

Institut für Optimierung und Diskrete Mathematik

Vortrag im Seminar Optimierung und Diskrete Mathematik

10.2.2015, 16:00

Seminarraum C208, Steyrergasse 30, 2. Stock

Solution Approaches for Double and Multi Row Facility Layout Problems

ANJA FISCHER

(TU Dortmund)

Given a set of departments the Multi Row Facility Layout Problem (MRFLP) ask for a non-overlapping arrangement of the departments in a given number of rows such that the weighted sum of the pairwise center-to-center distances is minimized. In general, the lengths of the departments may vary, but we also consider the so called equidistant case when all lengths are equal to one. The MRFLP is an extension of the Linear Arrangement Problem (LA) as well as of the Single Row Facility Layout Problem (SRFLP). In contrast to these two problems, there might be spaces between neighboring departments in the same row in the MRFLP. In this talk we present two new models for the equidistant MRFLP that are based on results on the structure of optimal solutions. The first model uses binary betweenness variables as well as binary variables indicating whether two departments are in same position. The second model leads to a semidefinite programming relaxation which is solved using a spectral bundle method. In the second part of the talk we present combinatorial lower bounds for the general MRFLP that are related to the so called star-inequalities of the LA and to approximation algorithms in parallel machine scheduling. Furthermore we study connections between (optimal) solutions of SRFLP and MRFLP.

Joint work with Miguel Anjos, Frank Fischer and Philipp Hungerländer

Eranda Dragoti-Çela und Bettina Klinz