

Duality in MIP

Pachkova, Elena V. (*Copenhagen University, Denmark*)

This presentation treats duality in Mixed Integer Programming (MIP in short). A dual of a MIP problem includes a dual price function F , that plays the same role as the dual variables in Linear Programming (LP in the following).

The price function is generated while solving the primal problem. However, different to the LP dual variables, the characteristics of the dual price function depend on the algorithmic approach used to solve the MIP problem. Thus, the cutting plane approach provides nondecreasing and superadditive price functions while branch and bound algorithm generates piecewise linear, nondecreasing and convex price functions.

Here a hybrid algorithm based on branch and cut is investigated, and a price function for that algorithm is established. This price function presents a generalization of the dual price functions obtained by either the cutting plane or the branch and bound method.