Multiplier Sets

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Abstract: The present paper discusses differential stability of convex programming problems in Hausdorff locally convex topological vector spaces. Among other things, we obtain formulas for computing or estimating the subdifferential and the singular subdifferential of the optimal value function via suitable multiplier sets. Optimality conditions for convex optimization problems under inclusion constraints and for convex optimization problems under geometrical and functional constraints will be formulated too. But our main aim is to clarify the connection between the subdifferentials of the optimal value function and certain multiplier sets. Namely, by using some results from [1], we derive an upper estimate for the subdifferentials via the Lagrange multiplier sets and give an example to show that the upper estimate can be strict. Then, by defining a satisfactory multiplier set, we obtain formulas for exact computing the subdifferential and the singular subdifferential of the optimal value function.

References

[1] D. T. V. An and N. D. Yen, Differential stability of convex optimization problems under inclusion constraints, *Applicable Analysis*, 94, pp. 108–128 (2015).

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