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Virtual Program Guide

International Conference on Operations Research

August 31 - September 3, 2021 / Online

www.or2021.unibe.ch / or2021@pqm.unibe.ch

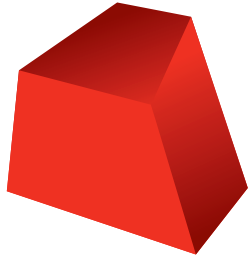
OR 2021

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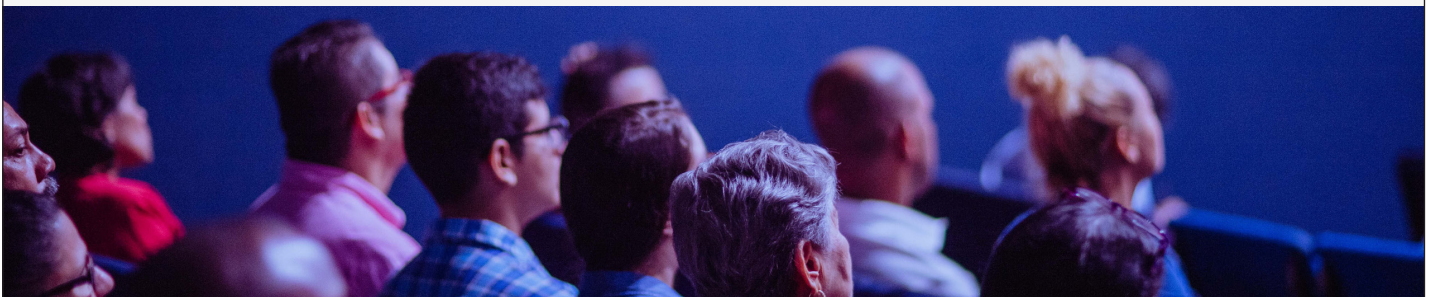
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Welcome to OR 2021



It is our great pleasure to welcome you to the virtual OR 2021 conference. Designed around this year's special theme Business Analytics for Data-Driven Decision Making, the OR 2021 is an excellent platform to share the most recent research, to discuss trends in the industry and interact with leading experts. **Thank you for joining us!**

We are happy that the virtual setting allows us to welcome participants from all over the world. Even though we do not meet in physical plenary halls and conference rooms, our scientific program is as exciting as you know it from previous OR conferences. It involves more than 350 live presentations via Zoom, 12 distinguished plenary- and semi-plenary speakers including, among others, Mirjam Dür (EURO Plenary, Augsburg University) and Georgia Perakis (MIT Sloan School of Management), interactive tutorial sessions, and a special event dedicated to all PhD students. I am also very excited to announce our Meet-the-Editors event, where Ulrike Leopold-Wildburger (CEJOR), Oliver Stein (MMOR) and Guido Voigt (OR Spectrum) share insights on their journals and review processes. Lastly, I invite everyone to attend our virtual get-together taking place on the social platform Gather Town.

I would like to take this opportunity to thank our sponsors and partners for their support in organizing this conference. We have greatly appreciated their assistance and trust during these uncertain times. My warm thanks also go to my colleagues from the Program and Organizing Committee and, last but certainly not least, to all presenters, speakers and participants – the conference would not be possible without you!

I am looking forward to an inspiring OR 2021 conference!

Norbert Trautmann
Conference Chair OR 2021



Committees

Program Committee

Norbert Trautmann (Chair), University of Bern
Philipp Baumann, University of Bern
Richard Hartl, University of Vienna
Natalia Kliewer, Free University of Berlin
Raimund Kovacevic, TU Wien
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Organizing Committee

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Mario Gnägi, University of Bern
Nicklas Klein, University of Bern
Nadine Saner, University of Bern



Schedule at a Glance

Tuesday, August 31, 2021

13:00 – 17:00 Set-up

Wednesday, September 1, 2021

09:00 – 10:20 WA Opening Ceremony and Plenary Talk
10:20 – 10:40 Break
10:40 – 12:00 WB Parallel Sessions
12:00 – 13:00 Lunch Break
13:00 – 14:20 WC Parallel Sessions
14:20 – 14:40 Break
14:40 – 15:40 WD Semi-Plenary Talks
15:40 – 16:00 Break
16:00 – 17:20 WE Parallel Sessions
16:00 – 16:45 Interactive Tutorial Session by Gurobi
17:30 Meet-the-Editors followed by
Virtual Social Program

Thursday, September 2, 2021

09:00 – 10:20 TA Parallel Sessions
10:20 – 10:40 Break
10:40 – 12:00 TB Parallel Sessions
12:00 – 13:00 Lunch Break
13:00 – 14:00 TC Semi-Plenary Talks
14:00 – 14:20 Break
14:20 – 15:40 TD Parallel Sessions
15:40 – 16:00 Break
16:00 – 17:00 TE Plenary Talk
17:00 – 18:00 GOR Meeting & PhD Program

Friday, September 3, 2021

09:00 – 10:20 FA Parallel Sessions
10:20 – 10:40 Break
10:40 – 11:40 FB Semi-Plenary Talks
11:40 – 12:00 Break
12:00 – 13:00 FC Plenary Talk
13:00 Closing



Attending a Session

Guidance for the Virtual Setting

The scientific program takes place via the video conferencing software Zoom. Please visit our [website](#) to access the virtual rooms. The passcode required to enter the virtual rooms will be distributed via e-mail prior to the conference.

Participants kindly follow these steps to attend a session:

1. Log into Zoom. If you are not yet on Zoom, please [sign up for a free Zoom account](#) prior to the conference.
2. Browse the detailed [scientific program](#) to choose a session you would like to attend. Virtual room assignments are indicated in the header of the session pages.
3. Go to our [website](#) and click on the respective virtual room.
4. Enter the passcode that you have received via e-mail.
5. Welcome to the session! Please note that participants' video cameras are turned off and microphones are muted.
6. To ask a question after a presentation, please raise your hand by clicking on the icon displayed on the right. As soon as it is your turn to speak, you will be given the permission to unmute your microphone.



In case of any technical issues during a session, please contact or2021@pqm.unibe.ch.



Interactive Tutorial Session by Gurobi



When: Wednesday at 16:00

Where: Via Zoom

We are excited to announce that our Gold Sponsor Gurobi offers an interactive tutorial session during the OR 2021 conference to showcase their newest products. Visit our [website](#) to stay updated.

Meet-the-Editors

When: Wednesday at 17:30

Where: Presentations via Zoom (Room Bundeshaus) followed by a Q&A session in Gather Town. Please visit our website (subpages [Virtual Rooms](#) and [Virtual Social Program](#)) to access the virtual room and OR 2021 gather space.

We are delighted to invite you to attend our Meet-the-Editors event with Ulrike Leopold-Wildburger from Central European Journal of Operations Research, Oliver Stein from Mathematical Methods of Operations Research and Guido Voigt from OR Spectrum. The editors share insights on the aim and scope of their journals and talk in detail about the review processes. The event is rounded off by a Q&A session on the social platform Gather Town.

A unique opportunity to look behind the scenes of three major journals. We cannot wait to see you there!



Virtual Social Program

When: Wednesday evening following the Meet-the-Editors event

Where: Social platform Gather Town. Please visit our [website](#) to access the OR 2021 gather space.

We warmly invite you to attend our virtual get-together on the social platform Gather Town. A great opportunity to interact with sponsors, meet old and new colleagues at the rooftop bar and tour the beautiful city of Bern – all from the convenience of your home or office.

A highlight of the virtual sightseeing tour is our Bern quiz, generously sponsored by [Springer](#). With a good knowledge of the capital of Switzerland and a bit of luck you might be the winner of a EUR 250, EUR 150 or EUR 100 voucher for a book purchase in the [Springer Shop](#).

We are looking forward to socializing with you!

New to Gather Town?



Gather Town is “a social platform that creates virtual spaces to bring people together and connect authentically. The platform combines video calling with fun features in a custom 2-D world, making it more spontaneous and enjoyable to get together for work, life, or play!” (<https://gather.town>)

After logging in and setting up your avatar, you are able to explore the virtual space and interact with other participants and objects that are close by. The videos and sounds of other people fade in and out based on how close you are to their avatars – just like in real life. Besides public areas you can find private spaces for spontaneous one-on-one meetings with colleagues and friends.

Invited Talks

Plenary Speakers



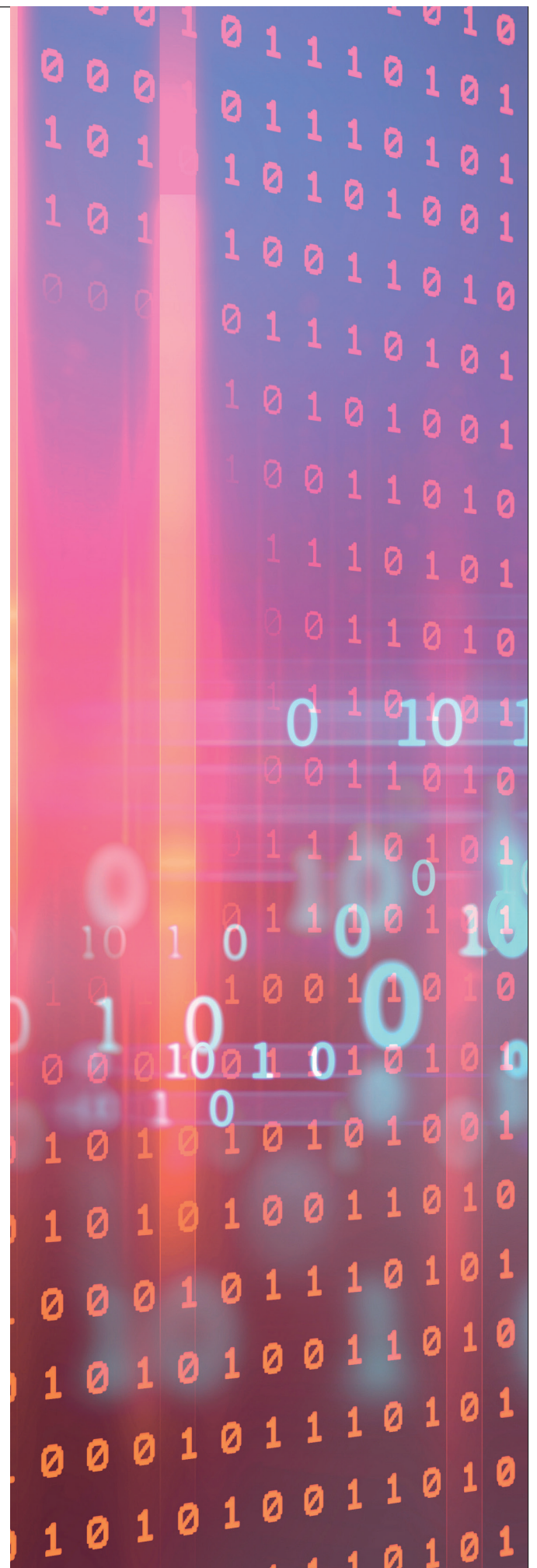
Mirjam Dür (EURO Plenary)
Professor of Mathematical
Optimization,
Augsburg University

*Friday, 12:00 – 13:00,
Room Bundeshaus*

Title of Talk: Conic Optimization:
An Application-Oriented Survey

A conic optimization problem is a problem involving a constraint that the optimization variable be in some closed convex cone. Linear optimization is a prominent example, where the nonnegativity constraint can be interpreted as requiring that the variable should be in the cone of nonnegative vectors. Other examples are second order cone problems (SOCP) where the variable is constrained to be in the second order cone, and semidefinite programming (SDP) where the matrix variable is required to be in the cone of positive semidefinite matrices. More general cones appear in special applications.

In this talk, we will highlight the enormous modeling power of conic optimization and review recent progress made in this field. While the past decades have seen research mainly in linear conic optimization, interest has now shifted to nonlinear and mixed-integer conic optimization. We will discuss algorithmic progress made in this direction as well as new fields of application. Special emphasis will be given to applications of conic optimization appearing in operations research.



Invited Talks

Plenary Speakers



Georgia Perakis

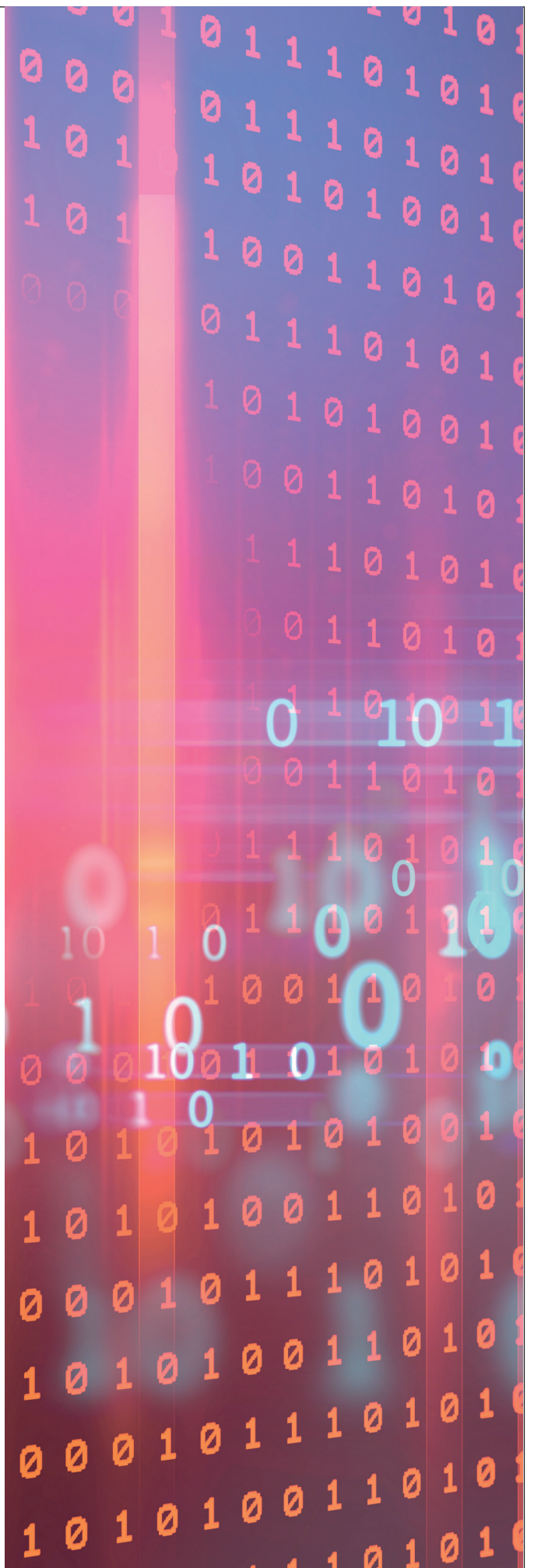
William F. Pounds Professor of Operations Research and Operations Management, MIT Sloan School of Management

*Thursday, 16:00 – 17:00,
Room Bundeshaus*

Title of Talk: Analytics for Tackling Covid-19

In this talk I will discuss how Analytics have helped for tackling the COVID-19 pandemic. I will present work from various groups but will mostly focus on the work of my team related to COVID-19 this past year. I will discuss the MIT-Cassandra model that is a suite of models that are part of an ensemble method for COVID-19 case and death prediction. I will discuss the individual methods and what motivated them and then the ensemble method and show how they perform with data in the US. I will discuss how these models are comparing relative to other models also used by the CDC. I will further connect these predictions with detecting true infection (also referred to as prevalence). Finally, I will discuss how these methods and results can be used to distribute vaccines in different counties (or areas) within a state (or country) to a heterogeneous population, through optimization, ensuring fair distribution among the different counties. We will show how the proposed optimization model performs in the different counties in the state of Massachusetts.

(The MIT-Cassandra team includes in addition to myself my students (current and former): Amine Bennouna, David Nze-Ndong, Boyan Peshlov, Divya Singhvi, Omar Skali-Lami, Yiannis Spantidakis, Leann Thayaparan, Asterios Tsiourvas, Shane Weisberg)



Invited Talks

Semi-Plenary Speakers



Claudia Archetti
Professor of Operations
Research,
ESSEC Business School

*Thursday, 13:00 – 14:00,
Room Bundeshaus*

Title of Talk: Formulations and Exact Solution Approaches for the Inventory Routing Problem

In the last decades, Inventory Routing Problems (IRPs) have been attracting growing attention from the research community, due to the real-world applications, in integrated logistics and supply chain management, and the intellectual challenges that their study poses. The interest in studying IRPs is mainly motivated by the potential benefits coming from combining inventory management and routing decisions. Solving two separate optimization problems for inventory management and routing typically produces sub-optimal solutions to the integrated problem. Tackling directly the integrated problem causes an increase of the computational burden, but tends to provide considerably better solutions.

In the IRP the goal is to determine an optimal distribution plan to replenish a set of customers by routing a limited fleet of capacitated vehicles over a discrete planning horizon. Each customer consumes a per period quantity of product and has a maximum inventory capacity. The objective is to minimize the total distribution cost, that includes the routing and the inventory holding costs.

Different formulations have been proposed in the literature for modelling the problem, giving raise to various exact solution approaches, based on branch-and-price and branch-and-cut.

The goal of this talk is to analyse the formulations and study their pros and cons. We will mainly focus on compact formulations, focusing on properties and links between formulations with vehicle indices and aggregated formulations.



Margaretha Gansterer
Professor for Production
Management and Logistics,
University of Klagenfurt

*Friday, 10:40 – 11:40,
Room Bundeshaus*

Title of Talk: Collaborative Vehicle Routing: Computational and Game Theoretical Aspects

The Sharing Economy is on the rise. Traditional business models have to be adapted and players have to learn how to survive in a world of shared idle capacities and digital platforms. The concept of shared transportation resources, also denoted as collaborative vehicle routing, is one of the hot topics in transportation and logistics. A collaboration can be described as a partnership between two or more companies to optimize operations by making joint decisions and sharing information, resources, or profits. While the willingness to enter coalitions does exist, the success of collaborations strongly depends on mutual trust and behavior of participants. Hence, proper mechanism designs, where carriers do not have incentives to deviate from jointly established rules, are needed.

In this talk, we elaborate horizontal collaborations, where logistics providers share resources with their competitors through the exchange of selected transportation requests. The aim is to increase the overall efficiency of the transport industry, by avoiding costly and pollutive empty trips. We focus on decentralized exchange mechanisms, which are based on the assumption that no fully informed decision maker exists. In such mechanisms, efficient solution methods for complex routing problems have to be tackled, while game theoretical aspects have to be taken into account. The talk gives insights on auction-based systems, where several strongly related decision problems have to be integrated. We analyze, for instance, whether carriers face a Prisoner's Dilemma when selecting requests for trading. Recent findings as well as promising future research directions are presented.

Semi-Plenary Speakers



Daniel Kuhn
Professor of
Operations Research,
École Polytechnique Fédérale
de Lausanne (EPFL)

*Thursday, 13:00 – 14:00,
Room Zytglogge*

Title of Talk: A Unifying Framework for Robust and Distributionally Robust Optimization

Robust and distributionally robust optimization are modeling paradigms for decision-making under uncertainty where the uncertain parameters are only known to reside in an uncertainty set or are governed by any probability distribution from within an ambiguity set, respectively, and a decision is sought that minimizes a cost function under the most adverse outcome of the uncertainty. In this talk, we develop a general theory of robust and distributionally robust nonlinear optimization using the language of convex analysis. Our framework is based on a generalized ‘primal-worst-equals-dual-best’ principle that establishes strong duality between a semi-infinite primal worst and a non-convex dual best formulation, both of which admit finite convex reformulations. This principle offers an alternative formulation for robust optimization problems that may be computationally advantageous, and it obviates the need to mobilize the machinery of abstract infinite-dimensional duality theory to prove strong duality in distributionally robust optimization. We illustrate the modeling power of our approach through convex reformulations for distributionally robust optimization problems whose ambiguity sets are defined through general optimal transport distances, which generalize earlier results for Wasserstein ambiguity sets.



Frauke Liers
Professor of
Applied Mathematics,
Friedrich-Alexander University
Erlangen-Nuremberg

*Friday, 10:40 – 11:40,
Room Zytglogge*

Title of Talk: Mixed-Integer Robust Optimization: Some Algorithms and Some Applications

Protecting optimization problems against uncertainties is an exciting research area where new methods and algorithms are developing rapidly. One way of protecting against uncertainties that occur in real-world applications is to determine best possible robust decisions that are feasible regardless of how uncertainties manifest themselves within predefined uncertainty sets.

In this talk, we will review some of the recent developments in particular for mixed-integer robust optimization problems that often apply reformulation, decomposition as well as approximation approaches. Data-driven approaches are on the rise as well. (Mixed-integer) discrete decisions add another difficulty in algorithmic tractability, both in theory as well as in practice.

We will also look into some robust energy network applications together with some overview of the literature. In electricity networks, we show that robust protection can also be used for a robust safe approximation of joint chance constrained in DC Optimal Power Flow problems. For the robust operation of gas networks, we review reformulation and decomposition approaches for the occurring mixed-integer two-stage nonconvex robust problems, where the latter use an outer approximation for a bundle method that is able to deal with nonconvexities.



Semi-Plenary Speakers



Renata Mansini
Professor of
Operations Research,
University of Brescia

*Wednesday, 14:40 – 15:40,
Room Zytglogge*

Title of Talk: Solving Mixed Integer Linear Programming Problems by Kernel Search: Issues, Challenges and Future Directions

A wide range of optimization problems deriving from different application contexts can be formulated as mixed integer linear programming (MILP) problems. The solution of these complex problems is usually addressed with customized heuristic methods that can be seldom reused, even to solve similar problems. In the literature, several attempts have been made to overcome the drawback of problem-dependent heuristics. For example, meta-heuristic algorithms introduce general schemes that explore the solution space regardless of the underlying problem structure, whereas general-purpose methods exploit commercial MILP solvers as effective off-the-shelf tools to optimize problems where no specific insight is used beyond the one provided by their mathematical formulations.

Kernel Search (KS) can be classified as a general-purpose heuristic framework based upon a straightforward decomposition paradigm. More precisely, KS constructs a sequence of restricted subproblems by identifying a subset of promising variables, called the kernel set, and partitioning the remaining variables into buckets. Each restricted subproblem takes into account the kernel set (possibly updated) plus a selected set of additional variables (the current bucket) and is solved by means of a commercial MILP solver. For this reason, KS is extremely easy to implement. The larger the kernel set, the more likely you are to get better solutions, but also higher computing times. According to the solved problem, KS can consider only a defined number of buckets or scroll the whole sequence of buckets more than once, use disjoint buckets or allow for their partial overlapping, consider equal or variable size buckets.

We will discuss the main features and the critical issues of the method by underlining its strong potential and indicating open challenges and future directions. Since the method has produced high-quality solutions for a number of specific (combinatorial) optimization problems, we will also investigate some of its applications providing useful insights for both researchers and practitioners.



Sophie Parragh
Professor for Production
and Logistics Management,
Johannes Kepler University
Linz

*Thursday, 13:00 – 14:00,
Room Münster*

Title of Talk: Branch-and-Bound for Multi-Objective (Mixed) Integer Linear Programming: Key Ingredients, Challenges, and Motivating Applications

As promoted by the European Green Deal, policy makers and companies increasingly strive for minimizing environmental impact, in addition to other objectives such as keeping costs low or ensuring a high customer service level. Unfortunately, the minimum cost solution is rarely the best from an environmental perspective or from the perspective of customer service. Optimizing conflicting objectives concurrently results in a set of optimal trade-off or efficient solutions which have the property that neither objective can be improved without deteriorating at least one other objective. The image of these solutions in objective space is called the non-dominated frontier or Pareto front. The wide range of practical problems which can be modeled as mixed integer linear programs (MILPs), and involve more than one objective, motivates the development of generic exact methods as general purpose tools to solve them. In this talk, we first give a brief overview of recent advances in exact methods for solving bi- and multi-objective MILPs which compute at least one solution for each point on the Pareto front. They are commonly classified as either criterion space search methods, which work in the space defined by the objective functions, or as decision space search methods, which have been mainly generalizations of branch-and-bound algorithms. We then focus on the most recent successful branch-and-bound schemes, which do not exclusively work in the decision space. We discuss their key ingredients, such as bound set generation, branching rules, and primal heuristics. Finally, we highlight motivating applications in logistics, discuss open challenges and indicate promising directions for future research.



Semi-Plenary Speakers



Marc Uetz
Professor for
Discrete Mathematics and
Mathematical Programming,
University of Twente

*Wednesday, 14:40 – 15:40,
Room Münster*

Title of Talk: Network Routing and Beyond: Equilibria for Atomic Congestion Games

Congestion games are a rich and fundamental class of problems which lie at the core of the area algorithmic game theory, just like the TSP lies in the core of discrete optimization. One well-known example is the result by Roughgarden and Tardos, showing that the price of anarchy in network routing games with affine cost functions equals $4/3$. The discrete version of the same problem, where each player chooses a single path instead of routing a flow, has a price of anarchy equal to $5/2$. This $5/2$ bound holds true for the more general class of atomic congestion games, where players choose arbitrary subsets of resources, while the cost of any resource increases with the number of players using it. There are interesting classes of atomic congestion games, however, which are not yet completely understood. The lecture addresses some open questions, along with some recent results in this context. We specifically consider games with restrictions of players' strategy spaces, but also congestion games where players act sequentially. Some of the results are improvements on the known price of anarchy bounds, but sometimes also counter-intuitive results where the quality of equilibria deteriorates.



David Wozabal
Professor for Investment,
Finance and Risk Management
in Energy Markets,
Technical University of Munich

*Friday, 10:40 – 11:40,
Room Münster*

Title of Talk: Short-Term Power Markets: Towards Optimal Trading Decisions

The talk explores optimal strategies for trading on short-term power markets. We take the perspective of a single firm that does not act strategically but treats market outcomes as exogenous and random. The problem is of high practical relevance for most players in the electricity sector and, correspondingly, there is an extensive literature on the subject. However, due to the high number of traded products and the increasing influence of variable intermittent production technologies which necessitates repeated rebalancing until shortly before delivery, the resulting decision problems are of considerable computational complexity. In particular, finding optimal strategies for trading on continuous intraday markets remains a largely open problem as most authors consider only simplified versions of the market leading to policies that are not implementable in practice. We review the current state-of-the-art and discuss the specifics of different short-term markets and the resulting trade-offs associated with trading on them. We then go on to show that, for firms that operate on multiple markets, optimal policies for individual markets are interdependent and decisions therefore have to be coordinated. We demonstrate how stochastic optimization approaches can be combined with model predictive control to arrive at near optimal trading strategies on an hourly granularity and quantify the value of coordination between the day-ahead market and a continuous intraday market. To push the trading frequency to a sub-hourly level, we discuss a parametric weather-based trading heuristic based on intraday updates of renewable production forecasts. We evaluate the resulting decisions out-of-sample based on detailed order book level data.



Overview of Parallel Sessions and Rooms

For up to date information on the scientific program, please visit the [EURO online tool](#).

The assignment of the virtual rooms below is indicative only and subject to change. Please double-check with the online information.

Stream	Wednesday – B 10:40–12:00	Room(s)	Wednesday – C 13:00–14:20	Room(s)	Wednesday – E 16:00–17:20	Room(s)
Analytics	Forecasting	Wetterhorn				
Decision Analysis and Support			Decision Support for Location and Routing Problems	Wetterhorn	MCDA in Production and Energy Management	Wetterhorn
Discrete and Combinatorial Optimization, sponsored by FICO	<ul style="list-style-type: none"> Robust Discrete Optimization Software for OR – Solvers I Applications and Computational MIP 	Eiger Mönch Jungfrau	<ul style="list-style-type: none"> Robust Discrete Optimization Software for OR – Solvers II Software for OR – Parallel (MIN)LP 	Eiger Mönch Jungfrau	<ul style="list-style-type: none"> Scheduling and Network Flows Software for OR – Modeling I Software for OR – MINLP 	Eiger Mönch Jungfrau
Energy and Environment	Optimal planning and operation of low-carbon distributed energy systems	Stockhorn	Energy and complementary problems	Stockhorn	Future energy systems – insights from model comparisons	Stockhorn
Finance	Financial Modelling I	Wildstrubel			Financial Modelling II	Wildstrubel
Game Theory and Behavioral Management			Games on Networks	Blüemlisalp	Behavioral Operations and Risk	Blüemlisalp
Health Care Management	Health Care Systems/Pandemics	Schilthorn			Operating Rooms	Schilthorn
Heuristics, Metaheuristics and Matheuristics			Matheuristics and Scheduling	Niesen		
Logistics and Freight Transportation	<ul style="list-style-type: none"> Transportation and mobility planning Drone and Robot Delivery 	Schreckhorn Gantrisch	Liner Shipping	Schreckhorn	City Logistics	Schreckhorn
Mobility and Traffic	Line Planning and Vehicle Scheduling in Public Transport	Faulhorn	Crew Scheduling in Public Transport	Faulhorn	<ul style="list-style-type: none"> Applications in Public Transport Applications in Traffic 	Faulhorn Niesen
OR in Engineering			Planning Problems with uncertainties	Schilthorn		
Project Management and Scheduling					Machine scheduling	Silberhorn
Revenue Management	Revenue Management for Logistics and Mobility	Blüemlisalp				
Supply Chain and Production Management	Planning in Supply Chain and Production Management I	Niesen	Planning in Supply Chain and Production Management II	Wildstrubel		
Systems Modeling and Simulation			Simulation-based Analysis	Gantrisch	Dynamic Decision Problems	Gantrisch
Award Presentations	PhD Thesis 2021	Silberhorn	PhD Thesis 2020	Silberhorn		

Overview of Parallel Sessions and Rooms

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Stream	Thursday – A 09:00–10:20	Room(s)	Thursday – B 10:40–12:00	Room(s)	Thursday – D 14:20–15:40	Room(s)
Analytics	Data Mining Techniques	Wetterhorn			Prescriptive Analytics and Interpretability	Wetterhorn
Decision Analysis and Support			MCDA: Artificial Intelligence and Digitalization	Wetterhorn		
Discrete and Combinatorial Optimization, sponsored by FICO	<ul style="list-style-type: none"> • Acyclic coloring of digraphs • Software for OR – Solvers III • Stochastic Optimization • Learning Augmented Algorithm Design 	Eiger Mönch Jungfrau Niesen	<ul style="list-style-type: none"> • Algorithms for Discrete Optimization Problems • Multi-Objective and Combinatorial Optimization • Two-Stage Stochastic Optimization 	Eiger Mönch Jungfrau	<ul style="list-style-type: none"> • Software for OR – Modeling II • Software for OR – NLP • Bi-Level Optimization 	Eiger Mönch Jungfrau
Energy and Environment	Gas networks and markets	Stockhorn	<ul style="list-style-type: none"> • System Boundaries • Multi-Criteria Decision Support for Energy Transitions 	Stockhorn Gantrisch	<ul style="list-style-type: none"> • Storage and flexibility markets • Microgrids and district heating 	Stockhorn Gantrisch
Finance	Financial Markets	Wildstrubel	Sustainable Finance and Catastrophe Risk	Wildstrubel		
Game Theory and Behavioral Management					Human Machine Interaction	Blüemlisalp
Health Care Management	Scheduling in Health Care	Schilthorn			Logistics in Health Care	Schilthorn
Heuristics, Metaheuristics and Matheuristics			Heuristics for industrial applications	Niesen	Metaheuristics and Feature Selection	Niesen
Logistics and Freight Transportation	Logistics in the pandemic crisis	Schreckhorn	Stochastic & Dynamic problems	Schreckhorn	Rail, air, bus and underground transportation	Schreckhorn
Mobility and Traffic	Dial-a-Ride Problems I	Faulhorn	Dial-a-Ride Problems II	Faulhorn	Data-Driven Approaches	Faulhorn
OR in Engineering			Technical Systems	Schilthorn		
Project Management and Scheduling	Project Scheduling	Silberhorn				
Revenue Management	Theory of Revenue Management	Blüemlisalp	Airline Revenue Management & Applications	Blüemlisalp		
Supply Chain and Production Management					Scheduling and Visualization in Supply Chain and Production Management	Wildstrubel
Systems Modeling and Simulation	Data Analytics, Forecasting & Simulation	Gantrisch				
Award Presentations			Young Researchers	Silberhorn	Master Thesis	Silberhorn

Overview of Parallel Sessions and Rooms

For up to date information on the scientific program, please visit the [EURO online tool](#).

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Stream	Friday – A 09:00–10:20	Room(s)
Analytics		
Decision Analysis and Support	MCA and LCA	Wetterhorn
Discrete and Combinatorial Optimization, sponsored by FICO	<ul style="list-style-type: none"> • Data Reduction • Semidefinite Programming • Theory and Applications of IPs • Machine Learning & Optimization 	Eiger Mönch Jungfrau Niesen
Energy and Environment	Power networks	Stockhorn
Finance		
Game Theory and Behavioral Management	Flows and Markets	Blüemlisalp
Health Care Management	Simulation/Machine Learning in Health Care	Schilthorn
Heuristics, Metaheuristics and Matheuristics		
Logistics and Freight Transportation	<ul style="list-style-type: none"> • Facility location & picking & cutting • Exact Vehicle Routing and Scheduling 	Schreckhorn Gantrisch
Mobility and Traffic	Electric Mobility	Faulhorn
OR in Engineering		
Project Management and Scheduling	New models and approaches in scheduling	Silberhorn
Revenue Management		
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