ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

16. Applications

1991 MS Classification: 90C, 90B
Zimmermann, Uwe T., Bussieck, Michael R., Lübbecke, Marco E. , Technische Universität Braunschweig, Germany

Hard Integer Programming Problems from Railroad Planning

Railroad planning processes including *line planning*, *train scheduling*, and *circulation of rolling stock* often permit a (mixed) integer programming (MIP) formulation. The integration of computers in the planning process made mathematical programming methods available for practically relevant problem sizes. We suceed in solving planning problems by customizing general MIP techniques. In particular, we exploit combinatorial problem structures and derive strong inequalities for the associated polytopes. Computational investigations for real world instances coming from industry reveal the practical impact of integer programming methods in the context of railroad planning.