

MME 2025

**The 43rd International Conference
on Mathematical Methods in Economics**

3-5/9/2025

Conference Programme

 Tomas Bata University in Zlín

 Tomas Bata University in Zlín
Faculty of Applied Informatics

 Tomas Bata University in Zlín
Faculty of Management and Economics



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Welcome to MME 2025

Dear participants,

It is my great pleasure to welcome you to the 43rd International Conference on Mathematical Methods in Economics (MME 2025), hosted by Tomas Bata University in Zlín. Continuing a long tradition, the conference serves as a meeting point for researchers, practitioners, and students interested in operations research, econometrics, optimization, and the wide spectrum of mathematical methods applied to economics and related fields.

MME 2025 offers an inspiring academic program of plenary lectures, parallel sessions, and the PhD student competition. The conference provides a valuable opportunity to share new results, exchange ideas across disciplines, and encourage collaboration between theory and practice. For students and young researchers, it also represents a unique chance to gain feedback, meet experienced colleagues, and strengthen their place within the scientific community.

We believe that the program will stimulate fruitful discussions, spark new collaborations, and contribute to further development of our field. At the same time, we hope you will enjoy the friendly atmosphere and the cultural richness of Zlín.

On behalf of the Organizing Committee,

Dušan Hrabec

General Chair of MME 2025

Zlín, September 2025

Programme

Wednesday	
8:30 — 10:00	Registration of participants (FHS foyer)
10:00 — 12:30	Opening ceremony and Plenary session
12:30 — 13:30	Lunch (FHS foyer)
13:30 — 15:00	Parallel sessions A
15:00 — 15:30	Coffee break (FHS foyer)
15:30 — 17:00	Parallel sessions B
17:00 — 17:30	Coffee break (FHS foyer)
17:30 — 18:30	Meeting of the Czech Society for Operations Research (FaME)
18:30 — 21:30	Welcome evening (FHS foyer)

Thursday	
9:00 — 10:30	Parallel sessions C (including PhD students competition and registration of participants)
10:30 — 11:00	Coffee break (FHS foyer)
11:00 — 12:30	Parallel sessions D (including PhD student's competition)
12:30 — 13:30	Lunch (FHS foyer)
15:00 — 17:00	Conference Excursion (Building 21 and Baťa's institutes)
18:00 — 23:00	Conference dinner at Baťa's Villa (including the ceremony announcing the results of the PhD student's competition)

Friday	
9:00 — 9:30	Morning coffee (FHS foyer)
9:30 — 11:00	Parallel sessions E
11:00 — 11:30	Closing ceremony
11:30 — 12:30	Lunch (FHS foyer)

Plenary Lectures

Modeling with Stochastic Programming

prof. Stein W. Wallace

There are many deep papers on the mathematics and algorithmics of stochastic programming. But why should we, as operations research people, care? The world is stochastic for sure, but does that imply that we need stochastic models to get good decisions? And if we embark on a genuine application, where real money is involved, what are the modeling questions we need to pose? What are the steps we need to take before we arrive at mathematical and algorithmic challenges?



Interval Linear Programming and Its Applications

prof. Milan Hladík

Interval Linear Programming (LP) provides theoretical foundations and methods for handling LP problems with interval coefficients. While such intervals often represent uncertain input data, we focus on fundamentally different applications. Specifically, we demonstrate how interval LP techniques can be used to address numerical issues in classical real LP, to construct relaxations in global optimization, and to conduct a more comprehensive sensitivity analysis that may involve all coefficients simultaneously.



Good times with Operations Research. The hunt for practical applications

Tomáš Pajonk



Sessions at FHS Building

Wednesday

Opening & Plenary sessions

10:00 – 12:30, FHS 106 (Aula)

Dušan Hrabec	Opening talk
Stein Wallace	Modeling with Stochastic Programming
Milan Hladík	Interval Linear Programming and Its Applications
Tomáš Pajonk	Good Times With Operations Research. The Hunt for Practical Applications

Parallel sessions A, 13:30 – 15:00

Room 329	Session I: Data Envelopment Analysis I
Chair: Martin Flégl	
Josef Jablonský	Evaluation and Ranking of Scientific Journals
Ondřej Sokol and Lukáš Frýd	Data Envelopment Analysis: How Input Choices Undermine Policy Conclusions
Ebrahim Rezaei, Tomáš Formánek and Josef Jablonský	Threshold Effects with Exogeneity and Endogeneity in Stochastic Frontier Models: An Application for Public Finance
Martin Flégl, Kristýna Vltavská and Andres Acero	Towards Evaluation of the Czech Primary Education and Its Effect on Civic Engagement and Governance

Room 304	Session II: Decision making with Applications
Chair: Robert Hlavatý	
Radomír Perzina and Zuzana Neničková	An Educational Mobile Tool for Multi-criteria Decision Problems
Josef Kunhart, Jiří Pilný, Simona Huguet and Jan Bartoška	Lyrical Themes in Contemporary Heavy Metal Albums: A Case Study
Zuzana Neničková, Lucie Waleczek Zotyková and Radmila Krkošková	Consumer Preferences and Utility in Milk Chocolate Selection: Conjoint Analysis and TOPSIS Method
Robert Hlavatý and Helena Brožová	On the Efficient Design of a Network Under Multiple Criteria

Room 305	Session III: Optimization under Uncertainty
Chair: Pavel Popela	
Ondřej Komora and Vít Procházka	A Copula-Based Scenario Generation Method for Discrete Data
Martin Branda	Preventive Maintenance in Fixed Interval Scheduling Problems Under Endogenous Uncertainty
Elif Garajová and Miroslav Rada	Convex Enclosures for Interval Linear Programming
Pavel Popela and Lukáš Kokrda	Solving Engineering Design Problems with Probabilistic and Differential Equations Based Constraints

Room 330	Session IV: Mathematical Economics
Chair: Vladimír Holý	
Michaela Chocholatá	Modeling CO ₂ Emissions and Economic Growth: A Spatial Panel Approach to the N-Shaped EKC
Petra Tomanová	The Weak Evidence Effect Revisited: A Mixed-Effects Approach
Dominik Kavřík and Jan Rejthar	Detecting Regime Shifts in the Taylor Curve: A Comparison of Time-Varying Parameter and Markov Switching Models
Vladimír Holý	Assessing Violations of the Independence of Irrelevant Alternatives in the Plackett-Luce Model

Parallel sessions B, 15:30 – 17:00

Room 329	Session I : Algorithms and Theory of OR
Chair: Miroslav Rada	
Adam Ulrich, Jan Krňávek and Zuzana Komínková Oplatková	Enhanced Novelty Detection in Economic Big Data Using Half-Space Tree
Anton Hovana and Peter Trebuňa	A Note on Characterization of Comonotonicity
František Koblasa and Miroslav Vavroušek	Assignment mutation in Evolution Algorithm to improve solutions in Flexible Job Shop Scheduling
Miroslav Rada and Michal Černý	How Good Is FGKLA Algorithm on Random Data Coming From Ugly Distributions? A Computational Study

Room 304	Session II: Pricing and Energy Markets
Chair: Miloš Kopa	
Martin Bařka	Partial Least Squares Structural Equation Modeling in Energy Economics: An Empirical Assessment
Martin Bařka, Natálie Várořová and David Hampel	Estimation of Price Elasticity of Demand for Energy in the Czech Republic
Miloř Kopa	Forecasting of Electricity Prices With Trading Applications

Room 305	Session III: Vehicle routing
Chair: Václav Sobotka	
Richard Hartl, Duřan Hrabec and Jorge Oyola	An ALNS Heuristic for Heterogeneous Fleet Routing With Continuity and Compatibility Constraints
Lucie řikudová, Duřan Hrabec and Lars M. Hvattum	Quantifying the Value of Stochastic Solution in Routing Problems with Stochastic Demands: A Systematic Review and Meta-Analysis
Michal Konopa and Jana Klicnarová	When Does Reoptimization Pay Off? A Hierarchical Approach to Vehicle Route Planning
Václav Sobotka	Vehicle Routing & Simulations: Revealing Hidden Solution Qualities

Room 330	Session IV: International Economics and Market Structures
Chair: Jana Heckenbergerová	
Petra Vašaničová and Martina Košíková	Cluster Patterns and Coopetition Potential Among EU Countries: An Analysis Based on the Travel and Tourism
Aleš Olejníček, Jakub Odehnal and Jiří Neubauer	Relationship Between Military and Social Expenditures in NATO Countries
Jana Heckenbergerová and Simona Tučková	Determinants of the Herfindahl-Hirschman Index Affecting Market Power and Concentration in the Czech Insurance Sector

Thursday

Parallel sessions C, 9:00 – 10:30

Room 329	Session I: Data Envelopment Analysis II
Chair: Martin Flégl	
Eva Štichhauerová and Miroslav Žižka	Efficiency of Regional Transport Systems
Markéta Matulová and Martin Flégl	A Dynamic Two-Stage DEA Assessment of Energy Transition
Markéta Matulová and Terézia Vančová	Efficiency of Green Renovation Subsidies in Czech Districts: A robust DEA Approach
Martina Kuncová and Roman Fiala	Efficiency Dynamics in the Czech Brewing Industry: A Post-Pandemic Comparison of Small, Medium, and Large Breweries

Room 304	Session II: Economics & Analysis
Chair: Diana Bílková	
Pavel Pražák and Jiří Křenek	On Discrete Dynamical System of New Keynesian Model
Nour Safar	General Equilibrium Modeling of Monetary Policy in Resource-Rich Economies: A Systematic Review (2000–2024)
Diana Bílková	Visegrad Four from Crisis to Crisis

Room 305	Session III: Stochastic Programming & Applications
Chair: František Zapletal	
Vít Procházka	Scenario Generation for Stochastic Vehicle Routing Problem
Jakub Kašný and Ivan Eryganov	Stochastic Bilevel Waste-to-Energy Pricing
Pavel Popela, Matouš Cabalka, Pavel Charvát and Jan Fišer	Two-Stage Stochastic Program for University Campus EV Charging
František Zapletal	Stochastic PROMETHEE: Optimal Portfolio Using Mean-Variance Model

Room	Session IV: PhD students competition I
Chair: Helena Brožová	330
Vojtěch Vávra	Chaotic Optimization with Different Chaos Maps for Tuning XG-Boost: Application to Gas Demand Forecasting
Jakub Neugebauer	A Vector-Based Weight Adjustment Algorithm for Portfolio Optimization Boosting Genetic Algorithm Efficiency
Jan Saro	Predictive Modelling of Dairy Herd Health Using Markov Chains and Neural Networks
Qian Gao	News Sentiment Aware Portfolio Optimization Strategy based on Crisis Regime Switching
Michaela Sedláková	Coordination of Expectations: A Case Study in Multi-Asset Markets

Parallel sessions D, 11:00 – 12:30

Room 329	Session I: DEA: Discussion Table
Chair: Martin Flégl	

Room 304	Session II: Portfolio Optimization
Chair: Juraj Pekár	
Jialei Xiong, Diana Barro and Martina Nardon	Integrating Market Attention into Portfolio Optimization
Adam Borovička	Portfolio Selecting Under Vague Preferences
David Neděla, Tomáš Tichý and Gabriele Torri	Entropy-Based Investing Strategies to Hedge Systemic Risk
Juraj Pekár, Ivan Brezina and Marian Reiff	Portfolio Selection in the Return and Absolute Deviation Space Incorporating Esg Indicators

Room 305	Session III: Transportation and Route Planning
Chair: Vít Procházka	
Jaromír Zahrádka	The Solving of Optimal Routes for Multi-Warehouses Distribution by Returning Vehicles
Jindřich Lacko and Michal Černý	Minimizing Elevation Difference in Route Construction: A Geospatial and Computational Analysis
Vít Procházka, Ondrej Komora and Haiying Jia	Optimizing Fleet Deployment under the Contract of Affreightment

Room 330	Session IV: PhD students competition II
Chair: Miloš Kopa	
Erik Kočandrle	Mean-CVaR Portfolio Choice Problem With Endogenous Randomness
Mohamed Atwy	The Impact of Healthcare Expenditures on Pharmaceutical sales and GDP in the Czech Republic
Anshu Anshu	The Impact of Social Media on Consumer Behaviour and Its Effect on GDP Growth in India
Petr Krautwurm	Revisiting the Almost Ideal Demand System with Respect to Substitutability and Complementarity: Suitability for Simulating Consumer Behavior

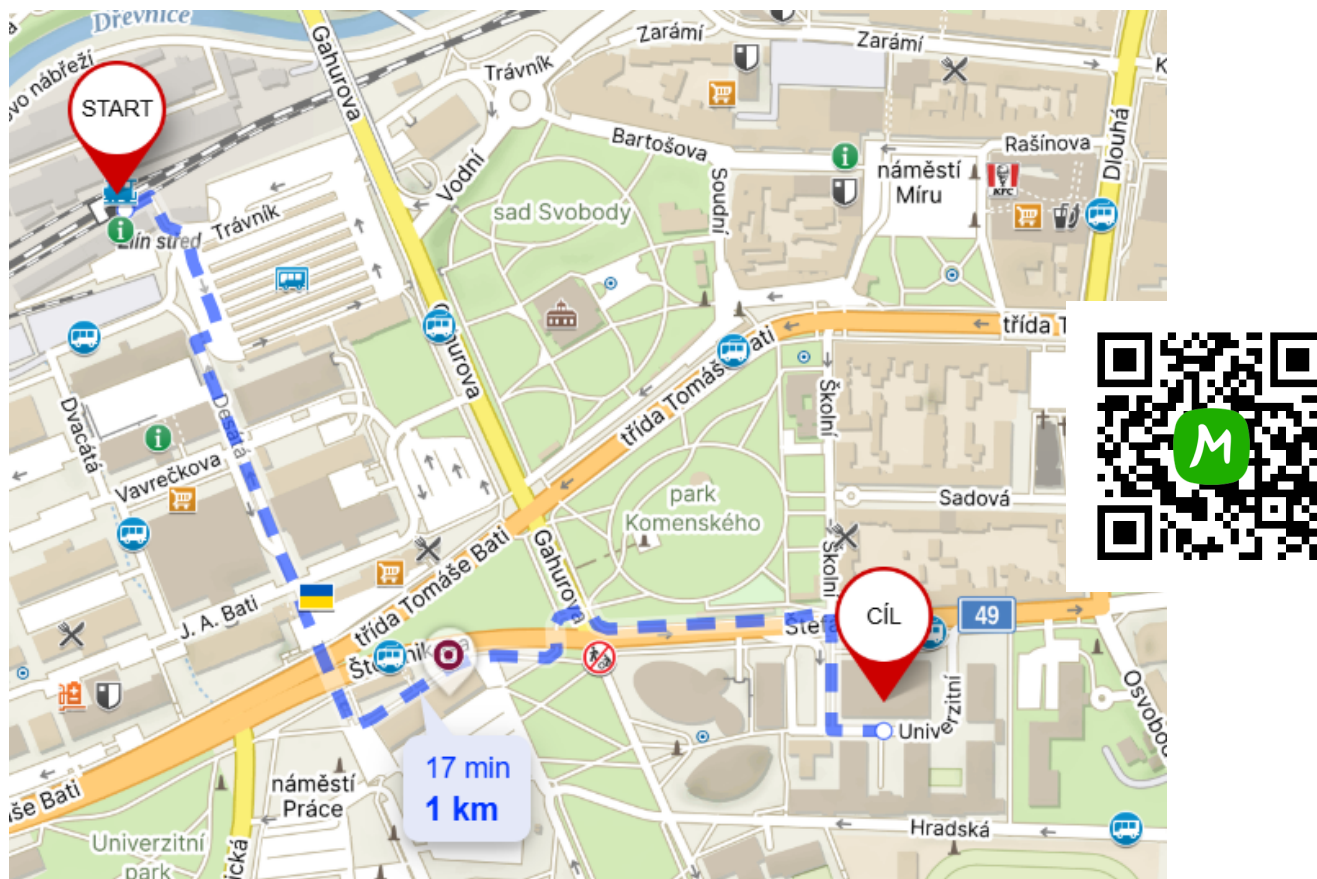
Friday

Parallel sessions E, 9:30 – 11:00

Room 329		Session I: Efficiency Analysis and Production Factors
Chair: Jana Hančlová		
Jan Bartoška, Josef Kunhart, Jiří Pilný and Simona Huguet		Extension of the WSJF Method With the Concept of Efficiency for Scrum Team
Simona Huguet, Tomáš Šubrt, Josef Kunhart, Jan Bartoška and Jiří Pilný		Transforming Project Management Through Systems Engineering Integration: A Pathway to Enhanced Efficiency and Risk Mitigation
Martin Pozdíllek, Alena Pozdílková and Martina Hedvičáková		Modeling Capital-Labor Substitution in the Era of Industry 4.0: A Sectoral Analysis of Czech Manufacturing
Jana Hančlová and Lucie Chytilová		The Share and Intensity of the Digital Transformation Process in EU Countries
Room 304		Session II: Game Theory & Equilibrium Modelling
Chair: Petr Fiala		
Ivan Eryganov		Delta-equilibrium in Price-setting Games
Jan Rejthar		Self-Seeding in Single-Elimination Tournaments
Petr Fiala, Renata Majovská and Lorena Caridad López del Río		New Negotiation Mechanism in Solving Double Auctions
Room 305		Session III: Asset Pricing, Finance and Trading
Chair: Lubor Homolka		
Petr Brzobohatý and Aliaksei Sidoryk		ATS As a Modern Tool in Citizen Investing
Bahate Maidiya		The Industry-Level Heterogeneous Impacts of Investor Sentiment on Return, Volume, and Volatility: Evidence From The S&P500
Igor Kohút		Dynamic Stochastic General Equilibrium Model With Heterogeneous Expectations for Small Open Economy
Room 330		Session IV: Healthcare
Chair: Jaroslav Janáček		
Pavla Jindrová, Hana Boháčová and Dominik Miškář		Using Multidimensional Comparative Analysis to Assess the Health Risks of the Elderly Population
Marek Květ and Jaroslav Janeček		Accuracy and Complexity of the Radial Approach to Ambulance Location in Emergency Medical System
Jaroslav Janáček and Marek Květ		Heterogeneous Region and Its Servicing by Distributed Queuing System

Navigation

The MME 2025 Conference will be held at the Faculty of Humanities (FHS)
Štefánikova 5670, 760 01, Zlín 1.



Route from the train and bus station to the FHS building



FHS building, conference venue, main entrance

Social Programme

We have prepared an engaging social programme for all conference participants to explore Zlín's rich industrial heritage and foster networking opportunities. Let's take a closer look at some of the city's most iconic landmarks.

Wednesday

18:30 — 21:00	Welcome Evening (Faculty of Humanities)
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Thursday

15:00 – 17:00	Conference Excursion (Building 21 and Baťa's institutes)
18:00 – 23:00	Conference Dinner & Award Ceremony at Baťa's Villa

Conference Excursion

Conference participants will be divided into two groups (during registration) to visit the iconic landmarks of Zlín's Baťa heritage, both located within walking distance of each other and approximately 10 minutes from the conference venue:

- Group A: Visit to the Building 21 (Baťa's Skyscraper)
- Group B: Guided tour of Baťa Institutes (Buildings 14-15)

After the first round, groups will swap locations to ensure everyone experiences both sites.



Building 21, also known as the Baťa's Skyscraper

One of the highlights of our social programme is a visit to Building 21, also known as the Baťa's Skyscraper, completed in 1938 as the administrative headquarters of the Baťa Shoe Company. A unique feature of this building is the office elevator — a spacious 6 x 6 meter cabin that served as the mobile office of the company's director. Equipped with a sink and air conditioning, this elevator

allowed quick movement between floors. Participants will have the opportunity to experience this remarkable invention and enjoy panoramic views from the 16th-floor observation deck.

Another key destination on the tour is the Baťa Institutes, located in the revitalized Buildings 14 and 15 of the former Baťa industrial complex. These buildings, once a center of industrial production, have been transformed into vibrant cultural and educational spaces. Here, you will visit the Museum of Southeastern Moravia, which provides a captivating insight into the history of the Baťa family and factory. The exhibition shows historical items such as old Baťa shoes, factory machines, and videos about the company's ideas and global impact. Participants can also visit the Regional Gallery of Fine Arts, which displays modern and contemporary art.



Museum of Southeastern Moravia and Baťa Institutes

Conference Dinner & Award Ceremony

Explore the historic Baťa's Villa through an exclusive guided tour with us. 18:00 — 23:00

- Enjoy a delightful conference dinner accompanied by the announcement of the PhD student competition results.
- The evening will be a great opportunity for informal discussions and networking.
- Transportation to Baťa's Villa is individual. You can use Bolt or take bus number 2 from the “Náměstí Práce” stop to the “Čepkov” stop. It is also about a 15-minute walk from the Faculty of Humanities.



Villa of Marie and Tomáš Baťa

Wi-Fi and Assistance

Network name:	MME2025
Password:	conference

Feel free to contact the organizers below at any time during the conference if you need assistance .

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Zuzana Vaculčíková and Lubor Homolka