

# Column Generation for Line Planning with Minimal Traveling Time

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The choice of a good line concept is an important step in transportation planning. There are many different approaches considering for example cost minimizing objectives. Anita Schöbel and Susanne Scholl introduced an integer program minimizing the overall traveling time of all customers. Even for small instances this problem is hard to solve. Applying the Dantzig-Wolfe-Decomposition yields an equivalent formulation using passenger paths. Motivated by the huge number of variables received by the Dantzig-Wolfe-Decomposition, a column generation algorithm is used to solve the relaxation and to approximate an integer solution. The corresponding pricing problems are shortest path problems, which can be solved efficiently.