

Conference Booklet

International Conference on Operations Research 2026



~Converging Streams in Decision Making~

Contact

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Website



<https://or2026.de/>

Impressum

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Welcome to OR 2026



In 2026, the German Operations Research Society (GOR) welcomes researchers and practitioners from around the globe to **Passau, Germany**. Join us to present cutting-edge research and exchange ideas across Operations Research, Management Science, Data Science, and Analytics – converging streams to advance decision making.

The conference takes place from **September 1–4, 2026**, with a pre-conference program on September 1 and the main conference program on September 2–4. We invite you to be part of a vibrant program showcasing innovative methods, real-world applications, and emerging practices.

OR 2026 offers an outstanding platform to discover ground-breaking applications and practices, expand your professional network, and engage with leading experts from academia and industry. We welcome you to Passau for a memorable conference.



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Committees

Organizing Committee



Marc Goerigk, Chair
University of Passau,
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& Data Science



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Optimization



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Sponsors

We thank our generous sponsors for their support of OR 2026!

Make sure to visit our **sponsors' booths** in the foyer of building AM (Audimax) and attend the **workshops** (during the pre-conference program on Tuesday) and **keynote talks** (during the main conference) of our gold sponsors! You can find more information on the gold sponsors' activities on page 47.

Gold Sponsors



Silver Sponsors



Bronze Sponsors



Sponsors



General Conference Information

How to get to OR 2026

OR 2026 takes place on the main campus of the University of Passau – located right next to the river Inn. From the train station, you can walk there in about 15 minutes (via ZOB and through Nikolakloster).



If you arrive by car, you can park in the university's underground car park at Innstraße 29 (marked with **P**). Its opening hours during the week are 6:30 to 22:00. Make sure to place your parking permit clearly visible under the windscreen (you get the parking permit via e-mail or at the Welcome Desk).

Welcome Desk

The **Welcome Desk** is located on the first floor of the WIWI building. Here you receive your conference bag, name badge, and your ticket for the conference dinner.

Our support team at the Welcome Desk is available anytime during the **opening hours** to answer questions and help.

- Tuesday: 8:30–21:00
- Wednesday: 7:30–18:30
- Thursday: 8:00–17:30
- Friday: 7:30–15:00

Luggage

On the ground floor of the WIWI building, we have a room (026) where you can store your luggage on your arrival/departure day. During the main arrival/departure times, a team member is there to open the room for you. At all other times, ask at the Welcome Desk for help.

Please note that bags are left at the owner's risk, as we cannot assume any liability for checked bags.

Lunch and Coffee Breaks

From Wednesday to Friday, we serve coffee and other drinks along with some snacks in the foyers of the buildings WIWI, AM, and IM. On Tuesday (the pre-conference day), coffee is available only in AM.

From Tuesday to Friday, lunch in the university canteen ("Mensa") is included in your conference registration – just show your name badge at checkout. You may choose freely among all offerings from the canteen, but please be responsible and help us reduce food waste!

The canteen is open from 11:00 to 14:00. You can view this week's menu at: <https://stwno.de/en/gastro-en/speiseplan-en/uni-passau/menu-passau-mensa>



WiFi & Hardware

Access to the **eduroam** network is available anywhere on campus. Alternatively, you can also use the **@BayernWLAN** network free of charge. You will simply have to accept the Terms of Use before the connection works.

All conference rooms are equipped with HDMI access to the projectors. Please bring your own laptop as well as an adapter if necessary.

No-Photo Policy

Please respect the privacy of other attendees and do not take pictures of or record others without their explicit permission (this includes speakers as well as their slides).

Campus and Buildings

Campus Overview

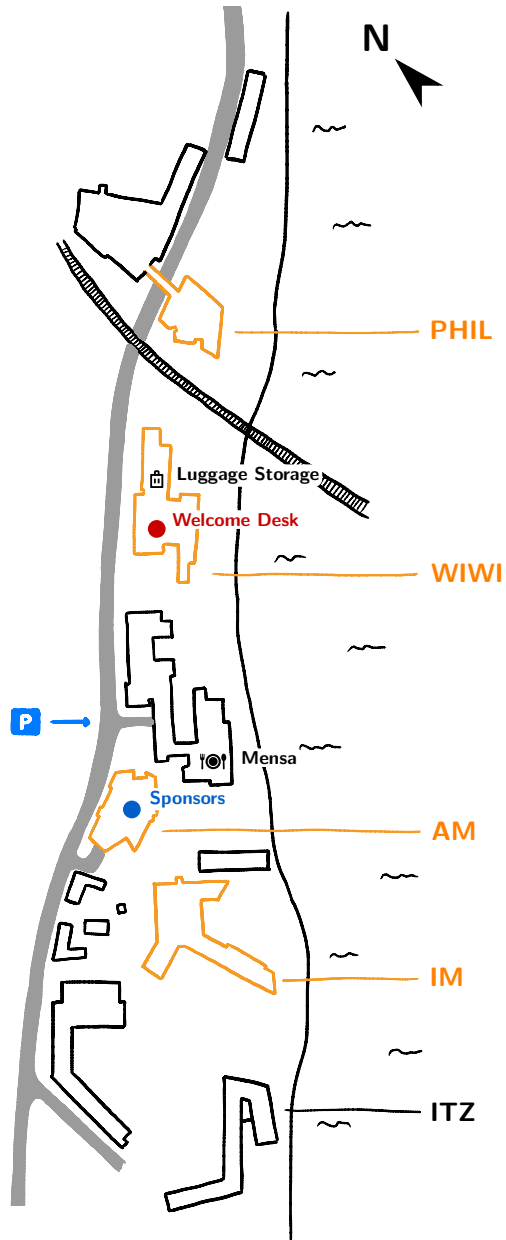
The conference takes place on the campus of the University of Passau right next to the river Inn.

The scientific program takes place in the buildings PHIL, WIWI, AM, and IM (highlighted in **orange** on the right).

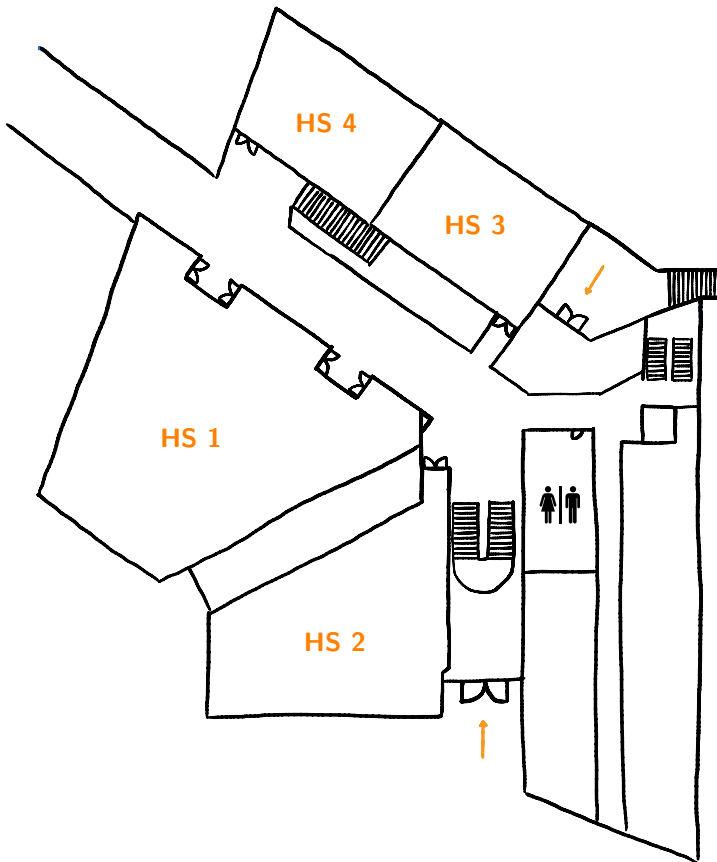
Registration takes place at the **Welcome Desk** in the WIWI building.

You can find more detailed room plans for these four buildings on the next pages.

During the lunch breaks, you can get food in the university canteen “Mensa” (marked with ☺) – bring your name-badge!



PHIL (Philosophicum)



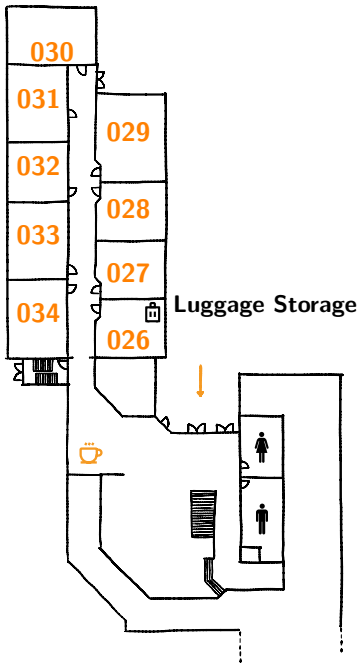
PHIL is the oldest building built specifically for the University of Passau. All four lecture halls used during the conference are located on the second floor of this building. If the weather is good, the “Campuswiese” in front of this building is a great place to get some fresh air and enjoy the sun.

To get coffee during the breaks, go to the WIWI building located to the south-west of this building (right on the other side of the railway bridge).

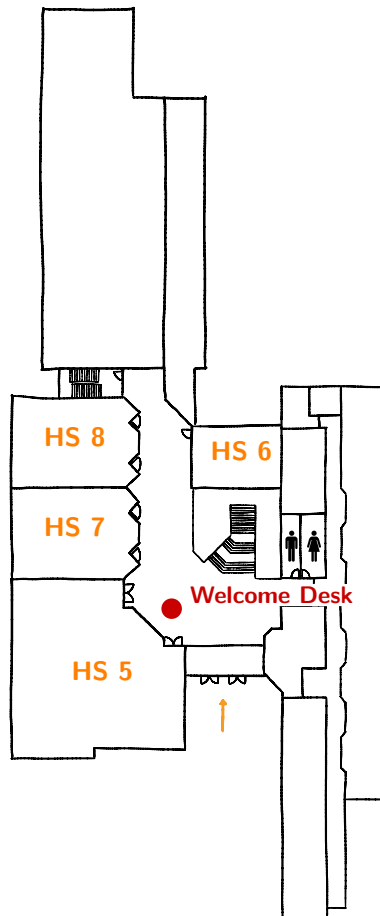
WIWI



Ground Floor



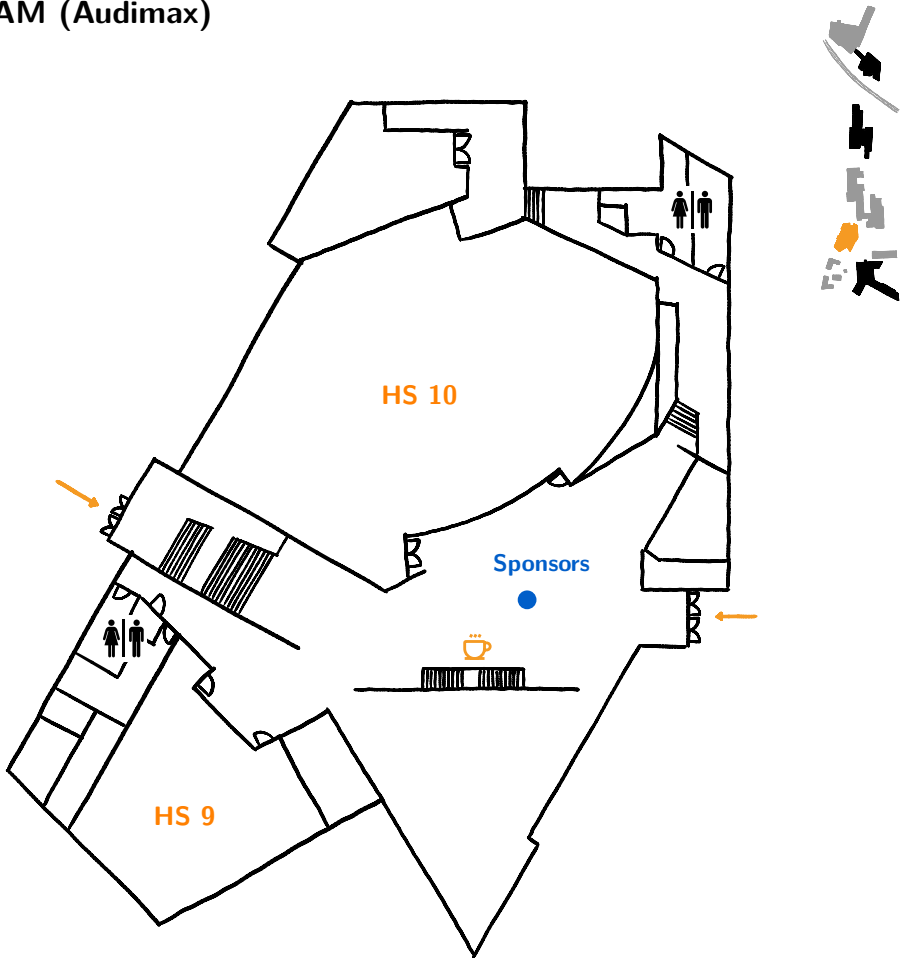
First Floor



WIWI is the main building of the School of Business, Economics and Information Systems. We use rooms on both the ground floor and the first floor. Additionally, you find here the **Welcome Desk** on the first floor and a room reserved for luggage storage (🧳) on the ground floor. During the main conference days, coffee, tea, and water are served on the ground floor (marked with ☕).

Room WIWI 301 is on the third floor of this building. Take the elevator from the ground or first floor.

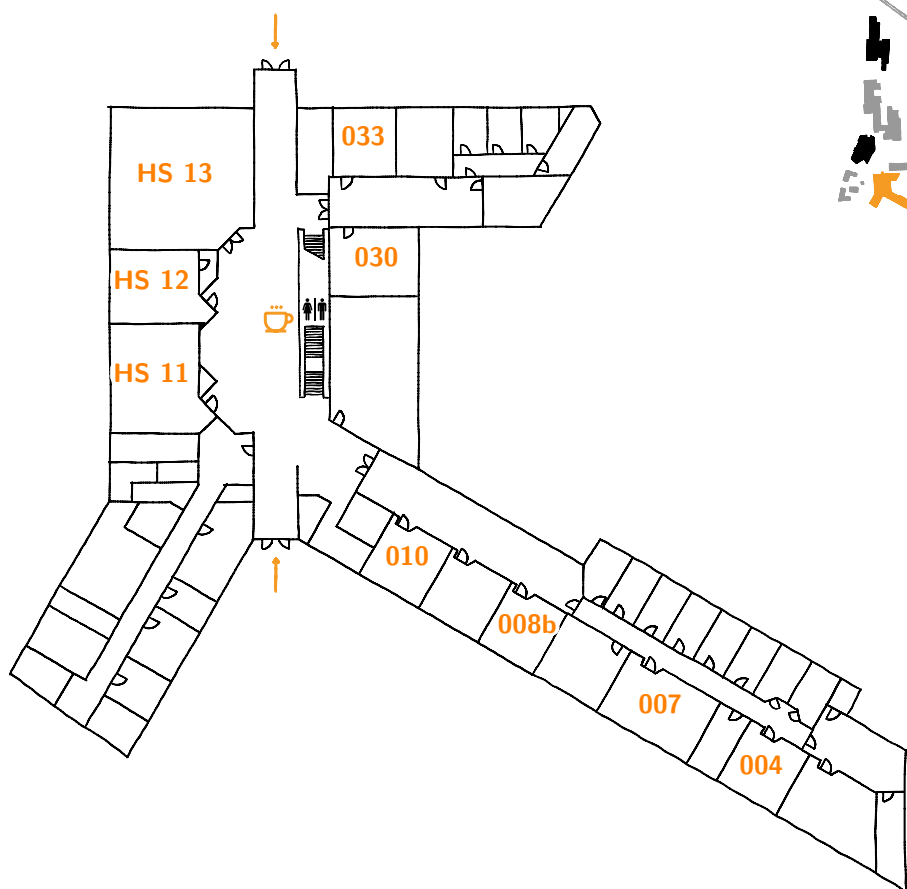
AM (Audimax)



AM is the building containing University of Passau's largest lecture hall, HS 10 ("Audimax"). Here, all the plenary talks and award sessions as well as the opening and closing sessions and the GOR annual meeting takes place. Moreover, all sessions of the pre-conference day (Dokt!OR and the gold sponsor workshops) take place in this building.

Throughout the conference, coffee, tea, and water are served in the foyer (marked with ☕) and you find our **sponsors' exhibition** there.

IM



IM is the main building of the Faculty of Computer Science and Mathematics. All rooms used in this building are on the ground floor. During the main conference days, coffee, tea, and water are served in the foyer (marked with ☕).

Scientific Program Overview

Tuesday September 1, 2026	Wednesday September 2, 2026
	8:30–9:00 Opening
	9:00–10:00 Plenary Talk <i>Dick den Hertog</i>
9:30–11:00 Dokt!OR Workshop <i>Christina Büsing</i>	10:00–10:30 Coffee Break
	10:30–12:00 Parallel Sessions, GOR Master Thesis Award Talks
11:15–12:15 Dokt!OR Workshop <i>Clemens Thielen</i>	
12:15–13:15 Lunch Break	12:00–13:15 Lunch Break
13:15–14:30 Workshop <i>Hexaly</i> ----- 13:30–14:30 Dokt!OR Tutorial <i>Kevin Tierney</i>	13:15–14:45 Parallel Sessions, GOR PhD Award Talks
14:45–16:00 Workshop <i>Gurobi</i> ----- Dokt!OR Master Class <i>Dick den Hertog</i>	15:00–16:00 Semi-Plenary Talks <i>M. Bichler, M. Bodur, S. Pokutta, R. Luce (Gurobi)</i>
16:00–16:30 Coffee Break	16:00–16:30 Coffee Break
16:30–18:00 Dokt!OR Panel Discussion	16:30–18:00 Parallel Sessions, GOR Young Researchers Award Talks

Thursday September 3, 2026	Friday September 4, 2026
8:30–10:00 Parallel Sessions	8:30–10:00 Parallel Sessions
10:00–10:30 Coffee Break	10:00–10:30 Coffee Break
10:30–11:30 Plenary Talk <i>Phebe Vayanos</i>	10:30–11:30 Semi-Plenary Talks <i>G. Kauermann, M.-È. Rancourt, S. Szeider</i>
11:45–12:45 Parallel Sessions, GOR Company Award Talk, Experiences with DFG Funding	11:45–12:45 Plenary Talk <i>Ivana Ljubić</i>
12:45–14:00 Lunch Break	12:45–13:15 Closing
	13:15–14:00 Lunch Break
14:00–15:30 Parallel Sessions	
15:30–16:00 Coffee Break	
16:00–17:00 Semi-Plenary Talks <i>R. Sioshansi, F. Spijksma, S. Weltge, L. Blaise (Hexaly)</i>	
17:00–18:30 GOR Meeting	

Streams

You can access the conference program via conftool or find the full technical program online under: <https://or2026.de/technicalprogram/>

Parallel Sessions on Wednesday, September 2

Room	10:30–12:00	13:15–14:45	16:30–18:00
Analytics, Data Science, and Forecasting			
Stream Chairs: Thomas Setzer, Sven F. Crone, Ralph Grothmann			
WIWI 033	WB 16: Prescriptive Analytics	WC 16: Feature Representation and Investment Strategies	WE 16: Features and Architectures
Artificial Intelligence, Machine Learning and Optimization			
Stream Chairs: Marc Goerigk, Frauke Liers			
WIWI HS 7	WB 09: Routing and Scheduling 1	WC 09: Routing and Scheduling 2	WE 09: Where we are and where we go
Continuous and Global Optimization			
Stream Chairs: Stephan Bütikofer, Andrea Seidl, Tristan Gally, Johannes Thürauf			
WIWI 034			WE 15: Optimal Control Applications
Decision Theory and Multi-criteria Decision Making			
Stream Chairs: Kerstin Dächert-Pauly, Michael Stiglmayr			
PHIL HS 2	WB 12: Part I	WC 12: Part II	WE 12: Part III
Discrete and Combinatorial Optimization			
Stream Chairs: Marc Pfetsch, Arie Koster			
WIWI HS 5	WB 06: Bilevel Optimization 1	WC 06: Quadratic Optimization	WE 06: Graphs and Networks 1
WIWI 029	WB 07: Applications 1	WC 07: Applications 2	WE 07: Routing Problems
Energy and Sustainability			
Stream Chairs: Dominik Möst, Dogan Keles			
IM HS 13	WB 04: Offshore wind & transmission and generation investments	WC 04: CO2 capture, transport, use and storage	WE 04: Bridging the Granularity Gap
IM HS 11	WB 05: Energy storage operation and fleet planning	WC 05: OR for industrial symbiosis - the case of Greenlab in DK	WE 05: Energy communities and local flexibilities

Room	10:30–12:00	13:15–14:45	16:30–18:00
Financial Management and Accounting			
Stream Chairs: Michael Breitner, Elmar Lukas, Matthias Amen			
WIWI 034	WB 15: Accounting	WC 15: Finance	
Mobility, Transportation, and Traffic			
Stream Chairs: Natalia Kliewer, Maximilian Schiffer, Marie Schmidt, Ralf Borndörfer			
PHIL HS 1	WB 02: Vehicle Routing	WC 02: Transportation in Logistics	WE 02: Vehicle Routing and Inventory Routing
PHIL HS 3	WB 03: Challenges in Mobility, Transport, and Traffic	WC 03: Hub Location and Resource Acquisition	WE 03: Route and Tour Planning under uncertain Conditions
PHIL HS 4	WB 13: Scheduling and Fleet Balancing		
Optimization Under Uncertainty			
Stream Chairs: Steffen Rebennack, Christina Büsing			
WIWI HS 8	WB 10: (Approximate) Dynamic Programming	WC 10: Vehicle Routing Problem	WE 10: Chance-Constraints and Decision-Dependent Robust Optimization
OR in Developing Countries			
Stream Chairs: Gerhard Wilhelm Weber, Tristan Becker			
PHIL HS 4		WC 13: Part I	WE 13: Part II
Software for Operations Research			
Stream Chairs: Jens Schulz, Stefan Vigerske			
WIWI HS 6	WB 11: Latest and Greatest in Solvers	WC 11: Modern Algorithms and Frameworks	WE 11: Fast Feasible Solutions
Supply Chain Management and Production			
Stream Chairs: Martin Grunow, Justus Arne Schwarz			
AM HS 9	WB 08: Lot Sizing	WC 08: Designing Manufacturing Systems	WE 08: Master Planning
Technical Operations Research			
Stream Chairs: Ulf Lorenz, Lena Charlotte Altherr, Peter Pelz			
IM HS 12	WB 14: Part I	WC 14: Part II	

Parallel Sessions on Thursday, September 3

Room	8:30–10:00	11:45–12:45	14:00–15:30
Artificial Intelligence, Machine Learning and Optimization			
Stream Chairs: Marc Goerigk, Frauke Liers			
WIWI 029	TA 07: Explainability and Interpretability		TD 07: Learning Rewards
WIWI HS 7	TA 09: Reinforcement Learning	TC 09: Production and Inventory Planning	TD 09: Robust and Stochastic Optimization
Continuous and Global Optimization			
Stream Chairs: Stephan Bütikofer, Andrea Seidl, Tristan Gally, Johannes Thürauf			
WIWI 034	TA 15: Theory, Algorithms, and Applications		
Discrete and Combinatorial Optimization			
Stream Chairs: Marc Pfetsch, Arie Koster			
WIWI HS 5	TA 06: Integer Programming	TC 06: Fairness & Robustness	TD 06: Nonlinearities
WIWI 029		TC 07: Selection Problems	
Energy and Sustainability			
Stream Chairs: Dominik Möst, Dogan Keles			
IM HS 13	TA 04: Near optimal solutions and system design		TD 04: Energy investments, peak power & storage
IM HS 11	TA 05: Electricity market modelling and price forecasting	TC 05: Green hydrogen production and grids	TD 05: Electricity and heating networks
Game Theory and Behavioral Management Science			
Stream Chairs: Nicolas Fugger, Florian Sachs			
IM HS 12	TA 14: Decision-making and AI	TC 14: Auctions	TD 14: Behavioral Logistics
Health Care Management			
Stream Chairs: Jens O. Brunner, Katja Schimmelpfeng			
PHIL HS 2	TA 12: Transportation problems	TC 12: Care Access and Intervention Strategies	TD 12: Scheduling Problems

Room	8:30–10:00	11:45–12:45	14:00–15:30
Mobility, Transportation, and Traffic			
Stream Chairs: Natalia Kliewer, Maximilian Schiffer, Marie Schmidt, Ralf Borndörfer			
PHIL HS 1	TA 02: Electric Vehicles	TC 02: Network Design and Urban Planning	TD 02: Railway Network Capacity Planning
PHIL HS 3	TA 03: Data Analysis in Mobility and Transport	TC 03: Network Design	TD 03: Drones 2
Optimization Under Uncertainty			
Stream Chairs: Steffen Rebennack, Christina Büsing			
WIWI HS 8	TA 10: Robust Optimization Applications	TC 10: Approximations for Robust Optimization	TD 10: Learning and Sequential Decision Making
Pricing and Revenue Management			
Stream Chairs: Claudius Steinhardt, Robert Klein, Christiane Barz			
WIWI 034		TC 15: Competition and Cancellations	TD 15: Applications to Last-Mile Logistics & Mobility
Project Management and Scheduling			
Stream Chairs: Simon Emde, Florian Jaehn			
PHIL HS 4	TA 13: Models and Optimization	TC 13: Project Management and Performance Control	TD 13: Scheduling in Logistics
Simulation and Quantum Computing			
Stream Chairs: Maximilian Moll, Max Krüger			
WIWI 033	TA 16: Quantum Computing Applications for Complex Optimization Problems	TC 16: Quantum Algorithms for Complex Optimization Problems	TD 16: Modeling and Learning in Complex Systems
Software for Operations Research			
Stream Chairs: Jens Schulz, Stefan Vigerske			
WIWI HS 6	TA 11: Beyond Linearity		TD 11: Modern Modeling
Supply Chain Management and Production			
Stream Chairs: Martin Grunow, Justus Arne Schwarz			
AM HS 10	TA 01: Scheduling in the Service and Paper Industries		TD 01: Sustainable Supply Chains
AM HS 9	TA 08: Supply Chain Management	TC 08: Scheduling in Semiconductor Manufacturing	TD 08: Integrating Production and Transportation

Parallel Sessions on Friday, September 4

Room	8:30–10:00
Artificial Intelligence, Machine Learning and Optimization Stream Chairs: Marc Goerigk, Frauke Liers	
WIWI HS 7	FA 09: LLMs for Optimization
Discrete and Combinatorial Optimization Stream Chairs: Marc Pfetsch, Arie Koster	
WIWI HS 5	FA 06: Bilevel Optimization 2
WIWI 029	FA 07: Graphs and Networks 2
Energy and Sustainability Stream Chairs: Dominik Möst, Dogan Keles	
IM HS 13	FA 04: Hydrological and Hydropower Modelling
IM HS 11	FA 05: Power-to-X and alternative fuels
Game Theory and Behavioral Management Science Stream Chairs: Nicolas Fugger, Florian Sachs	
IM HS 12	FA 14: Strategic Resource Allocation
Health Care Management Stream Chairs: Jens O. Brunner, Katja Schimmelpfeng	
PHIL HS 2	FA 12: Data-driven Planning and Cyber Risk
Mobility, Transportation, and Traffic Stream Chairs: Natalia Kliewer, Maximilian Schiffer, Marie Schmidt, Ralf Borndörfer	
PHIL HS 1	FA 02: Parcel Logistics and Location Routing
PHIL HS 3	FA 03: Route Planning for Public Transport Services
Optimization Under Uncertainty Stream Chairs: Steffen Rebennack, Christina Büsing	
WIWI HS 8	FA 10: Regret Optimization and Hurwicz Criterion
Project Management and Scheduling Stream Chairs: Simon Emde, Florian Jaehn	
PHIL HS 4	FA 13: Scheduling in Manufacturing and Projects

Room

8:30–10:00

Simulation and Quantum Computing

Stream Chairs: Maximilian Moll, Max Krüger

WIWI 033 FA 16: Optimization Across Complex Hierarchies, Organizations, and Networks

Software for Operations Research

Stream Chairs: Jens Schulz, Stefan Vigerske

WIWI HS 6 FA 11: Modeling Ecosystem

Supply Chain Management and Production

Stream Chairs: Martin Grunow, Justus Arne Schwarz

AM HS 10 FA 01: Scheduling Additive Manufacturing Systems and Lean in the Flower Industry

AM HS 9 FA 08: Risks in Supply Chains



Invited Speakers

Plenary Speakers



Dick den Hertog
University of Amsterdam



Ivana Ljubić
WU Wien



Phebe Vayanos
University of Southern
California

Semi-Plenary Speakers



Martin Bichler
Technical University of
Munich



Merve Bodur
University of Edinburgh



Göran Kauermann
Ludwig-Maximilians-
Universität München



Sebastian Pokutta
Zuse Institute Berlin and
TU Berlin



Marie-Ève Rancourt
HEC Montréal



Ramteen Sioshansi
Carnegie Mellon
University



Frits Spieksma
Eindhoven University of
Technology



Stefan Szeider
Technische Universität
Wien



Stefan Weltge
Technical University of
Munich

Abstracts: Plenary Speakers

Dick den Hertog

Optimization for a Better World

Wed 9:00–10:00 in AM HS 10



Abstract: This keynote explores the transformative role of optimization in helping non-governmental organizations (NGOs) and non-profit organizations (NPOs) accelerate progress toward the United Nations Sustainable Development Goals (SDGs). Through the work of the Analytics for a Better World Institute, cutting-edge optimization methods are developed and applied to address some of society's most pressing humanitarian and environmental challenges.

Drawing on real-world collaborations with NGOs and NPOs, the keynote will demonstrate how optimization can substantially enhance social impact. One featured example is a collaboration with The Ocean Cleanup, where advanced optimization models are used to determine how cleanup vessels should be deployed and routed to maximize the removal of plastic from the world's oceans, thereby increasing the effectiveness of large-scale efforts to combat marine pollution.

The keynote will also present a range of projects that use geospatial optimization to improve access to healthcare and other essential services. These include optimizing the locations of primary healthcare facilities in Timor-Leste, determining the optimal placement of stroke centers in Vietnam, planning COVID-19 testing centers in Nepal, and identifying suitable locations for water wells in Sudan. These initiatives have been conducted in partnership with organizations such as the World Bank, the World Health Organization, Amref Health Africa, and the American Red Cross.

Beyond showcasing the societal impact of these applications, the keynote will discuss the novel methodological and computational challenges they have generated. Many of these challenges remain open research questions, creating exciting opportunities for future advances in optimization and analytics for social good.

Bio: Dick den Hertog is professor of Operations Research at the University of Amsterdam. His research interests cover various fields in linear and nonlinear optimization. In recent years, his main focus has been on robust optimization, and recently he started research on Optimization with Machine Learning. He is also active in applying the theory in real-life applications. In particular, he is interested in applications that contribute to a better society. He received the INFORMS Franz Edelman Award twice: in 2013 for his research on optimal flood protection, and in 2021 for his research on optimizing the food supply chain for the UN World Food Programme. He has been Visiting Professor at MIT since 2019. He is Science-to-Impact Director of the Analytics for a Better World Institute, that he co-founded in 2022.

Phebe Vayanos

***Learning to Allocate Scarce Resources:
Balancing Efficiency, Fairness, and Trans-
parency from Real-World Data***



Thu 10:30–11:30 in AM, HS 10

Abstract: Motivated by collaborations with homelessness service providers, we study how causal inference, machine learning, and optimization can support high-stakes decisions involving scarce resources. In the first part of this talk, I focus on the allocation of scarce interventions such as housing to individuals experiencing homelessness. Using observational data collected in deployment, we develop a framework that learns simple, interpretable waitlist-based policies that maximize long-run outcomes while accounting for resource constraints and fairness considerations. Empirical results from a collaboration with the Los Angeles Homeless Services Authority show that our policies increase rates of exit from homelessness by 5.16 % relative to current practice, while fairness constraints can often be incorporated at little cost to efficiency.

In the second part of the talk, I discuss the design of risk assessment tools used to prioritize individuals for scarce interventions. In collaboration with the Missouri Balance of State Continuum of Care, we are developing risk scores that balance predictive accuracy, fairness, and transparency while remaining aligned with community values and operational needs. Our work combines machine learning, optimization, and extensive stakeholder engagement to evaluate alternative models and their associated trade-offs. Interestingly, community stakeholders ultimately preferred a substantially more interpretable risk score despite a non-negligible reduction in predictive performance. Determining when such trade-offs are worthwhile requires direct engagement with the communities affected by these systems.

Together, these projects illustrate a broader vision for designing human-centered decision-support systems that combine prediction and optimization to allocate scarce resources efficiently, fairly, and transparently in high-stakes social service settings.

Bio: Phebe Vayanos is an Associate Professor of Industrial & Systems Engineering and Computer Science at the University of Southern California where she holds a Viterbi Early Career Chair in Engineering. She is also a Co-Director of CAIS, the Center for Artificial Intelligence in Society and a Co-Director of the ORAI Program in Operations Research and Artificial Intelligence at USC. Her research is focused on optimization and its interface with machine learning, causal inference, and economics. Prior to joining USC, she was lecturer in the Operations Research and Statistics Group at the MIT Sloan School of Management, and a postdoctoral research associate in the Operations Research Center at MIT. She is a TED AI speaker, a recipient of the NSF CAREER award, and the Imperial College Emerging Alumni Leader Award, among others. She is an associate editor for Management Science, Operations Research, Operations Research Letters, and Computational Management Science.

Ivana Ljubić

***Modeling Fairness Through the Lenses
of Ordered and Bilevel Optimization***

Fri 11:45–12:45 in AM, HS 10



Abstract: Fairness has become an increasingly important consideration in contemporary societies, which are marked by growing economic and social inequalities. Consequently, policymakers and decision-makers are placing greater emphasis on incorporating fairness considerations into their decision-making processes. In this talk, we establish a connection between fairness modeling in optimization problems and bilevel optimization.

We present a unifying and flexible modeling framework based on the principles of ordered optimization that captures a broad class of fairness measures proposed in the literature. These include both linear and nonlinear notions of fairness, such as the range, the Gini index, least absolute deviations, least squares deviations, and several others. Many of these practically relevant fairness measures are inherently non-monotone, which necessitates the imposition of appropriate optimality conditions. This observation naturally leads to a bilevel optimization perspective.

To illustrate the practical implications of the proposed framework, we consider its application to vehicle routing problems, highlighting how bilevel optimization can be leveraged to model and solve fairness-aware optimization problems in real-world settings. This presentation is based on joint work with Justo Puerto and Alberto Torrejon.

Bio: Ivana Ljubić is Professor of Operations Research at ESSEC Business School in Paris. She serves as Area Editor for Transportation Science and Associate Editor for Operations Research and Networks. She has also served as Guest Editor for the European Journal of Operational Research and the Annals of Operations Research, and is a former Chair of the INFORMS Telecommunications Section.

Her research interests include network design, combinatorial optimization, optimization under uncertainty, and bilevel optimization. Her work focuses on the development of mixed-integer linear and nonlinear optimization methods for applications in telecommunications, transportation, logistics, data and distribution network design, and social networks.

Abstracts: Semi-Plenary Speakers

Martin Bichler

Wed 15:00–16:00 in AM, HS 10

Learning, Games, and Algorithmic Markets

While OR has made significant progress in solving optimization problems, we still know comparatively little about solving equilibrium problems. Recent algorithmic developments have shown that learning algorithms often find equilibrium in important classes of games. This is not only relevant to equilibrium computation, but also provides a model for learning agents in automated markets such as display advertising auctions or price competition on online retail platforms. Such markets are still not well understood theoretically. This talk provides a brief overview of mathematical concepts that help us understand when and why learning algorithms converge to a Nash equilibrium in games, and when this is not the case.

Merve Bodur

Wed 15:00–16:00 in IM, HS 13

Decision Diagrams for Discrete Decision-Making Under Uncertainty and Beyond

Sequential decision-making under uncertainty arises in many operations research applications. These problems become particularly challenging when recourse actions are binary or integer, and scalable solution methods remain limited in scope. This motivates approaches that leverage the combinatorial structure of discrete recourse.

In this talk, we will present how decision diagrams (DDs) can represent relevant combinatorial substructures in two-stage stochastic programming and adaptive robust optimization. For stochastic programs, we will show how DDs can convexify discrete recourse representations and make the problem amenable to Benders decomposition, including risk-averse extensions. For adaptive robust binary optimization, we will present DD-based network-flow formulations that provide exact models, size-controlled approximations, and high-quality primal and dual bounds. We will further touch on learning-guided DD construction for stronger relaxations.

We will also briefly discuss extensions beyond uncertainty, including multiobjective discrete optimization for efficient Pareto frontier enumeration and column generation settings where DDs support pricing.

Sebastian Pokutta

Wed 15:00–16:00 in WIWI, HS 5

Frank-Wolfe Beyond Polytopes: Convergence on Non-Polyhedral Sets

Frank-Wolfe methods are a classical projection-free approach to constrained optimization and are particularly attractive when linear minimization oracles are significantly cheaper than projections. Much of the classical theory and intuition has been developed for polyhedral domains, where active-set structure and sparsity play a central role. In many applications, however, the feasible region is not polyhedral but curved, for example a Euclidean ball, a spectrahedron, or a strongly convex set. This raises a natural question: How does the geometry of a non-polyhedral domain change the convergence behavior of Frank-Wolfe?

In this talk, I will discuss recent progress on Frank-Wolfe convergence beyond polytopes, with a particular focus on uniformly convex sets. After briefly reviewing the geometric picture and what is known about improved rates under additional assumptions, I will focus on a recent constructive lower bound, obtained through an approach that is rather unusual for lower-bound arguments, showing that even when both the objective and the constraint set are smooth and strongly convex, the classical $O(1/\sqrt{\epsilon})$ guarantee is tight in general. In particular, this settles, roughly a decade after the 2015 Garber-Hazan upper bound, the question of whether strong convexity of the feasible set alone can guarantee a uniformly faster rate. I will conclude by complementing this picture with a surprising new result.

Ramteen Sioshansi

Thu 16:00–17:00 in AM, HS 10

OR and Its Vital Role in Addressing Technology and Policy Challenges to Decarbonize Electricity Systems

The electricity industry and policymakers are grappling with the challenge of decarbonizing electricity systems. Decarbonization will require major changes in how electricity systems are planned and operated. Moreover, policy and market reforms will be needed to ease the transition. This talk surveys these changes and challenges and dispels some common misconceptions about decarbonization. Moreover, the important role of operations research in facilitating this transition is discussed.

Frits Spieksma

Thu 16:00–17:00 in WIWI, HS 5

Diversity of Solutions within Combinatorial Optimization

We describe a framework for quantifying the trade-off between diversity of solutions on the one hand, and their quality on the other hand. For this context, we develop a measure that we call the Price of Diversity (PoD).

We apply this concept to a number of problems. In particular, we investigate the Traveling Salesperson Problem with the triangle inequality, and show how the requirement to generate multiple diverse solutions influences tour quality. Specifically, we consider the problem of finding two edge-disjoint tours while minimizing the length of the longer tour. For this setting, we derive tight results establishing the PoD for this problem.

(Joint work with Andres Lopez Martinez and Mark de Berg)

Stefan Weltge

Thu 16:00–17:00 in IM, HS 13

Integer programming and bounded subdeterminants

Identifying parameters that capture the difficulty of integer programs is a central theme in the study of integer programming. One such parameter is the largest absolute value of any subdeterminant of the constraint matrix. In this talk, we explore how bounding this parameter influences the complexity of integer programs. We survey several recent results and discuss intriguing open questions in this area.

Göran Kauermann

Fri 10:30–11:30 in WIWI, HS 5

Applied Statistics and Operations Research – Two Sides of the same Coin?!

If one consults modern search engines for a brief definition of Operations Research, the answer is typically something along the lines of: “Operations Research is the use of mathematical models, statistical analysis, and optimization techniques to support better decision-making and improve the efficient use of resources”. Statistical analysis is mentioned as one of its tools, alongside mathematics and optimization. However, “Statistical Analysis”, or better “Applied Statistics” today goes much deeper into the subject matter, also with the aim of making “better decision-making.” In this respect, Operations Research and Applied Statistics pursue similar, if not partly identical, objectives. Yet the approaches of the two disciplines have different roots and histories.

This talk highlights the statistical perspective and illustrates how questions can be addressed using a statistical approach. Several practical examples are presented. Specifically, we consider the estimation of price elasticities and the optimization of renewable energy systems, the latter using South Africa as a case study. The central message is that, for concrete and complex problems, an interdisciplinary approach appears to be the most successful. In this sense, the coin has more than two sides, and each side both can and should be examined.

Marie-Ève Rancourt

Fri 10:30–11:30 in AM, HS 9

Data-Driven Optimization in Humanitarian Supply Chains: An Application to Madagascar

This presentation explores how data-driven optimization can support decision-making in humanitarian supply chains, with a focus on the specific challenges that arise in this context. Decision problems are often ill-defined and must be formulated in data-scarce, uncertain, and resource-constrained environments. In applied research, data collection and processing play a central role, not only in parametrizing mathematical models, but also in shaping relevant and practically meaningful problems and research questions. The presentation will discuss the main features that need to be positioned and clarified when modeling and solving optimization problems related to humanitarian operations.

The proposed approach to problem formulation follows a bottom-up research design, starting from operational challenges encountered by humanitarian organizations in the field and moving toward optimization-based solution approaches. A detailed case study in Madagascar illustrates this approach in the context of anticipatory stock repositioning for cyclone response. We develop a dynamic framework that combines a regression model to predict demand from cyclone forecasts and vulnerability indicators with a two-stage stochastic optimization model to guide repositioning decisions. The results show that anticipatory repositioning can reduce response time by up to 50 % compared to a wait-and-see strategy, which remains a common practice.

Large Language Models in the Optimization Loop

Large Language Models (LLMs) have reshaped natural language processing, but their role in combinatorial optimization and constraint solving is only beginning to take shape. In this talk, I argue that LLMs are most useful not as solvers in their own right, since they cannot guarantee optimality or even feasibility, but as collaborators for the exact solvers we already trust. I illustrate three roles an LLM can play across the optimization workflow.

First, as a modeler: The MCP Solver lets an LLM translate problems stated in plain English into encodings for constraint programming, SAT, MaxSAT, and SMT, editing the model incrementally as an agent. Second, as a search guide: LLM-generated streamlining constraints steer solvers toward promising regions of the search space. They cut runtimes sharply and set new record values for spatially balanced Latin rectangles. Third, as an algorithm selector: Pretrained text embeddings replace hand-crafted instance features, beating classical feature-based selection on 10 of 11 benchmark scenarios with no domain-specific engineering.

The thread connecting all three is neurosymbolic: Language models supply breadth and creativity, exact solvers supply rigor and guarantees, and the combination outperforms either alone.



Interviews

Interview with Plenary Speaker Dick den Hertog

In anticipation of Dick's keynote talk at OR 2026, organizing committee member Ralf Kellner asked him some questions about his research and his view on the field of operations research in general:

How did you originally come to the field of operations research? What is your background, and what kept your interest – how did you get to where you are today professionally?

That goes back to my master's degree. I had to choose a thesis topic – my master's was in general mathematics – and one of the options was in operations research, specifically about interior point methods. That was around 1988. I chose that topic, supervised by Professor Kees Roos in Delft, liked it a lot, and continued with a PhD in the same area.

In more recent years, what types of applications of operations research are you most interested and excited about?

It may help to mention that after my PhD I had a rather unusual career: I went into industry, working for a consultancy company in optimization and OR, on applications for many companies including Philips. In 2000 I returned to academia. Nowadays my passion is to apply optimization to NGOs and non-profit organizations – the World Food Programme, the Ocean Cleanup, the World Health Organization, the World Bank, and others. We see enormous potential for analytics, and for optimization in particular, in these organizations, and I want to help them exploit it, because I believe they are often not yet aware of it. That is also what I plan to discuss during my plenary talk.

What brought you to that direction? For me personally, I sometimes find it difficult to reconcile my ethical standards with the purely commercial financial world. Is there also a moral or ethical compass that motivates you toward this broader societal focus?

Without suggesting that working for commercial companies is wrong – it certainly is not – a key turning point was reading a book called *Excellence Without a Soul* by a former Harvard dean. It was a critique of Harvard's educational system, specifically the absence of a sense of purpose in education. That book influenced and inspired me deeply. From that point I decided to work on applications with greater societal purpose, to use those applications in my teaching, and to encourage students to write

their theses on such topics. So yes, there is a moral dimension to it. My passion now is to apply the powerful methods we have developed – which are not yet being exploited – in the service of NGOs and NPOs.

How do you experience the gap between academic models and practical application? In my own work in finance, I found that real-world constraints often forced heavy simplification. Is it the same in operations research, or can you apply methods more directly?

Honestly, I am consistently surprised by how directly applicable optimization is across the many projects I have worked on – perhaps tens or hundreds by now. There is an art to modeling a practical decision problem: capturing the core without making it too simple or too complex. But time and again I find that a large project – say, for the World Food Programme – results in a model that fits on a single slide and yet captures the essence of the problem. That is the power of mathematics. And with that model, they can now feed millions more people. The same holds for the Ocean Cleanup. In other projects we also develop genuinely advanced methods. But the alignment between clean mathematical models and real-world impact is consistently striking.

How do you distribute your time across the different phases of a project?

Roughly half my time goes to applied projects and the other half to more theoretical work. Within projects I always work together with students – master's, executive, and PhD students. We typically work through intermediaries rather than directly with communities; for example, through the World Bank, which has people on the ground. That allows us to focus more sharply on the mathematical side. Within a project itself, probably 50–60 % of effort is spent on discussions – understanding the real problem and how the solution will actually be used.

Do you see a role for large language models in democratizing access to optimization – allowing non-specialists to formulate and solve problems?

Yes – I believe LLMs will shift things considerably. Currently, you need to be an optimization expert for these kinds of applications. In the future I expect that will change, and that is also my aim for the NGO and NPO world: to lower the barrier. A concrete example: Some months ago, someone with a commercial company came to me. He had some basic knowledge of optimization but could not formulate his problem. I spent one evening with an LLM – within 20 minutes I had a working mathematical model and Python code.

That matches my experience for well-defined problems like portfolio optimization. But for many tasks I still find that LLMs are not reliable enough

without expert oversight – you need to be able to judge whether the output is actually correct.

That is still true – expert oversight is still needed. But I think that will change. LLMs are already useful to experts: In one project, an institution had a model that was computationally too slow, and using LLMs we reduced the computation time by a large factor. The key remaining challenge is not the mathematical formulation per se – if you define the problem precisely, LLMs can handle it – but the step from a vague real-world description to a precise verbal model. That is where most difficulty lies, and I believe LLMs will increasingly help there too.

Finally, what advice would you give to young researchers starting out?

What I observe is that young researchers genuinely want to work on applications with societal impact. My advice: Don't postpone it – just do it. And invest heavily in making your teaching as inspiring as possible.

Thank you for the interview and we are looking forward to seeing you in Passau!

Interview with Plenary Speaker Ivana Ljubić

In anticipation of Ivana's keynote talk at OR 2026, organizing committee members Lukas Graf and Dorothee Henke asked her some questions about her talk, her research and her view on the field of operations research in general:

What can you tell us about the topic of your plenary talk in Passau and its importance?

In my presentation, I will be talking about a connection between modeling fairness in optimization problems and bilevel optimization. Fairness is getting increasingly important in our times where we see increasing inequalities in our societies. Thus, policy and decision makers will be more and more interested in integrating fairness into their decision-making process. What we can do then, as operations researchers, is to develop mathematical models that can help them during this process.

In my talk, I will show you a unifying modeling framework that can address several interesting and practically relevant fairness measures proposed in previous literature.

I will focus on applications in routing, and I will show you how to develop branch-and-cut algorithms to solve this type of problems. The presentation is based on joint work with Alberto Torrejon from the University of Seville, that was part of his PhD thesis, and with his PhD supervisor, Justo Puerto.

What was your own path to operations research, and what attracted you to this field?

I originally studied mathematics and enjoyed virtually every area of the subject. However, it was only quite late in my studies—during my master's program in mathematics at the University of Belgrade—that I discovered a course in combinatorial optimization. That was the moment I realized I had found a field I was truly passionate about.

After taking that course, I wrote my master's thesis on Steiner trees and decided to pursue a PhD. Around that time, a PhD position became available at TU Wien. I applied, was fortunate to be selected, and continued working on Steiner trees, as well as other graph optimization problems.

Looking back, that combinatorial optimization course was the turning point that set me on the path to operations research and ultimately shaped my academic career.

You have also worked with industry partners. What can you tell us about those experiences?

These collaborations are both enjoyable and highly rewarding. When working with industry partners, you quickly realize that many of the problems we study in academia

are intentionally abstract and often quite far away from the complexity of real-world applications. Practitioners bring a different perspective and introduce many additional considerations that are essential in practice.

As a result, the problems become increasingly complex, often to the point where they appear almost impossible to solve because of the large number of requirements and constraints involved. The challenge is then to identify which aspects are truly essential and which can be simplified, relaxed, or even removed. Finding the right balance between models that are too abstract to be useful and models that are too complex to be tractable is one of the most interesting aspects of applied operations research.

Another challenge is communication. Practitioners do not usually speak the language of optimization or academia, so translating between these different perspectives is an important part of the collaboration. For example, concepts that seem fundamental to us, such as the distinction between objective functions and constraints, are not always framed in the same way by industry partners. Learning to understand each other's language and priorities is therefore a crucial part of the process. At the same time, this is what makes such collaborations so exciting.

There is a great sense of satisfaction in knowing that the methods and results you develop will not simply remain in a research paper or a drawer, but can have a tangible impact and be used to support real-world decision-making.

Do you have any recommendations on what academics could do better to make this interface easier?

I think this is already happening to some extent. In machine learning, for example, interfaces have become increasingly user-friendly, making sophisticated methods accessible to a much broader audience. We are seeing a similar trend in optimization. Companies developing optimization solvers, are continuously working to simplify their interfaces and lower the barriers to adoption.

I believe this is an important step for the growth of our field. Operations research is often perceived as highly technical and difficult to access. By developing tools that are easier to use and by making our methods more approachable, we can help practitioners focus on solving their problems rather than on mastering the underlying technical details. This will make it easier for organizations to adopt optimization methods and benefit from the advances being made in our research community.

You recently wrote a book together with Martin Schmidt and Yasmine Beck. What can you tell us about it?

This project began several years ago when Martin Schmidt and Yasmine Beck started preparing lecture notes for Martin's course on bilevel optimization at Trier University.

More recently, Martin invited me to join the project so that we could expand its scope and incorporate recent developments in mixed-integer bilevel optimization, alongside the topics of linear and continuous bilevel optimization.

Together, we developed the material far beyond the original lecture notes. The book now covers a broad range of topics, including branch-and-cut algorithms, interdiction problems, intersection cuts for mixed-integer bilevel optimization, bilevel optimization under uncertainty, and models with multiple leaders or multiple followers. Our goal was to provide an up-to-date introduction to the field that is useful both for newcomers and for researchers interested in recent advances. A preprint of the book is already freely available on our websites, and the printed version is scheduled to be published by Cambridge University Press at the beginning of next year.

Did you have a specific audience in mind that you would recommend this book to?

The book was written primarily as a textbook. It can be used as the main reference for an introductory course on bilevel optimization, either as an elective course in a master's program—particularly for students in mathematics, operations research, or computer science—or as an introductory course for PhD students entering the field.

At the same time, the book is intended to be accessible to a broader audience. Researchers from different areas who would like a clear and gentle introduction to bilevel optimization can also benefit from it. We have tried to present both the fundamental concepts and the more recent developments in a way that is approachable for readers who may not already be specialists in the field.

In this sense, I believe the book complements the existing literature quite well. While there are several excellent research monographs on bilevel optimization, this is the first textbook specifically designed to support teaching and self-study at the introductory level.

How do you see the future of OR? What challenges await the OR community?

I think there are really two different questions here: One concerns the challenges within the OR community, and the other concerns how we position ourselves in the broader scientific and industrial landscape.

Within the community, one of the biggest challenges is how we adapt to the rapid progress of AI. We need to understand how these increasingly powerful tools can be integrated into our research and teaching, and how they can help us become more productive. At the same time, we need to think carefully about maintaining scientific quality and originality. Tasks that once required months of work can now sometimes be completed in a fraction of the time with the assistance of AI. This raises important questions about how research will evolve and whether we, as a

community, can focus more on asking truly original and fundamental questions rather than simply accelerating established research workflows. The second challenge is how we position operations research externally, particularly in relation to industry. With the growing prominence of AI and machine learning, there is a risk that optimization and OR may be perceived as being absorbed into these broader trends. I believe it is important to communicate clearly that not every decision-making problem can be solved by AI alone. Optimization remains a field with its own expertise, methods, and theoretical foundations.

Of course, optimization plays a crucial role in many AI and machine learning algorithms and applications, but the relationship also works in the other direction. There are many important scientific and practical problems for which optimization methods provide insights, guarantees, and solutions that AI alone cannot offer. Demonstrating this value—to companies, policymakers, and society more broadly—will be essential for the future of our discipline.

When OR 2026 takes place in Passau in September, you will have just started a new position a bit further down the Danube at WU Vienna. What are you most looking forward to about returning to Vienna?

Returning to Vienna really feels like coming home for me. I am very excited to join the Institute of Statistics and Mathematics at WU Wien and to become part of such a vibrant academic environment. What I am particularly looking forward to is building bridges between operations research and the other areas of expertise represented at the institute, especially financial mathematics, statistics, and machine learning. I believe there are many opportunities for fruitful collaborations at the intersection of these fields, and I am eager to explore them.

Beyond that, I am also excited about the broader research environment at WU Vienna. The university is establishing a new department focused on Business Analytics and Decision Sciences, which I expect will create many new opportunities for exchange and collaboration.

Thank you so much for your time and we are looking forward to seeing you in Passau!

Awards

During the opening session of OR 2026, nine researchers in different stages of their career as well as a company receive awards from the German Operations Research Society for their work in the field of operations research. Throughout the conference days, the awardees give talks about their work:

GOR Master Thesis Award – Wed 10:30–12:00 in AM, HS 10

Asra Dia (University of Hamburg)

On Integrality of Queries in Robust Binary Optimization Problems under Controllable Uncertainty

Many real-world optimization problems involve data that is uncertain or only partially known. Often, that uncertainty can be reduced through costly queries before a decision is made. We study decision-dependent robust optimization problems in which each element of the uncertainty set can be adjusted independently. Uncertain cost coefficients lie in bounded intervals and the decision maker selects a query vector that shrinks each interval toward a hedging point, possibly to a single value.

The problem can be formulated as a four-level problem. The decision-maker first chooses the query vector, an adversary then sets the hedging points within a budgeted uncertainty set, the underlying binary decision follows and finally the remaining uncertainty is realized adversarially within the narrowed intervals. Computationally, optimal query variables appear to take integral values despite being modeled as continuous. We prove that, for problems of this form under budgeted uncertainty sets, optimal queries are indeed integral.

Reformulating the four-level model as a two-level bilinear program allows us to treat the query as a parameter in a parametric optimization problem. Because the query appears on both sides of the constraints, classical concavity results do not apply directly. We overcome this by using McCormick relaxations to linearize the bilinear terms and move the parameter to the right-hand side. Although such relaxations are generally approximate, we show they are exact in our setting. This reformulation allows us to apply standard concavity arguments, which in turn yield integrality of optimal queries.

Patricia Alexandra Ebert (Technische Universität Berlin)

Stochastic Optimization and Dispatching Rules for Railway Delay Management

In railway traffic, source delays occur daily. If the original timetable becomes infeasible, delay management aims to construct a disposition timetable minimizing propagated delays and passenger inconvenience. Two classes of decisions arise: wait-depart decisions determining whether trains should wait for delayed feeder trains to maintain passenger transfers, and precedence decisions defining the order of trains while respecting limited network capacities.

The classical Offline Delay Management Problem assumes source delays are fully known and stable. We propose the Stochastic Delay Management Problem (DM), treating source delays as constant within an initial control horizon and as random variables following a delay distribution thereafter. DM is NP-hard for finitely many second-stage scenarios. We introduce a two-stage stochastic mixed-integer linear programming formulation for DM.

To achieve comparability with common practices, we integrate six simple dispatching rules into our optimization framework. Additionally, we present the Doing-Nothing algorithm to study the price of non-dispatching. Computational experiments for the Berlin S-Bahn network show that stochasticity improves disposition timetables by 1.7% on average, at the cost of higher runtimes. The price of non-dispatching of 2.7% indicates a moderate benefit of dispatching, and three dispatching rules perform comparably to DM.

Jonathan Scholz (Otto-von-Guericke-Universität Magdeburg)
Solving Large Constrained Clustering Problems

Through globalization, outsourcing, and increasingly demanding customer requirements, effective supply chains are more important than ever. On the strategical level, this concerns, amongst others, the planning of facility locations and the assignment of customers to locations. Such problems are often solved by means of clustering methods. In practice, however, decisions are accompanied by many operational constraints, e.g., capacity of facilities, or that specific customers must (not) be assigned to the same facility. The constraints make finding effective and feasible location and assignment decisions significantly more complex. This work analyzes the complexity of different constraint types, including capacity constraints, pairwise link constraints and cluster size constraints. It then extends the BLP-Kmeans algorithm to simultaneously incorporate several of these constraint types. It introduces a method for transforming pairwise link constraints into general capacity constraints, which leads to improved runtime performance. Since no standard datasets jointly include both capacity and link constraints, existing data sets from the literature are extended. For a large set of different instances, experimental results show that the transformed model can reduce runtime significantly and therefore allows for solution for instances of realistic sizes.

GOR PhD Award – Wed 13:15–15:45 in AM, HS 10

David Fleckenstein (University of Augsburg)
Integrated Demand Management and Vehicle Routing – Theory and Applications in Sustainable Planning for Rural Shared Mobility-on-Demand

In a variety of business models, logistical service providers face two intertwined decisions: which offers to make to requesting customers, and how to fulfill confirmed orders with a feasible route plan. The objective is often to maximize revenue net of routing cost. Due to structural similarities, application-specific problems belong to a common family of

optimization problems, termed integrated demand management and vehicle routing problems (i-DMVRPs). The first part of this cumulative dissertation investigates i-DMVRPs from a theoretical, cross-application perspective. Building on a comprehensive literature review of models and solution concepts, it analyzes the properties of opportunity cost, which can be exploited in the development of approximation algorithms – a key component of many i-DMVRP solution approaches. The second part focuses on rural shared mobility-on-demand (SMOD) services, a flexible form of local public transport, as an i-DMVRP application of particularly high societal relevance. Using a real-world data set from the German SMOD provider FLEXIBUS, the dissertation identifies structural patterns in demand and analyzes the potential of various demand management approaches. Finally, it proposes a sustainable dynamic pricing approach that balances multiple social, environmental, and economic objectives and yields benefits for both providers and customers.

Dorothee Henke (University of Passau)

Computational Complexity of Robust Bilevel Optimization Problems

Bilevel optimization problems involve two decision makers, a leader and a follower. Each player's decision influences the other player's optimization problem. The leader has to anticipate the follower's reaction, which can make the bilevel problem hard to solve. In terms of computational complexity, combinatorial bilevel problems are typically on the second level of the polynomial hierarchy.

In this work, we study three relatively easy and natural combinatorial bilevel problems. The Bilevel Selection Problem and the Bilevel Continuous Knapsack Problem can be solved in polynomial time and the Bilevel Minimum Spanning Tree Problem is NP-equivalent. All three belong to the class of partitioned-items bilevel problems.

We also study the additional complexity that uncertainty introduces in bilevel problems. In our setting of robust bilevel optimization, we assume that the leader does not have full information about the follower's objective and optimizes for the worst case. We consider several types of uncertainty sets and study their effect on the underlying bilevel problem. We present complexity results for a class of robust linear bilevel problems and thoroughly study robust versions of the Bilevel Selection Problem and Bilevel Continuous Knapsack Problem. The results reveal differences between robust bilevel and robust single-level optimization.

Florentin Hildebrandt (Otto-von-Guericke-Universität Magdeburg)

Machine Learning for Stochastic Dynamic Vehicle Routing Problems

Spontaneous transportation of passengers and goods is popular but challenging for logistics service providers. New requests, fleet outages, and traffic jams continuously necessitate route plan updates. Reacting to these uncertain events is not sufficient to ensure smooth operations. Instead, it is a strategic necessity to anticipate future developments to stay competitive. This constitutes a new problem class: stochastic dynamic vehicle routing problems (SDVRPs) with three main challenges: The planner must repeatedly search for new route plans, evaluate each route plans' long-term cost by anticipating future developments,

and do so fast to provide a smooth customer experience. We show how machine learning may be embedded in established SDVRP solution methods to surmount the challenges. One particularly promising idea is based on the observation that many established solution methods are parameterized globally such that they perform well in uncertain environments. However, as we show, these methods can often be significantly improved by reparameterizing them dynamically based on the current decision state. We show for a wide range of problems how this reparameterization may look like, and how it is learned with reinforcement learning.

Matthias Oberlechner (Technical University of Munich)
Equilibrium Learning in Auction Games

Markets increasingly consist of automated agents that adapt their behavior through independent learning. This raises fundamental questions about whether these systems achieve the equilibrium outcomes predicted by economic theory. In this dissertation, we demonstrate that automated agents using online learning algorithms can reliably converge to equilibrium in auction games with incomplete information. We introduce an algorithmic framework that discretizes type and action spaces to learn distributional strategies via online optimization. We prove that discretized game equilibria approximate continuous equilibria in single-item auctions, and demonstrate empirically that the method closely approximates equilibria across diverse auction formats. To understand why learning algorithms converge, we analyze equilibrium problems through infinite-dimensional variational inequalities. We show that equilibria in first- and second-price auctions correspond to variational inequality solutions, yet standard sufficient conditions for convergence fail. This opens important questions about why algorithms converge in practice. Despite the lack of convergence guarantees, our framework can analyze settings where analytical solutions are unknown. We demonstrate this by addressing a practical question from display ad exchanges, where we show that second-price auctions achieve higher revenue under return-on-investment maximization, and that bandit algorithms show no systematic deviation from equilibrium. Overall, this work demonstrates that market automation need not undermine equilibrium predictions of economic theory.

GOR Young Researcher Award – Wed 16:30–18:00 in AM, HS 10

Jarmo Haferkamp (Universität Bremen)
Design of Multi-Optional Pickup Time Offers in Ride-Sharing Systems

On-demand ride-sharing systems provide travelers with a set of transportation alternatives that differ, among other aspects, in their pickup times. Designing such multi-optional offers requires balancing traveler acceptance with operational efficiency, as individual preferences vary while vehicle resources are limited. In our work on designing pickup time offers, we propose a cost function approximation that balances estimated acceptance probabilities with approximated routing effort to identify promising transportation offers. Building on this work, we discuss how transportation offer design can be extended beyond short-term

acceptance maximization. We outline future research directions on how transportation offers shape user expectations over time and how strategic offer design can support long-term user retention.

Thomas Schillinger (University of Mannheim)
Inverse Demand Tracking in Transportation Networks

This work deals with the reconstruction of the desired demand in an optimal control problem, stated over a tree-shaped transportation network which is governed by a linear hyperbolic conservation law. As desired demands typically undergo fluctuations due to seasonality or un-expected events making short-term adjustments necessary, such an approach can exemplarily be used for forecasting from past data. We suggest to model this problem as a so-called inverse optimal control problem, i.e., a hierarchical optimization problem whose inner problem is the optimal control problem and whose outer problem is the reconstruction problem. In order to guarantee the existence of solutions in the function space framework, the hyperbolic conservation law is interpreted in weak sense allowing for control functions in Lebesgue spaces. For the computational treatment of the model, we transfer the hierarchical problem into a nonsmooth single-level one by plugging the uniquely determined solution of the inner optimal control problem into the outer reconstruction problem before applying techniques from nonsmooth optimization. Some numerical experiments are presented to visualize various features of the model including different types of noise in the demand and strategies of how to observe the network in order to obtain good reconstructions of the desired demand.

GOR Company Award – Thu 11:45–12:45 in AM, HS 10

Every two years, the GOR honors a company that has demonstrated exceptional commitment to the application and dissemination of operations research in practice. The award is intended to recognize successfully completed, innovative projects with a proven significant OR component in planning, implementation, or practical application.

The winning company is announced during the opening session of the conference.

PhD Program Dokt!OR

Dokt!OR offers PhD students a unique opportunity to gain inspiration and practical insights to advance both their research and future careers in operations research. This year's program brings together five sessions covering research and presentation skills, emerging connections between AI and OR, and diverse career paths within the OR community.



Join us on Tuesday, September 1, starting at 9:30, in Audimax (AM, HS 10).

Christina Büsing

Workshop: *Giving Better Presentations*

Tue 9:30–11:00 in AM, HS 10



The workshop Giving Better Presentations introduces key principles of effective scientific communication. Through an Euler presentation, participants first experience a deliberately poor presentation and then a well-designed version of the same content, highlighting common pitfalls and best practices. The workshop covers techniques for creating a strong opening, maintaining audience attention, using slides effectively, and improving delivery through body language, interaction, and clear structure. Practical exercises and discussions provide participants with concrete tools to enhance their own presentation skills and communicate their ideas more effectively.

Clemens Thielen

Workshop: *Making an Impact*

Tue 11:15–12:15 in AM, HS 10



This workshop will explore how Operations Research can create impact in practice. It will focus on how OR models, analytical methods, and decision-support approaches can inform and improve real-world decisions, tools, and processes. Based on examples and experiences from applied research projects, the workshop will address factors that can enable or hinder practical impact, such as problem selection, stakeholder involvement, model realism, usability, trust, and communication. It will also consider the relation between scientific depth and practical relevance, and why technically strong research does not automatically lead to practical adoption. Interactive elements will help participants reflect on the practical impact potential of their own research.

Kevin Tierney

Tutorial: *Automatic Heuristic Discovery: From DRL to LLMs*

Tue 13:30–14:30 in AM, HS 10



In this tutorial, I will discuss the topic of automatic heuristic discovery, which is the task of creating custom heuristics to solve optimization problems. Starting from a deep reinforcement learning (DRL) perspective, I will cover the main mechanisms for directly predicting decisions of routing and scheduling problems. Following a look at DRL, I will turn to large language models (LLMs), which can also automatically design and code solution methods for optimization problems. The methods I will show match or beat state-of-the-art, human-designed heuristics on challenging routing and scheduling problems. The tutorial will end with ideas for integrating these methods into PhD student's work.

Dick den Hertog

Master Class: *Mixed Integer Optimization with Constraint Learning*

Tue 14:45–16:00 in AM, HS 10



Many real-world optimization problems involve objectives and constraints that cannot be explicitly specified by mathematical formulas. For example, the effectiveness of a humanitarian intervention, the feasibility of a logistics plan, or the acceptability of a medical treatment may depend on complex relationships that are only partially understood but for which historical data are available. This raises a fundamental question: how can we optimize decisions when the optimization model itself must be learned from data?

This master class introduces the emerging field of constraint learning, which combines machine learning and optimization to construct prescriptive models directly from data. We will discuss how predictive models, including linear models, decision trees, ensemble methods, and neural networks, can be embedded within mixed-integer optimization formulations, enabling the representation of complex objectives and constraints that are difficult or impossible to model analytically.

A central challenge in this setting is reliability. Optimization algorithms tend to exploit imperfections in learned models, often leading to decisions in regions where little or no data are available. We will examine several approaches to addressing this issue, including trust-region methods that prevent harmful extrapolation and ensemble-based approaches that explicitly account for model uncertainty. The master class will present both the methodological foundations and practical applications of constraint learning, drawing on examples from humanitarian logistics and healthcare. Throughout the course, particular attention will be paid to the many open research questions that arise at the intersection of machine learning and optimization, making this a rich area for future PhD research.

Panel Discussion: *Careers in OR*

**with Christina Büsing, Dick den Hertog, Frauke Liers, Sonja Mars,
Nikolas Stott, Clemens Thielen**

Tue 16:30–18:00 in AM, HS 10

Join us for an interactive session that is about your future! What pathways are there for a career in Operations Research, either in academia or in industry? Will we still need OR experts in the era of AI? Our panel of experts shed light on their individual experiences and take any questions you have.



Session: Experiences with DFG Funding

Martin Bichler, Frauke Liers, Katja Schimmelpfeng

Thu 11:45–12:45 in IM, HS 13

This session provides an overview of current developments and funding opportunities at the German Research Foundation (DFG). Members of the DFG Review Board will share recent news and practical information, followed by brief presentations of successful proposal examples. We will conclude with an open Q&A, giving participants the opportunity to discuss their questions about DFG funding and the proposal process. This session is particularly intended for early-career researchers who are interested in learning more about third-party grant applications at the DFG.

Gold Sponsor Activities

Our two gold sponsors **Gurobi** and **Hexaly** each offer a workshop on the pre-conference day (on Tuesday afternoon) and a keynote talk during the main conference (on Wednesday and Thursday, respectively). You can also find them in our sponsors' exhibition in the foyer of the AM building.



Léa Blaise

Pre-Conference Workshop: *Modeling and Solving Routing Problems with Hexaly Studio*

Tue 13:15–14:30 in AM, HS 9

Hexaly Optimizer is a next-generation mathematical optimization solver that extends the traditional Mixed-Integer Programming (MIP) paradigm with a richer modeling framework. Alongside classical algebraic formulations, it supports native combinatorial constructs, nonlinear expressions, and black-box optimization, enabling users to express complex optimization problems in a compact and natural way. By preserving high-level problem structure, Hexaly automatically leverages advanced algorithmic techniques, including decomposition methods, column generation, branch-price-and-cut, and decision diagrams. As a result, it delivers state-of-the-art performance across challenging optimization domains such as routing, scheduling, packing, simulation-based optimization, machine-learning-driven decision problems, and more.

In this hands-on workshop, we will focus on the application of Hexaly to routing problems, showcasing how the solver's set-based modeling capabilities naturally align with the structure of these problems. Participants will be guided through building and solving real-world routing problems using Hexaly Studio, a web-based integrated development environment designed specifically for optimization modeling. Hexaly Studio features intuitive dashboards, interactive widgets, and graphical solution visualizations, making it easy to both formulate models and interpret results. Through guided examples and interactive problem-solving, participants will gain hands-on experience with Hexaly and will be equipped to explore it further in their own research or applied projects.

Léa Blaise

Keynote: *Hexaly: the Next-Generation MIP Solver*

Thu 16:00–17:00 in AM, HS 9

Mixed-Integer Linear Programming (MIP) has been the dominant optimization framework for decades. While highly successful, many real-world problems remain difficult to express naturally within a purely linear paradigm. Large-scale routing, scheduling, packing, simulation-based optimization, and machine-learning-driven decision problems often require extensive reformulations that can obscure problem structure and limit performance.

Hexaly extends the traditional MIP approach with a richer modeling framework designed to capture optimization problems closer to their original form. In addition to classical algebraic modeling, it introduces native combinatorial constructs such as sets, lists, and intervals, together with nonlinear and black-box optimization capabilities. This allows practitioners to model complex systems, simulations, and predictive models directly, without relying on large reformulations.

At the algorithmic level, Hexaly automatically exploits advanced optimization techniques, including decomposition methods, column generation, branch-price-and-cut, and decision diagrams, making sophisticated solution approaches available out of the box. In this talk, I will present the principles behind this next-generation MIP approach, illustrate its modeling capabilities on routing, scheduling, and packing applications, and provide an overview of the solver's current performance on selected benchmarks.



Robert Luce

Pre-Conference Workshop: *Smarter Modeling with Gurobipy*

Tue 14:45–16:00 in AM, HS 9

This hands-on workshop explores the powerful capabilities of gurobipy, Gurobi's Python interface, with a focus on best practices and comparative analysis of different modeling paradigms. Participants will gain practical insights into different modeling flavors:

- *Traditional Term-Based Modeling*: The foundational approach using object-oriented constructs with variables, constraints, and expressions built iteratively.
- *Matrix-Friendly API*: Introduced in Gurobi 9.0 and enhanced through version 13.0, this paradigm leverages NumPy-style vectorization, broadcasting, and multi-dimensional operations.
- *gurobipy-pandas*: A convenience layer that allows mathematical model building directly out of DataFrames. The workshop is suitable for both optimization practitioners seeking to enhance their gurobipy skills and students who want to get started with modelling in gurobipy.

Prerequisites: Basic familiarity with Python and mathematical optimization concepts.

Robert Luce

Keynote: *Gurobi's Primal-Dual Hybrid Gradient (PDHG) algorithm: practice and performance*

Wed 15:00–16:00 in AM, HS 9

Gurobi's Primal-Dual Hybrid Gradient (PDHG) algorithm has evolved rapidly since its introduction, with both the CPU and GPU backends having grown into production grade Gurobi features. In this session, we will share key insights from this exciting period of algorithmic innovation, including benchmarking results, customer success stories, and an overview of the technical capabilities of Gurobi's PDHG implementation. We will also discuss where PDHG fits within the broader optimization landscape and the types of problems where it can deliver the greatest value.

Social Program



Get Together on Tuesday, 18:00–21:00

On the evening before the conference, we invite all participants to Leberkässemeln (or a vegan alternative) on the forecourt of the Mensa.

Welcome Reception on Wednesday, 19:00–21:30

On the first evening of the main conference, we welcome you to join us for the reception in the beautiful council chamber in the town hall (Rathausplatz 2).

Conference Dinner on Thursday, 19:00–23:30

Discover Passau from a unique perspective during a special evening cruise on the three rivers. Aboard a ship operated by *Donauschifffahrt Wurm & Noé*, we will enjoy a relaxed and memorable evening featuring excellent food, inspiring conversations, and the scenic riverside views of Passau.

The ship leaves from Pier A11 at 19:30 – so make sure to be there on time. And bring your ticket!

We will arrive back in Passau around 22:30.

Folk Festival Herbstdult, starting on Friday at 15:00

While the conference ends on Friday noon, it just happens that the local folk festival Herbstdult starts at the same day. So, if you plan to stay another night, you can go there to enjoy some Bavarian pretzels and beer.

You can find more information on: <https://www.passauer-dult.de>

About Passau

Passau is a charming city of about 53,000 inhabitants, uniquely located at the confluence of the rivers Danube, Inn, and Ilz on the Austrian border. Known as the “City of Three Rivers” and often called “Bavaria’s Venice” for its Mediterranean flair and peninsular old town, Passau combines history, culture, and natural beauty. The Baroque city center features landmarks such as St. Stephen’s Cathedral with one of the world’s largest church organs, and the Veste Oberhaus fortress overlooking the skyline. With its riverside promenades, lively cafés, and proximity to the Bavarian Forest, Passau offers both cultural richness and ample opportunities for leisure.

In your conference bag, you find a map of Passau together with several recommendations for sightseeing.



Local Food Recommendations

As Passau is a very touristy place, it offers many options to get lunch, dinner, or some ice cream. Here, are some recommendations from the local organizing team.

Restaurants



Mari's Pizza Bar (1)

Julian: *Delicious pizza in idyllic surrounding (directly on the Residenzplatz)*

Braves Mädchen (2)

Joachim: *A very diverse menu where you can always find something surprising that tastes delicious*



Goldenes Schiff (3)

Tobias: *Bavarian cuisine in a lovely beer garden*

Zweite Heimat (4)

Hannah: *Cozy burger place; order side dishes half-and-half*



Pasta e Vino (5)

Joachim: *Gives you the feeling of a typical family restaurant in Italy, with food that's beyond reproach*

Julis Spätzlerei (6)

Dorothee: *Classical and innovative Spätzle (special type of pasta) dishes; sit either inside or in the cozy backyard*



Pomeranz (7)

Marc: *Mediterranean food inspired by Passau's unique and historic bitter orange variety*

Gallo Nero (8)

Joachim: *They have wonderful pizza here – and more.*



Griechisches Restaurant AVLI (9)

Hannah: *Delicious Greek food with a view towards Veste Oberhaus*

MEKO (10)

Lukas: *Cute little restaurant with tasty Georgian food*



Pizzaliebe (11)

Dorothee: *Good Italian pizza very close to the campus*

Ice Cream



Fontanella (A)

Julian: *Wide selection of delicious flavors – often featuring a unique “Flavor of the Week”*

Purogelato (B)

Tobias: *Many different flavours – all of them delicious!*



Eis Ladn (C)

Lukas: *Smaller but often unusual selection of flavours. Has two locations in the city, but closes already early evening!*

La Veneziana (D)

Hannah: *My favourite ice cream place for six years now*



CONVERGING **STREAMS** IN DECISION MAKING



OR
2026
Passau

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