Stable Strong Fenchel and Lagrange duality for evenly convex optimization problems

Authors: M.D. Fajardo, J. Vidal

Department of Statistics and Operations Research

 University of Alicante, 03080 Alicante, Spain

Abstract: By means of a conjugation scheme based on generalized convex conjugation theory instead of Fenchel conjugation, we build an alternative dual problem, using the perturbational approach, for a general optimization primal one defined on a separated locally convex topological space. Conditions guaranteeing strong duality for disturbed primal problems by continuous linear functionals and their respective dual problems, which is named stable strong duality, are stablished. In these conditions, the evenly convexity of the perturbation function will play a fundamental role. Stable strong duality will also be studied in particular for Fenchel and Lagrange primal-dual problems, obtaining moreover a characterization for Fenchel case.