

Fenchel-Lagrange c-conjugate duality in infinite convex optimization

Jose Vidal* and M.D. Fajardo

Abstract

In this talk we obtain a Fenchel-Lagrange dual problem for an infinite dimensional optimization primal one, via perturbational approach and applying a conjugation scheme called c-conjugation.

Using this approach, Fenchel-Lagrange dual problem is shown to be a combination of Fenchel and Lagrange dual problems obtained in [1] and [2], respectively. For this reason, the purpose of this talk is twofold. First, we will analyse the main inequalities that these three optimization problems satisfy as well as sufficient conditions for equality. Secondly, we will develop two closedness-type regularity conditions and a characterization for strong Fenchel-Lagrange duality. As it happens in the *classical* context with the lower semicontinuity and convexity of the involved functions in the primal problem, see [3] for a deep knowledge in the field, the evenly convexity and properness of the functions will be a compulsory requirement since this scheme is appropriate for the so called evenly convex functions, see [4].

Finally, we extend such conditions to the study of stable strong Fenchel-Lagrange duality.

References

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*TU Chemnitz