The integrated timetabling and passenger routing problem

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Abstract

The Periodic Event Scheduling Problem (PESP) is a widely researched problem in the optimization of public transportation. The goal is to compute a periodic timetable that minimizes the travel time of the passengers. In the classic PESP, passengers are routed before the computation of the timetable, neglecting the fact that passengers may choose their path depending on the underlying timetable. The integrated timetabling and passenger routing problem deals with this issue. Here, a path for every OD-pair is computed along with the timetable during the process of optimization. As this further increases the complexity of the classic PESP significantly, we cannot hope to solve problems of realistic size exactly. The aim of this talk is to present strategies that help reduce the size of the problem as well as ideas on how to choose subsets of OD-pairs that are routed during the optimization process.