

# Row Layout Problems

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Given a set of  $n$  departments the Double Row Facility Layout Problem (DRFLP) asks for a non-overlapping arrangement of the departments right and left to one path, i. e. in two rows, such that the weighted sum of the pairwise center-to-center distances is minimized. In contrast to the well-studied Single Row Facility Layout Problem, there might be spaces between neighboring departments on the same side. In general, the lengths of the departments may vary, but in one part of this talk we consider the so called equidistant case when all lengths are equal to one. We present an integer linear programming (ILP) model as well as a semidefinite programming (SDP) model that allow to solve medium-sized instances to optimality. The SDP model provides good lower bounds even for large instances. For DRFLP with arbitrary lengths we present a new ILP based approach. With this approach we are able to solve instances with up to 16 departments to optimality. For larger instances we show how to alternatively derive combinatorial lower bounds.

This is joint work with Miguel Anjos, Frank Fischer and Philipp Hungerländer.