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A Simple Stabilizing Method for Column Generation Heuristics: An Application to *P*-Median Location Problems

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Abstract—The Lagrangean/surrogate relaxation has been explored as a faster computational alternative to traditional Lagrangean heuristics. In this work the Lagrangean/surrogate relaxation and traditional column generation approaches are combined in order to accelerate and stabilize primal and dual bounds, through an improved reduced cost selection. The Lagrangean/surrogate multiplier modifies the reduced cost criterion, resulting in the selection of more productive columns for the *p*-median problem, which deals with the localization of *p* facilities (medians) on a network in order to minimize the sum of all the distances from each demand point to its nearest facility. Computational tests running *p*-median instances taken from the literature are presented.

Keywords—*P*-median, Location, Column generation, Large-scale optimization, Integer programming

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