Summer School Integrated Public Transport Planning

Learn how to design and operate a public transport system

Date: 19 - 23 July 2021

Place: Online

Language: English

Target Group: Master & PhD students of transport engineering, computer science and mathematics

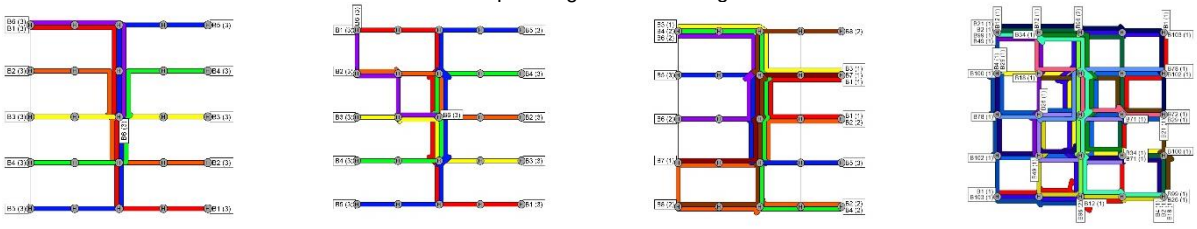
Registration: https://for2083.mathematik.uni-kl.de/en/events/summerschool until 30 June 2021

Objective of the Summer School Integrated Public Transport Planning

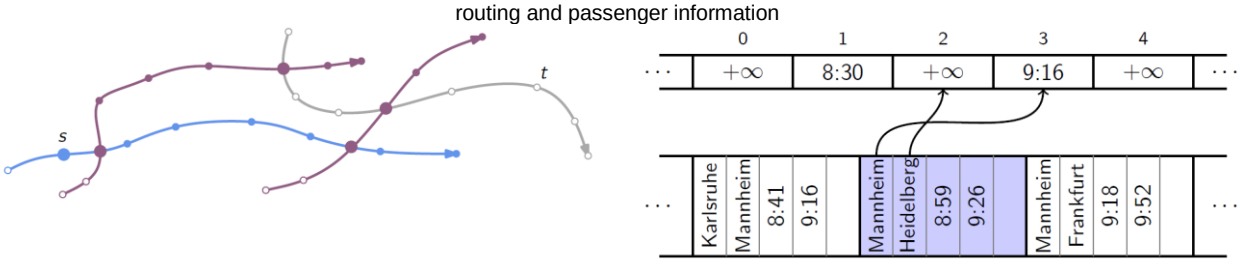
Public transport is the most efficient "sharing system" available to us in densely populated areas. A large number of people can be transported with just a few vehicles and vehicle kilometres. Future Mobility-as-a-Service (MaaS) offerings that enable individualized transport with shared vehicles will be attractive to travellers, but will lead to additional vehicle kilometres. Therefore, it will remain an important task of transport planning to provide an attractive public transport supply offering alternatives to private or shared cars. This task leads to the overall topic of the summer school: How to design and operate a public transport service that is as good as possible?

The summer school will present methods to design and evaluate public transport plans covering the steps of line planning, timetable planning and vehicle scheduling. It will look at methods to facilitate access to public transport by providing routing information and by addressing disturbances in the daily operation. The Summer School aims at introducing participants to practical and mathematical methods for planning and optimising public transport.

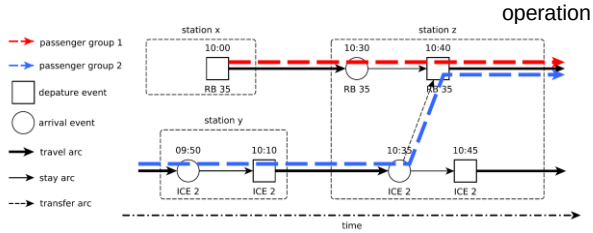
line planning and timetabling



routing and passenger information



operation and dispatching



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Day 1 – Public Transport and Travel Demand

Time	Topic	Speaker
11:00 – 11:30	Welcome and introduction	Schöbel
11:30 – 13:00	Introduction to public transport planning • What is a good public transport supply? • The planning task	Friedrich
14:00 – 15:30	Data models for public transport planning • Network models: links, stops, lines, timetables, blocks • Graphs:	Friedrich + Schiewe
16:00 – 17:30	Travel demand • Factors influencing travel demand • Demand modelling • Public transport assignment	Friedrich
18:30 – 19:30	Virtual introduction round	

Day 2 – Line Planning and Timetabling

Time	Topic	Speaker
09:00 – 10:30	Public transport planning: approach in planning practice • Line networks and timetables • Operating cost	Friedrich
11:00 – 12:30	Group work: developing your own solution	Group work
13:30 – 15:00	Presentation of the results	Group work
15:30 – 17:00	Modeling with integer variables	Schöbel

Day 3 –Timetabling and Vehicle Scheduling

Time	Topic	Speaker
09:00 – 10:30	Introduction to LinTim Create your own Dataset	Schiewe
11:00 – 12:30	Line Planning • Lecture • Hands-on with LinTim	Schöbel + Schiewe
13:30 – 15:00	Timetabling • Lecture • Hands-on with LinTim	Schöbel + Schiewe
15:30 – 17:00	Vehicle Scheduling • Lecture • Hands-on with LinTim	Schöbel + Schiewe

Tag 4 – Routing and Traveller Information

Time	Topic	Speaker
09:00 – 10:30	Introduction to travel information systems (requirements, goals, models, challenges)	Müller-Hannemann
11:00 – 12:30	Route planning in transport networks – basic techniques	Wagner
13:30 – 15:00	Journey planning in public transit networks	Sauer + Wagner
15:30 – 17:00	Multimodal journey planning	Sauer + Wagner

Tag 5 – Disposition in Case of Disruptions

Time	Topic	Speaker
09:00 – 10:30	Disposition in case of disruptions and delays (types of disruptions, measures, forecasting of delays, disposition timetables)	Müller-Hannemann
11:00 – 12:30	Disposition for long-distance trains (waiting decisions; train cancellations; passenger guidance)	Müller-Hannemann
13:30 – 15:00	Disposition for urban public transport – analysis and simulation	Briem + Vortisch

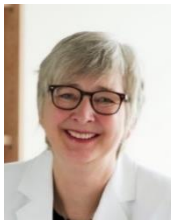
Speakers

Prof. Dr. Anita Schöbel
TU Kaiserslautern
Fachbereich Mathematik

Dr. Alexander Schiewe
TU Kaiserslautern
Fachbereich Mathematik

Prof. Dr.-Ing. Markus Friedrich
Universität Stuttgart
Lehrstuhl für Verkehrsplanung und Verkehrsleittechnik

Prof. Dr. Matthias Müller-Hannemann
Martin-Luther-Universität Halle-Wittenberg
Institut für Informatik



Prof. Dr. Dorothea Wagner
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