

In this paper we investigate the datapath merging problem (DPM) in reconfigurable systems. DPM is NP-hard and it is described here in terms of a graph optimization problem. We present an Integer Programming (IP) formulation of DPM and introduce some valid inequalities for the convex hull of integer solutions. These inequalities form the basis of a branch-and-cut algorithm that we implemented. This algorithm was used to compute lower bounds for a set of DPM instances, allowing us to assess the performance of the heuristic proposed by Moreano et al. [1] which is among the best ones available for the problem. Our computational experiments confirmed the efficiency of Moreano's heuristic. Moreover, the branch-and-cut algorithm also was proved to be a valuable tool to solve small-sized DPM instances to optimality.