

# Optimization of Train Unit Rotations in a Railway Network



YUAN GAO  
ASSOCIATE PROFESSOR  
SCHOOL OF MANAGEMENT AND ECONOMICS  
BEIJING INSTITUTE OF TECHNOLOGY

The train unit rotation plan is a significant part in railway operations. In this presentation, I first review several formulations and algorithms for train unit rotation plans with different settings. Then, I introduce the background of train unit rotation plan in Chinese high-speed railway networks, including the maintenance regulations and coupling rules. In order to reduce the total cost of train units on each day of a week, a weekly train unit rotation model is formulated, based on a newly developed rotation network. To solve the model, a customized branch-and-price algorithm is developed, which combines a diving algorithm to quickly find a feasible solution.

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Questions? Nikola Besinovic at  
N.Besinovic@tudelft.nl