

## 第48讲

### 运行图概述(二)

主讲：张天伟



# 主要内容

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- 上讲内容回归
- 运行图的分类
- 国内外研究现状



# 主要内容

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- 上讲内容回顾
- 运行图的分类
- 国内外研究现状



# 上讲内容回顾

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- 运行图的定义
- 运行图的意义
- 运行图的表示方法



# 主要内容

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- 上讲内容回归
- 运行图的分类
- 国内外研究现状



# 运行图的分类

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- 一、按使用范围
- 二、按照区间正线数
- 三、按照列车运行速度
- 四、按照上下行方向列车数
- 五、按照同方向列车运行方式



# 一、按使用范围

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- 铁路内部使用的列车运行图
- 社会使用的列车运行图



## 二、按照区间正线数

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- 单线运行图
- 双线运行图
- 单双线运行图



# 1.单线运行图

区间内运行线不能出现交叉，列车交会在车站进行

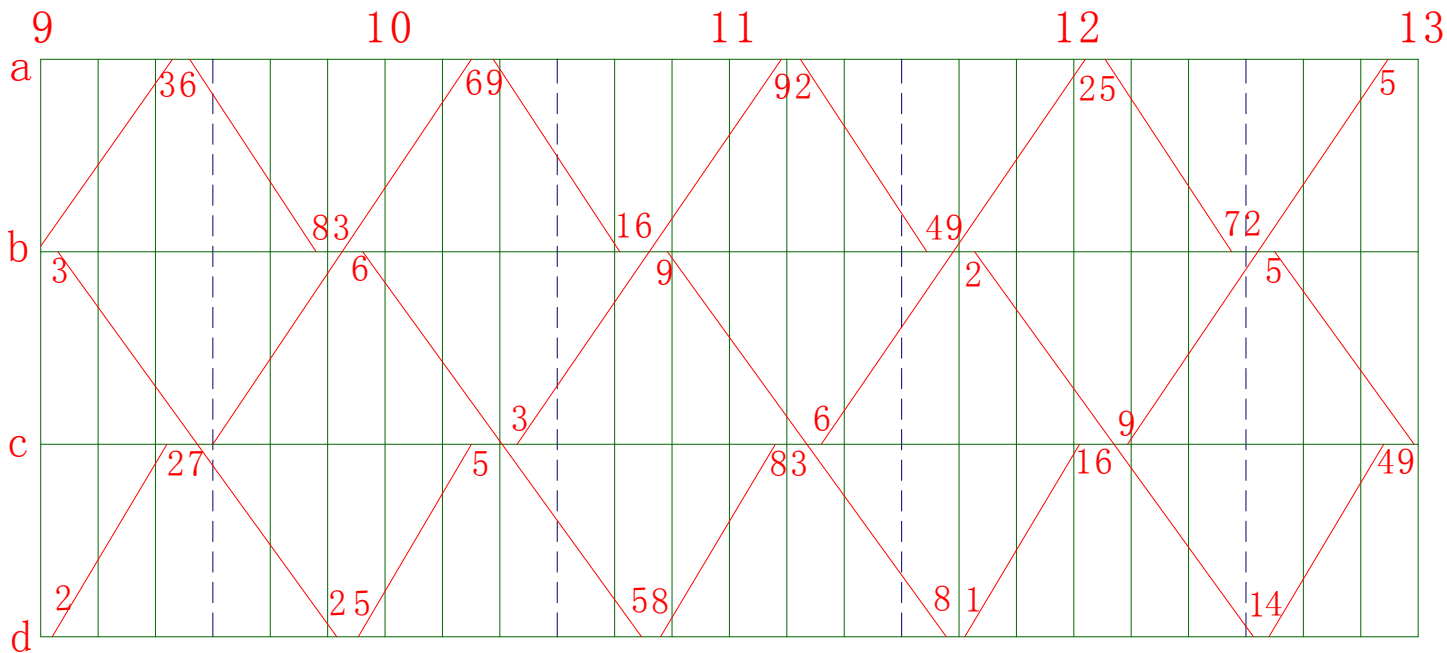


图3-1-5 单线成对平行运行图

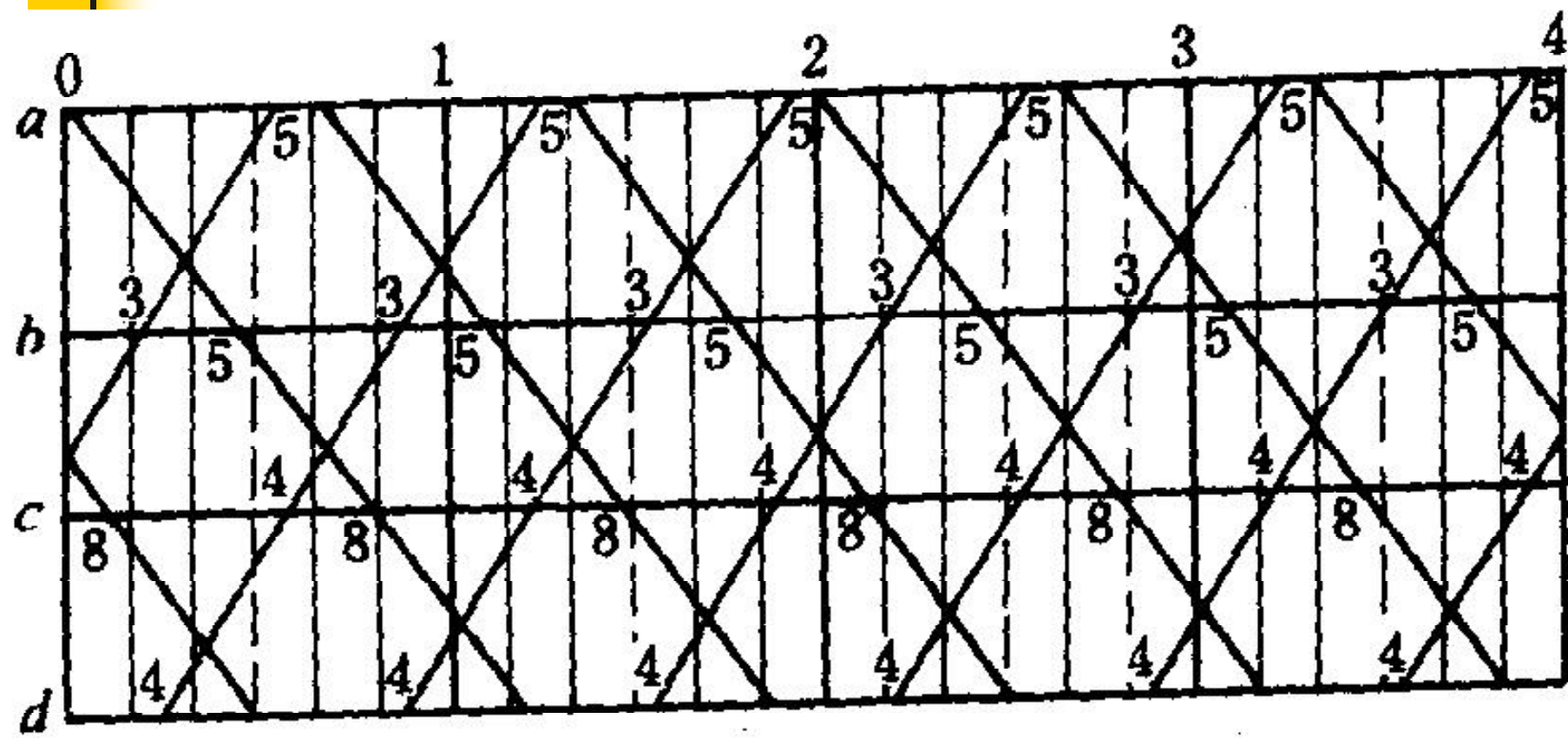


图 3—1—6 双线成对平行运行图





## 三、按照列车运行速度

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- 平行运行图
- 非平行运行图

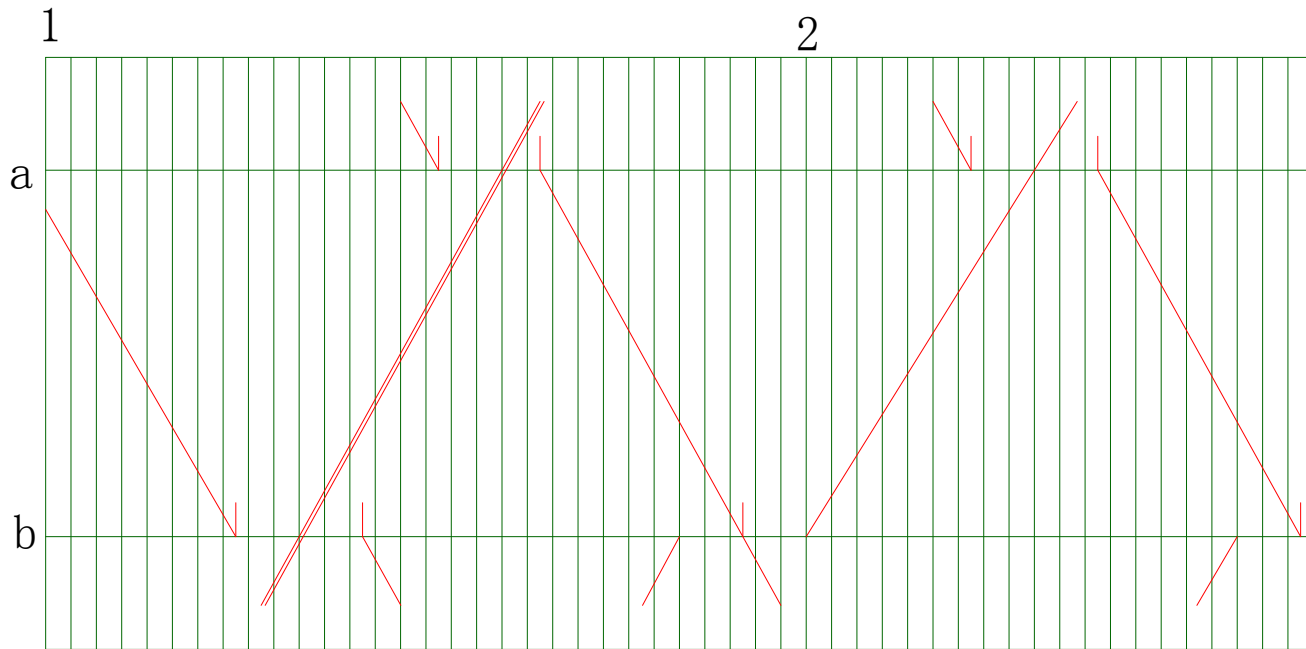
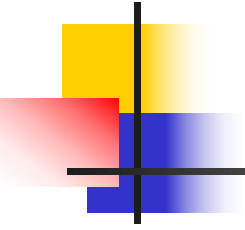


图3-1-1 二分格运行图

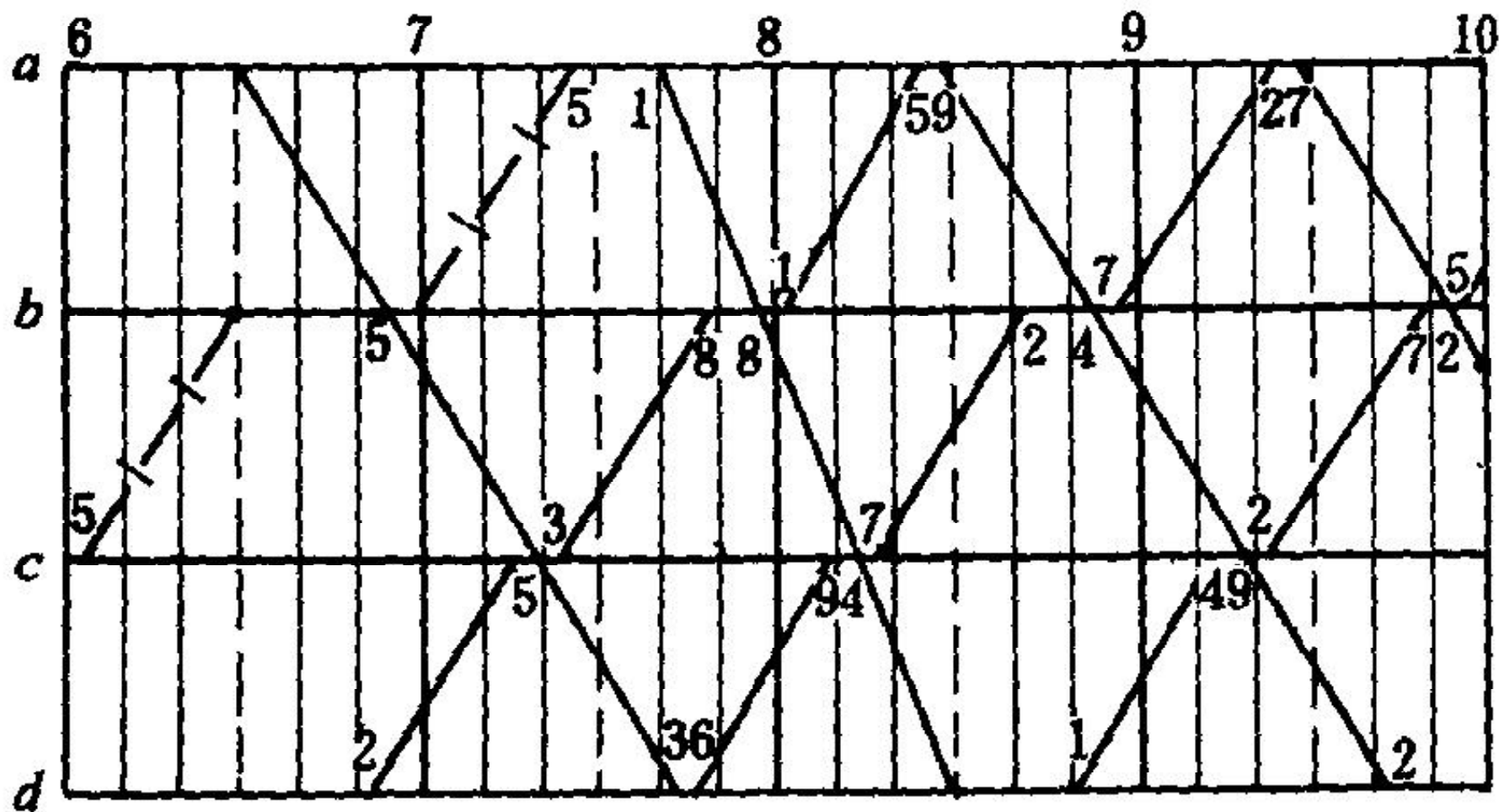


图 3—1—8 单线非平行运行图



## 四、按照上下行方向列车数

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- 成对运行图
- 不成对运行图

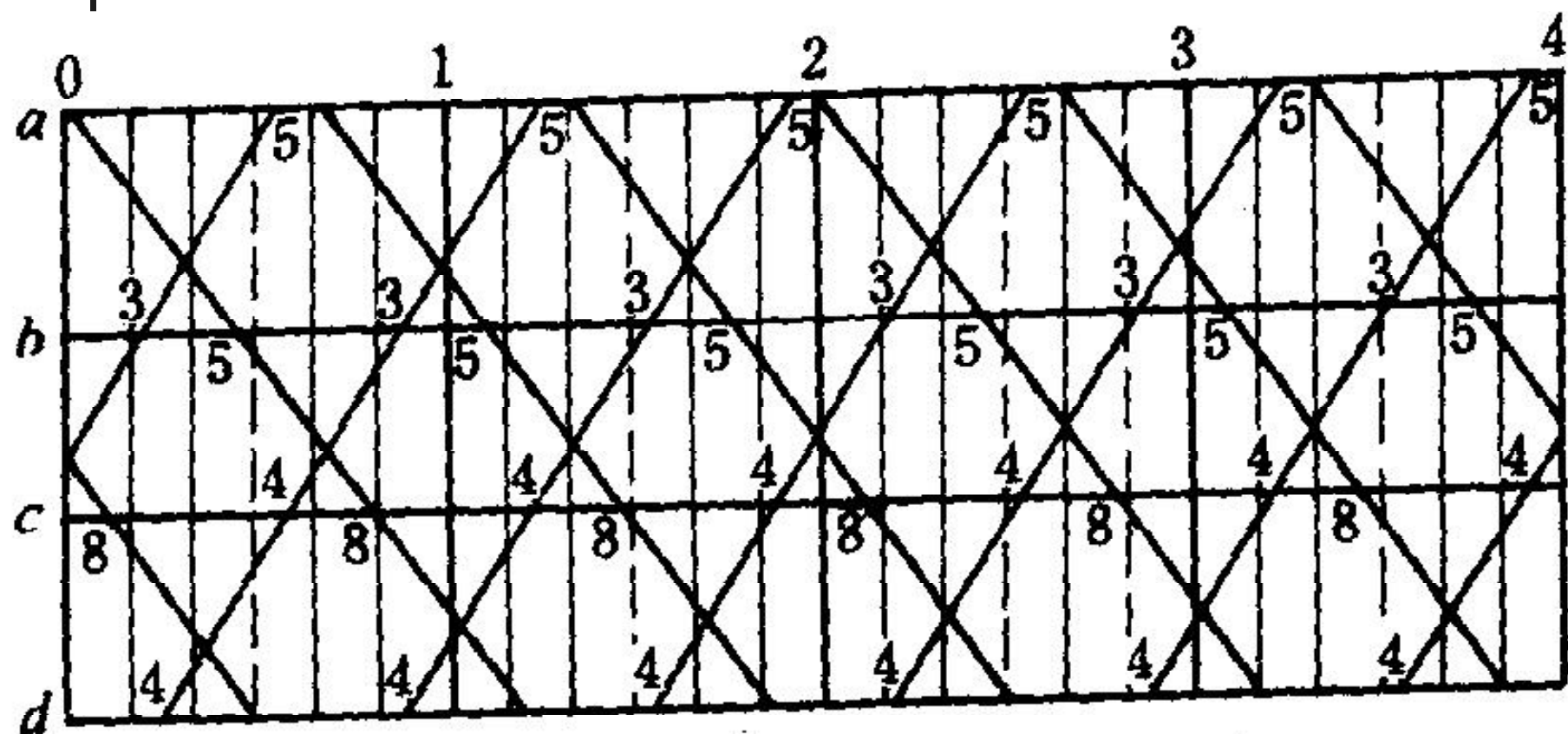


图 3—1—6 双线成对平行运行图



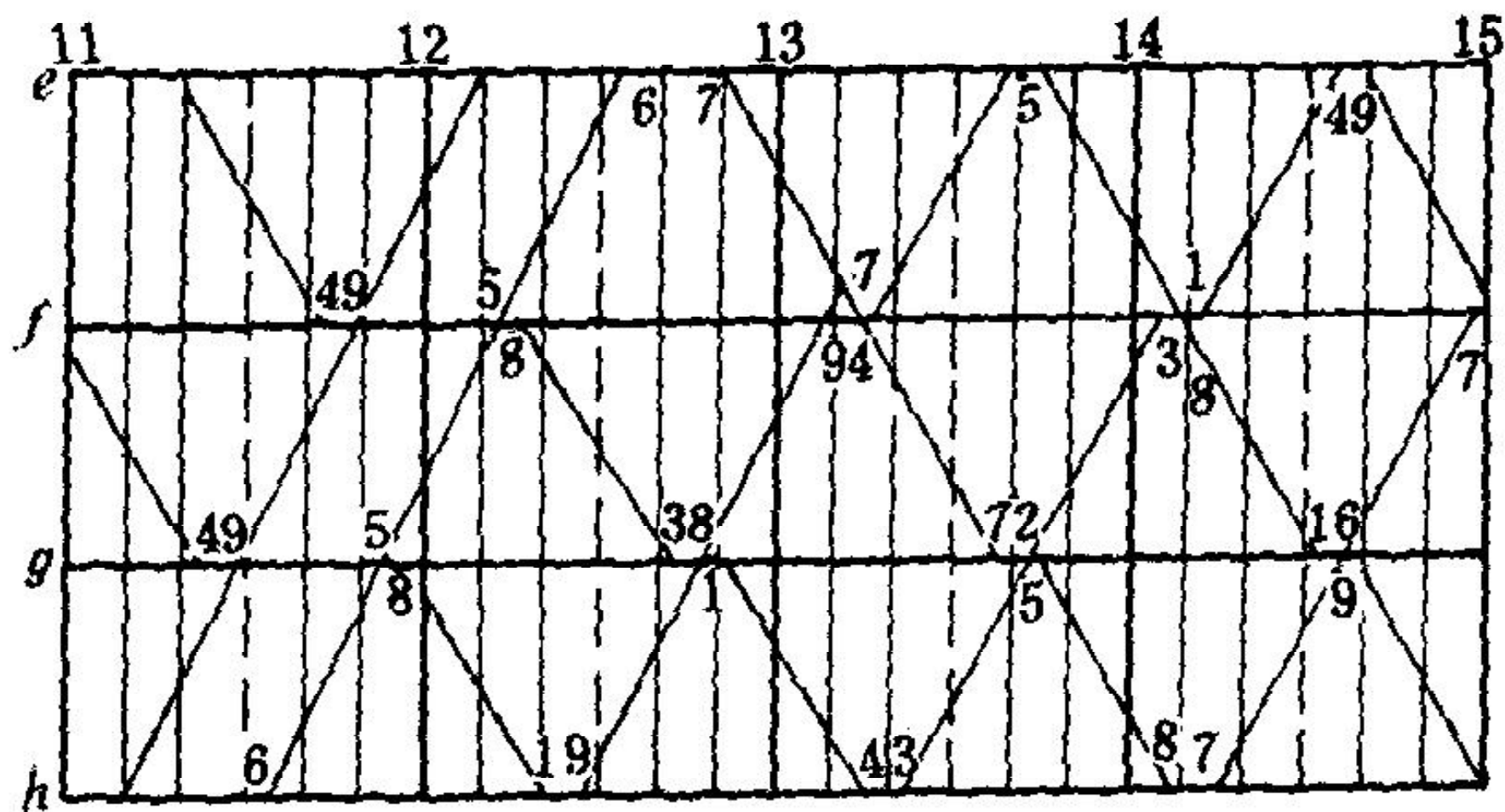


图 3—1—9 单线不成对运行图



## 五、按照同方向列车运行方式

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- 连发运行图
- 追踪运行图

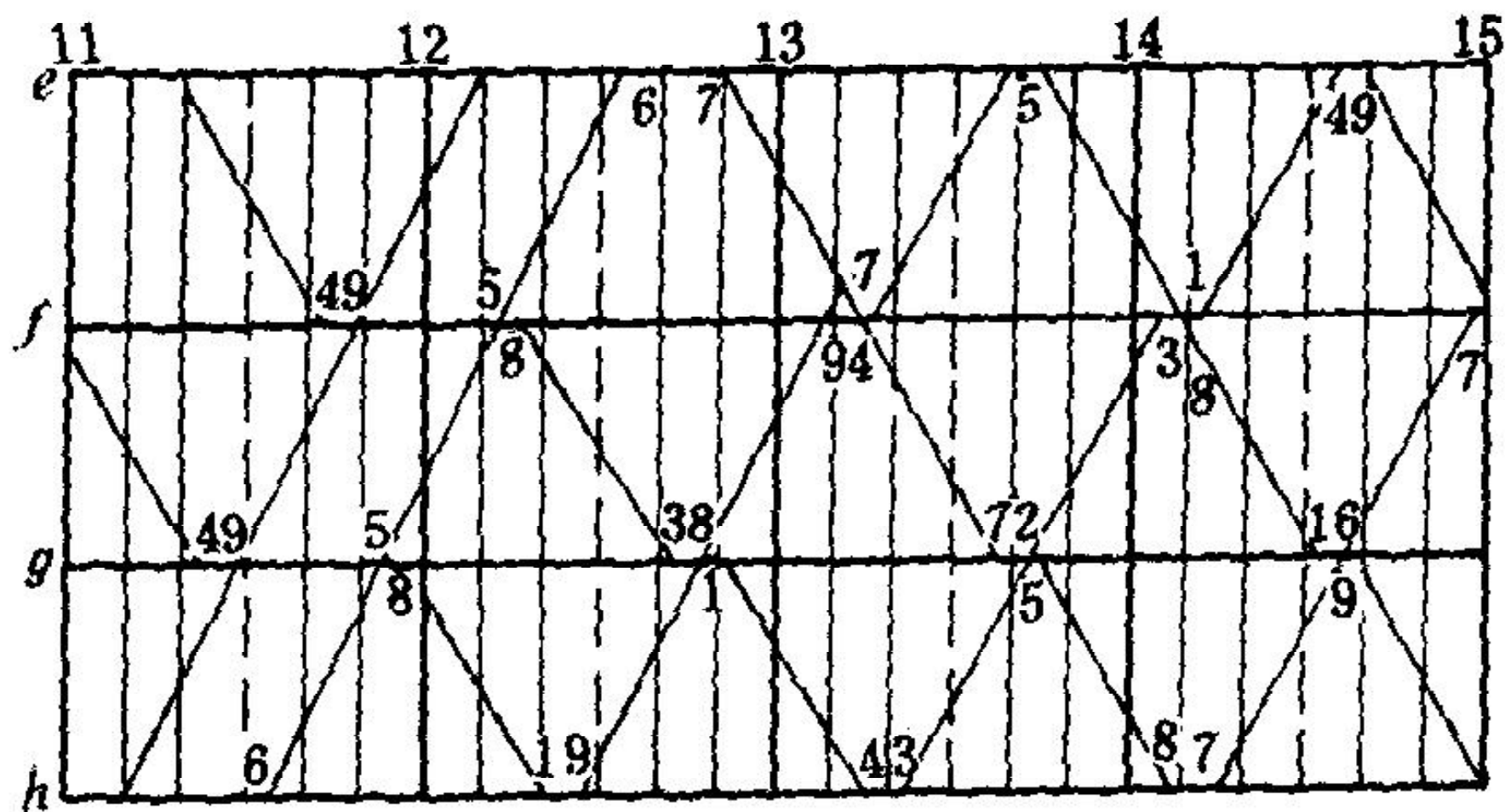


图 3—1—9 单线不成对运行图

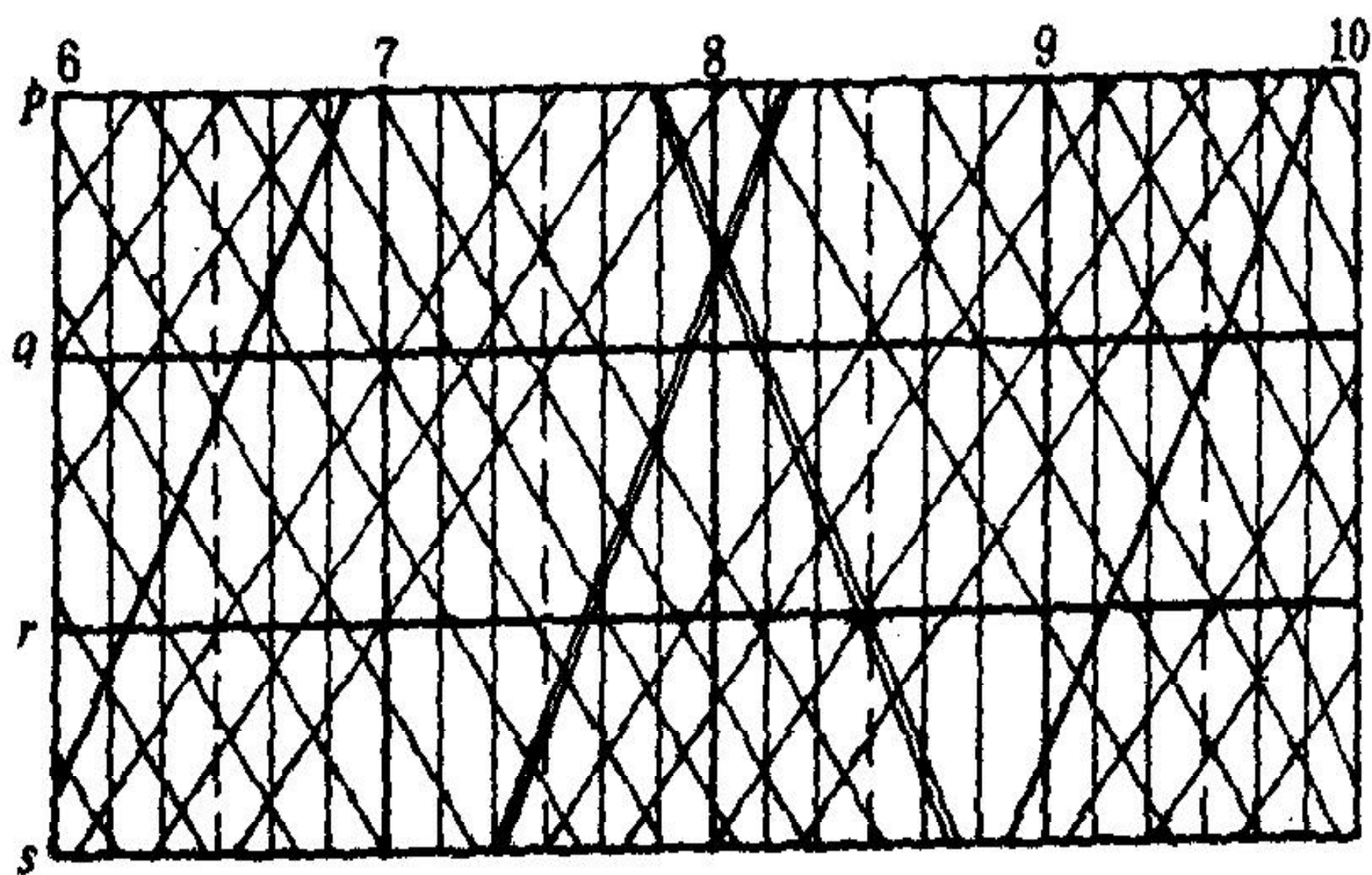


图 3—1—10 双线追踪非平行运行图



# 主要内容

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- 上讲内容回归
- 运行图的分类
- 国内外研究现状

# 研究现状

序号	题名	作者	作者单位	文献来源	发表时间	被引频次	下载频次
1	客运专线网络列车开行方案与运行图综合优化模型及算法	周文梁	中南大学	【博士】中南大学	2010-06-01	4	597
2	客运专线旅客列车周期运行图的优化理论与方法研究	贾晓秋	西南交通大学	【博士】西南交通大学	2011-06-01		12
3	基于列车运行图优化的动车组周转接续问题的研究	谢美全	北京交通大学	【博士】北京交通大学	2010-12-22	1	316
4	基于稳定性的客运专线运行图编制与评价问题研究	陈军华	北京交通大学	【博士】北京交通大学	2009-06-15	10	455
5	客运专线列车运行图动态性能及其仿真评估系统的研究	孟令云	北京交通大学	【博士】北京交通大学	2009-12-01	2	370
6	高速铁路列车运行图网络协同编制优化方法与关键技术研究	夏明	北京交通大学	【博士】北京交通大学	2011-09-01	2	224
7	网络环境下单线列车运行图编制的优化算法研究	李峰	北京交通大学	【博士】北京交通大学	2010-09-01	1	165
8	单线区段列车运行图铺划与运行调整优化方法研究	黎新华	中南大学	【博士】中南大学	2005-04-01	5	908
9	双线铁路列车运行图缓冲时间优化分配研究	巴博	西南交通大学	【博士】西南交通大学	2008-07-01	5	365
10	基于周期化运行的轨道交通列车开行方案和运行图研究	汪波	北京交通大学	【博士】北京交通大学	2007-12-01	5	934






- 1   **Consumer benefits and demand impacts of regular train timetables** Original Research Article  
*International Journal of Transport Management, Volume 2, Issue 1, 2004, Pages 39-49*  
Mark Wardman, Jeremy Shires, William Lythgoe, Jonathan Tyler  
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- 2   **Railway traffic on high density urban corridors: Capacity, signalling and timetable** Original Research Article  
*Journal of Rail Transport Planning & Management, Volume 1, Issue 2, December 2011, Pages 59-68*  
A. Dicembre, S. Ricci  
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### Highlights

- We study the correlations between main railway capacity parameters. ► A pilot application on high density railways i affect capacity and reliability.

- 3   **Allocation of capacity in the rail industry** Original Research Article  
*Utilities Policy, Volume 11, Issue 1, March 2003, Pages 39-42*  
Stephen Gibson  
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- 4   **Stability evaluation of a railway timetable at station level** Original Research Article  
*European Journal of Operational Research, Volume 195, Issue 3, 16 June 2009, Pages 780-790*  
Xavier Delorme, Xavier Gandibleux, Joaquín Rodríguez  
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- 5   **A method for using stochastic blocking times to improve timetable planning** Original Research Article  
*Journal of Rail Transport Planning & Management, Volume 1, Issue 1, November 2011, Pages 1-13*  
Giorgio Medeossi, Giovanni Longo, Stefano de Fabris  
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[Purchase](#)[E-mail articles](#)[Export citations](#)[Download multiple PDFs](#)[Open all previews](#)1 [Incorporating constraint propagation in genetic algorithm for university timetable planning](#) Original Research Article*Engineering Applications of Artificial Intelligence, Volume 12, Issue 3, June 1999, Pages 241-253*

Safaai Deris, Sigeru Omatu, Hiroshi Ohta, Puteh Saad

[Show preview](#)[PDF \(491 K\)](#)[Related articles](#)[Related reference work articles](#)2 [Optimizing the demand captured by a railway system with a regular timetable](#) Original Research Article*Transportation Research Part B: Methodological, Volume 45, Issue 2, February 2011, Pages 430-446*

Roberto Cordone, Francesco Redaelli

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### Research highlights

► Ignoring the feed-back between transport demand and offer may engender bad decision policies. ► Combining the state-of-the-art models for a piecewise-linear overestimate of the demand model.

3 [Timetable-based operation in urban transport: Run-time optimisation and improvements in the operating process](#) Original Research Article*Transportation Research Part A: Policy and Practice, Volume 45, Issue 8, October 2011, Pages 721-740*

M. Salicrú, C. Fleurent, J.M. Armengol

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### Highlights

► Punctuality improvement using real passing time timetables. ► Modelling based on atypical trip identification, day segmentation, passing time development integrated into HASTUS platform framework.

4 [Railway timetable stability analysis using max-plus system theory](#) Original Research Article*Transportation Research Part B: Methodological, Volume 41, Issue 2, February 2007, Pages 179-201*

Rob M.P. Goverde

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- 5  [Railway traffic on high density urban corridors: Capacity, signalling and timetable](#) Original Research Article  
*Journal of Rail Transport Planning & Management, Volume 1, Issue 2, December 2011, Pages 59-68*  
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### Highlights

► We study the correlations between main railway capacity parameters. ► A pilot application on high density railways is performed. ► C affect capacity and reliability.

- 6  [Railway Timetable Rescheduling Based on the Feedback of Train-set Circulation](#) Original Research Article  
*Procedia - Social and Behavioral Sciences, Volume 43, 2012, Pages 781-789*  
Meiquan Xie, Xiamiao Li






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- 7  [Scheduling with neural networks: Application to timetable construction](#) Original Research Article  
*Neurocomputing, Volume 6, Issue 4, August 1994, Pages 419-442*  
Denis Pellerin, Jeanny Hérault

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- 8  [Consumer benefits and demand impacts of regular train timetables](#) Original Research Article  
*International Journal of Transport Management, Volume 2, Issue 1, 2004, Pages 39-49*  
Mark Wardman, Jeremy Shires, William Lythgoe, Jonathan Tyler

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- 9   **Creating bus timetables with maximal synchronization** Original Research Article  
*Transportation Research Part A: Policy and Practice, Volume 35, Issue 10, December 2001, Pages 913-928*  
A Ceder, B Golany, O Tal  
[Show preview](#) | [PDF \(201 K\)](#) | [Related articles](#) | [Related reference work articles](#)
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- 10   **A method for using stochastic blocking times to improve timetable planning** Original Research Article  
*Journal of Rail Transport Planning & Management, Volume 1, Issue 1, November 2011, Pages 1-13*  
Giorgio Medeossi, Giovanni Longo, Stefano de Fabris  
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- 11   **Stability evaluation of a railway timetable at station level** Original Research Article  
*European Journal of Operational Research, Volume 195, Issue 3, 16 June 2009, Pages 780-790*  
Xavier Delorme, Xavier Gandibleux, Joaquín Rodríguez  
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- 12   **Assessment of flexible timetables in real-time traffic management of a railway bottleneck** Original Research Article  
*Transportation Research Part C: Emerging Technologies, Volume 16, Issue 2, April 2008, Pages 232-245*  
Andrea D'Ariano, Dario Pacciarelli, Marco Pranzo  
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- 13   **Quality of hub-and-spoke networks; the effects of timetable co-ordination on waiting time and rescheduling time** Original Research Article  
*Journal of Air Transport Management, Volume 7, Issue 4, July 2001, Pages 241-249*  
Piet Rietveld, Martijn Brons  
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- 14   **Optimization of transit route network, vehicle headways and timetables for large-scale transit networks** Original Research Article  
*European Journal of Operational Research, Volume 186, Issue 2, 16 April 2008, Pages 841-855*  
Fang Zhao, Xiaogang Zeng


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- 15   **Inter-city bus routing and timetable setting under stochastic demands** Original Research Article  
*Transportation Research Part A: Policy and Practice, Volume 40, Issue 7, August 2006, Pages 572-586*  
Shangyao Yan, Chin-Jen Chi, Ching-Hui Tang


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- 16   **A Monitoring Data Mining based Approach to Measuring and Correcting Timetable Parameters** Original Research Article  
*Procedia - Social and Behavioral Sciences, Volume 43, 2012, Pages 644-652*  
Junhua Chen, Xingcheng Zhang, Hanzhe Cai, Yajing Zheng


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- 17   **A spoken language inquiry system for automatic train timetable information** Original Research Article  
*Phillips Journal of Research, Volume 49, Issue 4, 1995, Pages 399-418*  
Harald Aust, Martin Oerder, Frank Seide, Volker Steinbiss

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- 18   **Air cargo fleet routing and timetable setting with multiple on-time demands** Original Research Article  
*Transportation Research Part E: Logistics and Transportation Review, Volume 42, Issue 5, September 2006, Pages 409-430*  
Shangyao Yan, Shin-Chin Chen, Chia-Hung Chen

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# 本讲小结

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- 运行图的分类
- 国内外研究现状