



## Conference Program June 29 – July 2, 2014

Dear conference participant,

I welcome you to Mannheim for StochMod14. This joint meeting of the GOR and the EURO Working Group on Stochastic Modelling is the 5<sup>th</sup> in a series that brings together applied Probabilists, Operation Researchers, Engineers, Computer Scientists and Statisticians with a main or side interest in stochastic modelling. The scope of the conference includes both theoretical papers with advances in mathematical techniques that can be useful for analyzing stochastic models as well as applications of performance analysis of telecommunication systems, the modelling of logistics and service systems, the theory of queueing and inventory models, revenue management, and so forth.



This year, 60 researchers from 12 countries participate in the meeting. I would like to express my sincere appreciation for the contribution of all participants. I also thank the University of Mannheim, the Mannheim Business School, the German OR Society (GOR) and the EURO Working Group on Stochastic Modelling for their support.

Mannheim is a versatile city in one of the sunniest regions of Germany. Our university and conference venue is at the Mannheim castle, which is not only the largest baroque palace in Germany, but also the second-largest in Europe, only being surpassed by the French Versailles. I am sure you will enjoy your time and return home with fond memories.

Mannheim, June 29  
*Raik Stolletz*

## 1 Conference Opening

The conference will be officially opened on **Monday, 09:00-09:30am** in room **SN 169**. The

- president of the University, **Prof. Dr. Ernst-Ludwig von Thadden**
- the dean of the Business School of the University of Mannheim, **Dr. Jürgen M. Schneider**,
- and the coordinator of the EURO Working Group on stochastic modelling and the organizer of this years' conference, **Prof. Dr. Raik Stolletz**

are happy to welcome you.



Prof. Dr. Ernst-Ludwig von Thadden



Dr. Jürgen M. Schneider

## 2 Committees

### Program Committee

**Zeynep Akşin**, Koc University, Turkey  
**Philippe Chevalier**, Université catholique de Louvain, Belgium  
**Oualid Jouini**, Ecole Centrale Paris, France  
**Ger Koole**, VU University Amsterdam, The Netherlands  
**George Liberopoulos**, University of Thessaly, Greece  
**Oliver Rose**, Universität der Bundeswehr München, Germany  
**Alexander Schied**, University of Mannheim, Germany  
**Raik Stolletz**, University of Mannheim, Germany

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### Local Planning Committee

**Andrej Saweljew**, University of Mannheim, Germany  
**Raik Stolletz**, University of Mannheim, Germany  
**Sophie Weiss**, University of Mannheim, Germany

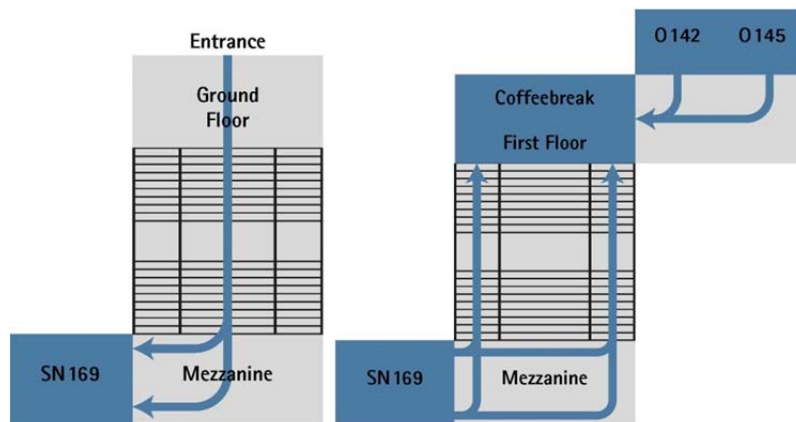
## 3 Practical Information

### Full program

This is the short program containing all relevant information in a compact manner. You can find the full program that also includes the full abstracts on the USB stick in your conference folder.

### Conference Venue

The conference takes place in Mannheim at the University of Mannheim. All sessions will take place in the rooms SN 169 (mezzanine, after the stairs on the right), O142 and O145 (first floor, after the stairs on the right).



Coffee breaks are on the second floor, lunch will be in the catacombs. **All directions will be signposted.**

## 4 Practical Information

### Registration desk

The registration and information desk is open during the get-together as well as during the coffee breaks and the sessions. You can find the desk right at the main entry of the university.

### Guidelines for Speakers and Session Chairs

The session rooms will be equipped with a laptop and a computer projector. Please be on time for your session and check in with your session chair. A volunteer or organizer will be available to set up your presentation and help you with any issues you might encounter. Presentations should emphasize the key issues and conclusions. Each speaker has in total 20 minutes for presentation and discussion, we propose to use at most 15 minutes for the presentation.

The last speaker of each session is assigned the session chair. He/she coordinates the session. The chair introduces each presentation, informs the speaker when the time is running short and leads the discussion.

## 5 Practical Information

### WiFi credentials

### On the whole campus

Our university participates in the **eduroam** initiative. If your university supports eduroam, you can login with your credentials.

### In areas where StochMod 2014 takes place

Alternatively, we have set up a **guest network** for you which can be used in the areas where the StochMod takes place.

**SSID:** (Info only in printed program)

**Password:** (Info only in printed program)

### Urgent issues

In case of any urgent issue, please contact a member of the **local organizing committee:**

- Andrej Saweljew (Info only in printed program)
- Raik Stolletz (Info only in printed program)
- Sophie Weiss (Info only in printed program)

You can find further details on page 24.

## 6 Conference Schedule

	Monday		Tuesday		Wednesday	
	Stream 1	Stream 2	Stream 1	Stream 2	Stream 1	Stream 2
08:45-09:00						
09:00-09:30		Opening				
09:30-10:00		Plenary - Ton de Kok	Health Care Operations	Inventory Management II	Call Center II	Applications of stochastic models
10:00-10:30						
10:30-11:00		Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
11:00-11:30	Optimization of Production Systems	Financial Modeling				
11:30-12:00			Plenary - Kai Furmans	Plenary - Kai Furmans	Plenary - Shane Henderson	
12:00-12:30	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
12:30-13:00						
13:00-13:30						
13:30-14:00	Queueing Networks	Inventory Management I	Time-dep. Queueing I	Supply Chain Management	Queueing	Queueing
14:00-14:30						
14:30-15:00		Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
15:00-15:30			Time-dep. Queueing II	Scheduling	Game Theory	Game Theory
15:30-16:00	Call Center I	Queueing and MDP				Closing
16:00-16:30			Group photo	Group photo		
from 16:30		Heidelberg	Conference Dinner	Conference Dinner		

Further information regarding the social events can be found on page 19.

**Monday, 09:30-10:30**

**Room SN169**

**Ton de Kok** Managing complexity and uncertainty with Newsvendor equations

Real-world problems in operations management concern multiple items to be sold, processed and sourced and multiple resources in type and quantity to be used. This complexity has been successfully dealt with in the context of deterministic problem formulations due to advances in generic optimization tools, such as CPLEX. Unfortunately, real-world problems show uncertainty in demand and processes, whereby objective functions become nonlinear and in complex situations even expressions for objective functions and constraints may be hard to derive. Despite this statement it seems that for generic multi-item multi-echelon problems optimal policies within well-known classes of policies, e.g. base stock policies, satisfy so-called Newsvendor equations. These equations are characterized by target customer service fractiles that can be computed directly from holding and penalty cost parameters, where holding costs are charged for inventories and penalty costs are charged for backlogs or lateness. The form of these equations enables efficient computation of optimal policies, despite the non-linear multi-dimensional objective functions. In this presentation we provide insight into the nature of the problems that leads to the emergence of Newsvendor equations. We also discuss the managerial insights that follow directly from the target fractiles.



**Tuesday, 11:00-12:00**

**Room SN169**

**Kai Furmans** Stochastic Models in Lean Management – Applications and Research Opportunities

Lean Management was first viewed as a collection of tools like Kanban, internal and external Milkruns and kaizen. Later it was understood, that at the core of it, it is a successful approach in leadership and management.



However, when analyzing the tools, it can be shown by using stochastic models, how the individual tools support the overall goals of lean management. Using a few examples, it is shown, how stochastic models can be used, to evaluate the impact of lean methodologies on the performance of an operation.

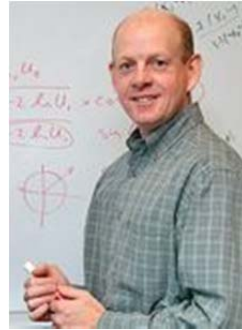
However, there are still some areas, where lean management does not have answers yet. thus giving opportunities for further research. Some examples will be given.

**Wednesday, 11:00-12:00**

**Room SN169**

**Shane Henderson** Real-Time Control of Ambulance Fleets, and Simulation Optimization using High-Performance Computing

In the first part of the talk I will discuss ambulance redeployment, in which an ambulance fleet is controlled in real-time to attempt to ensure short response times to calls. I'll focus on the use of simulation optimization to tune approximate-dynamic programs that yield highly effective policies, along with a coupling approach to compute a bound on the optimality gap. This work has motivated us to develop simulation-optimization algorithms that exploit parallel computing capabilities. In the second part of the talk, I'll discuss our work in developing "ranking and selection" algorithms for high-performance computing environments, and show results for runs using up to 1000 cores.



**Monday, 09:30-10:30**

**Session 1, Room SN169: Plenary**

**Ton de Kok** Managing complexity and uncertainty with Newsvendor equations

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**Monday, 11:00-12:00**

**Session 2a, Room O142: Optimization of Production Systems**

**Barış Tan** Mathematical Programming Representations of Dynamics of Continuous Flow Production Systems

**Sophie Weiss and Raik Stolletz** Sample-based optimization of buffer allocations in flow lines with correlations

**James Smith** Joint Optimization of Buffers and Network Population for Closed Finite Queueing Systems

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**Monday, 11:00-12:00**

**Session 2b, Room O145: Financial Modeling**

**Tobias Jung** Gas storage valuation with kernel-based dynamic programming

**Nicola Secomandi** Analysis and Enhancement of Practice-based Policies for the Real Option Management of Commodity Storage Assets

**Ali Devin Sezer, Monique Jeanblanc and Tomasz Bielecki** Joint Hitting-Time Densities for Finite State Markov Processes

**Monday, 13:30-14:30****Session 3a, Room O142: Queueing Networks**

**Martin Epp, Judith Stoll, Carsten Rohlehr and Sebastian Scherer** Discrete time analysis of closed queueing networks

**Svenja Lagershausen and Barış Tan** On the Inter-departure, Inter-start, and Cycle Time Distribution of Closed Queueing Networks Subject to Blocking

**Kan Wu and Ning Zhao** Analysis for Tandem Queues with Finite Buffer Capacity

**Monday, 13:30-14:30****Session 3b, Room O145: Inventory Management I**

**Ilana Bendavid, Yale Herrer and Enver Yucesan** Inventory Management under Working Capital Constraints

**Odysseas Kanavetas and Apostolos Burnetas** Ordering policies for two products with demand substitution

**Caner Canyakmaz, Süleyman Özekici and Fikri Karaesmen** Inventory Management in the Presence of Price Fluctuations

**Monday, 15:00-16:30****Session 4a, Room O142: Call Center I**

**Ger Koole and Sihan Ding** Minimal cost staffing and traffic management in call centers

**Oualid Jouini, Benjamin Legros and Ger Koole** On the Scheduling of Jobs in a Contact Center with Idling Times during the Call Service

**Benjamin Legros, Oualid Jouini and Ger Koole** Queueing and advertisements

**Gideon Weiss, Marko Boon and Ivo Adan** Design of parallel skill based service systems based on FCFS bipartite infinite matching

**Monday, 15:00-16:30****Session 4b, Room O145: Queueing and MDP**

**Rakhee Kulshrestha** Analysis of an Infinite Capacity Single Server Discrete Time Queue with Second Optional Service and Server Breakdown

**Dwi Ertiningsih and Flora Spieksma**  $E_k/M/1$ -queue: Stationary distribution and monotonicity properties

**Herman Blok and Flora Spieksma** Convergence properties of parametrised Markov decision processes

**Laurens Smit, Michael Katehakis and Flora Spieksma** On Successive Thinning and Lumping of Markov Processes

**Tuesday, 09:00-10:30****Session 5a, Room O142: Health Care Operations**

**Caroline Jagtenberg, Sandjai Bhulai and Rob van der Mei**  
A Polynomial Time Method for Real-Time Ambulance  
Redeployment

**Rutger Kerkkamp, Caroline Jagtenberg, Sandjai Bhulai  
and Rob van der Mei** Robustness of the Maximal Covering  
Location Problem

**Lerzan Ormeci, Nermin Kurt and Amin Khoshkenar**  
Analysis of Admission, Routing and Early Discharge Decisions  
in a Hospital Setting

**Maria Rieders and Michael Levy** Analysis of Household  
Participation in a Public Health Intervention Program for  
Eliminating the Spread of an Epidemic Disease

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**Tuesday, 09:00-10:30****Session 5b, Room O145: Inventory Management II**

**Felix Papier** Supply Allocation under Advance Demand  
Information

**Lars Fischer and Michael Manitz** An Exact Discrete-Time  
Model of a Two-Echelon Inventory System with Two Customer  
Classes

**Heinrich Kuhn, Alexander H. Huebner and Sandro Kuehn**  
An epsilon-exact procedure for retail assortment planning with  
substitution effects

**Tuesday, 11:00-12:00****Session 6, Room SN169: Plenary**

**Kai Furmans** Stochastic Models in Lean Management –  
Applications and Research Opportunities

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**Tuesday, 13:30-14:30****Session 7a, Room O142: Time-dependent Queueing I**

**Athanasia Manou and Antonis Economou** Strategic  
customers in a fluid queue with fast and slow service periods

**Vera Rensink** Impact of Parameter Uncertainty for Rare Event  
Simulation in the  $M(t)/M/1$  queue

**Justus Arne Schwarz, Gregor Selinka and Raik Stolletz**  
Analytical performance evaluation of time-dependent queues:  
A classification



**Tuesday, 13:30-14:30****Session 7b, Room O145: Supply Chain Management**

**Michael Vidalis and Varlas George** Production/distribution decisions for supply chains and the determination of their parameter values is a challenging problem. By linking production, stock and transportation processes, improved customer service levels can be obtained.

**Massimo Di Francesco, Alexei A. Gaivoronski and Paola Zuddas** Simulation and optimization for stochastic empty container repositioning

**Gerd Hahn, Torben Sens, Catherine Decouttere and Nico Vandaele** Sales & Operations Planning: the Issue of Subcontracting

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**Tuesday, 15:00-16:00****Session 8a, Room O142: Time-dependent Queueing II**

**Gregor Selinka and Raik Stolletz** Performance analysis of heterogeneous queueing systems under time-dependent conditions

**Ad Ridder and Vera Rensink** Importance sampling simulation of queues with time-varying rates

**Axel Franz and Raik Stolletz** Queueing-based optimization of truck appointment systems

**Tuesday, 15:00-16:00****Session 8b, Room O145: Scheduling**

**Miray Öner-Közen and Stefan Minner** Employing the EDD rule in MTO Production Systems with External Due Dates

**William Kun Liang and Baris Balcioglu** A Practical Framework to Coordinate Dynamic Pricing and Scheduling Policies in a Make-to-Stock Queue

**Stella Kapodistria** CBM scheduling based on SPC treating false triggered alarms

**Wednesday, 09:30-10:30****Session 9a, Room O142: Call Center II****Zeynep Aksin, Baris Ata, Seyed Emadi and Che-Lin Su**

Impact of Delay Announcements in Call Centers: An Empirical Approach

**Andrej Saweljew, Raik Stolletz and Ger Koole** The impact of service level agreements on call center performance**Ger Koole** Call center routing optimization using waiting times**Wednesday, 09:30-10:30****Session 9b, Room O145: Applications of Stochastic Models****Julia Amador** Modeling computer virus spread with a stochastic model**George Mytalas and Michael Zazanis** Reliability of a Two-Parallel k-out-of-n System with Removable Repair Mechanism**Philippe Chevalier** Group Buying Platforms, Leveraging the Online Effect**Wednesday, 11:00-12:00****Session 10, Room SN169: Plenary****Shane Henderson** Real-Time Control of Ambulance Fleets, and Simulation Optimization using High-Performance Computing**Wednesday, 13:30-14:30****Session 11, Room SN169: Queueing****José Antonio Heredia Álvaro, Antonio Estruch and Nico Vandaele** Analysis of the variability transmission in a production line with an adaptive phase-type decomposition approach**Stella Kapodistria, Ivo Adan and Johan Van Leeuwen** How to pick the better line**Ioannis Dimitriou** A queueing system for modeling power-saving in wireless systems with retransmissions**Wednesday, 14:30-15:30****Session 12, Room SN169: Game Theory****Pelin Canbolat, Boaz Golany and Uriel G. Rothblum** Risk-sensitive criteria in a class of resource-allocation games**Refael Hassin and Alexandra Koshman-Kaz** Optimal control of a queue with high-low delay announcements

## Monday, June 30: City tour Heidelberg

When you come to Heidelberg, you will find it is a city that – in the words of J.W. Goethe, one of Germany's greatest writers – has "something ideal" about it. Asked to name their favorite destination in Germany, visitors from abroad consistently choose Heidelberg. And no fewer than three million international tourists come to Heidelberg every year, drawn by the historical flair of this university city, with its stunning setting and the baroque style old town.



### Detailed information

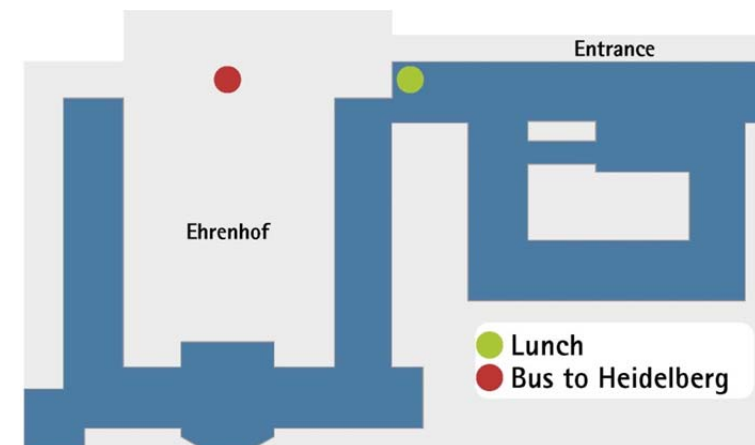
We will travel to Heidelberg with a chartered bus, which departs from **Mannheim Castle (Ehrenhof)** after the last session at **4:30pm**. In Heidelberg, we will follow a **guided walking tour** to the most stunning spots in the city. The tour takes **two hours**. The bus departs from **Heidelberg Neckarmünzplatz** at **9pm**, the time in between the guided tour and the departure is at free disposal. The bus will arrive in Mannheim around 9:30pm.

If you would like to stay longer, we provided you with a city map of Heidelberg in your conference folder. From the city center, you can take the tram lines no. 5 and 21 from Bismarckplatz to "Heidelberg Hauptbahnhof" (main station). From there, you can easily take the following trains back to

"Mannheim Hauptbahnhof", the travel time is approximately 20 minutes. **Please note that you cannot buy tickets in the train.** They have to be bought beforehand at a ticket machine.

Departure Heidelberg Main Station	Arrival Mannheim Main Station	Train	Platform	Direction
21:44	22:02	S1	2	Kaiserslautern
22:14	22:32	S1	2	Kaiserslautern
22:44	23:02	S4	2	Mannheim
23:14	23:32	S1	5	Kaiserslautern
23:42	0:01	S1	1	Ludwigshafen
0:14	0:30	S1	2	Kaiserslautern
0:54	1:14	S2	5	Ludwigshafen

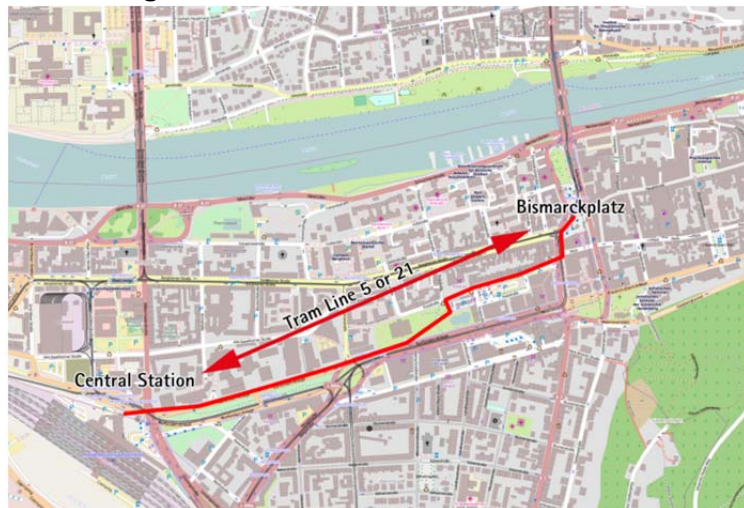
### Bus departure in Mannheim: Ehrenhof



### Bus departure in Heidelberg: Neckarmünzplatz



### Heidelberg Main Station



### Tuesday, July 1: Hambach Castle

Built in the first half of the 11th century, Hambach Castle was reconstructed several times during the 13th century. In 1552 it was burned down, and only provisionally restored. It suffered further damage



during the War of the Palatinian Succession in 1688 and was finally abandoned. In 1832, Hambach Castle became famous due to the Hambacher Fest, a demonstration which took place at the ruins. The Palatinate population, among others, showed their discontent over the Bavarian administration demanding freedom and democracy. Ever since then, Hambach Castle has been considered as the cradle of German democracy. In 1844, first attempts to restore the castle were made by Bavaria, but the project stopped already in 1846. On the occasion of the 150th anniversary of the Hambacher Fest, the castle finally was completely restored. Today, the castle is a museum and a convention center with about 200.000 visitors each year.

#### Detailed information

We will travel to Hambach Castle with a chartered bus at around **4:45pm**, after we have taken a group photo at **Mannheim Castle (Ehrenhof)**. The bus departs there as well. Please note that a short but rather steep walk from the parking lot up to the castle is necessary. At the castle, we will be

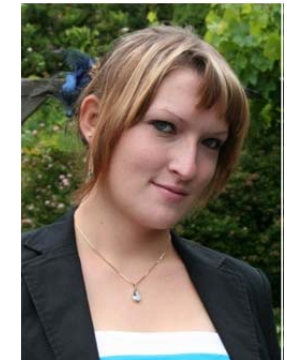
welcomed with a champagne reception on the terrace. Afterwards, the conference dinner will take place in the Festsaal. The bus departs from **Hambach Castle** at **around 10:30pm** and will arrive in Mannheim around 11pm.



**Raik Stolletz**



**Andrej Saweljew**



**Sophie Weiss**



**Qinrui Zhou**



**Chieh Lin (Ellen)**

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