

Detailed Program Joint ORBEL-NGB Conference

Wednesday, 29 January 2025

13:00 - 14:00 **Registration and welcome coffee**
Ad Fundum

14:00 - 15:15 **Opening session**
Room: Aula (H0.01)

Welcome by Lissa Melis

Keynote Marco Lübbecke
A Dantzig-Wolfe Hierarchy for the Stable Set Problem
Session chair: André Berger

15:15 - 15:45 **Coffee break**
Ad Fundum

15:45 – 16:45 **Parallel session WA1 – Packing and volume maximization**
Session chair: J. Tollenaere
Room: A0.23

Binary linear programming formulations for a two-stage dual bin packing problem for wood reuse

Bessemans, P., Paquay, C., and Dumont, M.

Voxel-based, GPU-accelerated approaches for the 3D Irregular Strip Packing Problem

La Greca, A., Tollenaere, J., and Wauters, T.

Optimal continuous rotation in volume maximization problems through quaternions

Tollenaere, J., and Wauters, T.

15:45 – 16:45 **Parallel session WA2 – Mobility**
Session chair: S. Bayri
Room: H0.06

Approximate Dynamic Programming for the Assignment Problem in Crowdshipping

Innocente, E., and Tancrez, J.S.

Nash flows over time with tolls

Rosner, S., Schröder, M., and Vargas Koch, L.

The Bike-Sharing Station Location Problem in Hybrid Urban Mobility Systems

Bayri, S., Braekers, K., and Caris, A.

15:45 – 16:45 Parallel session WA3 – Optimization

Session chair: A. Lopez Martinez

Room: H0.04

Interacting with Uncertainty: An integrated simulated annealing algorithm for model-robust choice designs with partial profiles

Mao, Y., and Kessels, R.

Towards Quantum Annealing for Multi-League Sports Scheduling

Pechler, O., and Phillipson, F.

Finding Diverse Solutions in Combinatorial Problems with a Distributive Lattice Structure

De Berg, M., Lopez Martinez, A., and Spieksma, F.

15:45 – 16:45 Parallel session WA4 – Healthcare personnel planning

Session chair: A. Maharani

Room: A0.24

Re-planning home healthcare services with roster stability

Delaet, A., Braekers, K., Ramaekers, K., Guerry, M.A., and Hirsch, P.

Optimizing the training of community first responders

Overbeek, B., Van den Berg, P.L., Jagtenberg, C.J., and Van der Mei, R.D.

A metaheuristic approach for integrated nurse routing and rerostering in hospital-at-home

Maharani, A., François, V., and Arda, Y.

Thursday, 30 January 2025

9:00 - 9:30 Welcome coffee

Ad Fundum

9:30 - 10:30 Keynote Alexandra Brintrup

Artificial Intelligence for Nudging Complex Supply Networks

Session chair: Lissa Melis

Room: Aula (H0.01)

10:30 - 11:15 Coffee break

Ad Fundum

11:15 – 12:35 **Parallel session TA1 – Decision centric and fairness**

Session chair: J. Peeperkorn

Room: A0.23

Pessimistic bilevel optimization approach for decision-focused learning

Jiménez, D., Pagnoncelli, B., and Yaman, H.

Empulse: A unifying framework for profit-driven and cost-sensitive learning in Python

Rahman, S., Janssens, B., and Bogaert, M.

Decision-Centric Fairness: Evaluation and Optimization for Classification Problems

De Vos, S., Van Belle, J., Algaba, A., Verbeke, W., and Verboven, S.

Achieving Group Fairness through Independence in Predictive Process Monitoring

Peeperkorn, J., and De Vos, S.

11:15 – 12:35 **Parallel session TA2 – Public transport**

Session chair: T. De Munck

Room: H0.06

Passenger Assignment for Public Transport Services Considering Line Frequencies and Timetabling

Wens, M., Verstraete, J., and Vansteenwegen, P.

Optimizing passengers' boarding and alighting operations in urban mass transit

Knappik, L., Reyes-Rubiano, L.S., and Müller, S.

The divisibility index: a theoretical device to help decide public transport design.

Gómez, V., Jara-Díaz, S., and Fielbaum, A.

On the Benefits of Coordinating Ride-Hailing Platforms with Public Transit Systems

De Munck, T., Tancrez, J.S., and Vera, J.

11:15 – 12:35 **Parallel session TA3 – History of algorithms**

Session chair: R. De Landtsheer

Room: H0.04

50 years of metaheuristics

Sörensen, K., Sevaux, M., and Martí, R.

What many operations researchers have done wrong and what are the remedies

Stützle, T.

OscaR.cb1s 6.0: Review after 12 years of Continuous Development

Fayolle, T., Meurisse, Q., De Landtsheer, R., Germeau, F., and Michelini, S.

11:15 – 12:35 Parallel session TA4 – Healthcare optimization problems

Session chair: M. Vollebergh

Room: A0.24

Strategy-proofness of Credit Mechanisms for Kidney Exchange
Smeulders, B.

Home healthcare routing and scheduling with task-splitting
Van Montfort, L., Leitner, M., and Dullaert, W.

Integrated location and inventory decisions in healthcare logistics: review, model and first results
Puttemans, I., Braekers, K., and Caris, A.

Using multi-period bankruptcy rules for medicine allocation
Vollebergh, M., Dullaert, W., Estévez-Fernández, A., and Ghiami, Y.

12:35 - 14:00 Lunch

Ad Fundum

ORBEL board meeting

Room: A0.23

14:00 – 15:20 Parallel session TB1 – Data science: Network and process

Session chair: J. De Moor

Room: A0.23

GARG-AML for smurfing detection in transaction networks
Deprez, B., Baesens, B., Verdonck, T., and Verbeke, W.

Unseen market shares: exploiting CDR data for telecom insights in a prepaid multi-SIM setting
De Rucker, Y., and Bogaert, M.

Estimating treatment effects in networks using domain adversarial training
Caljon, D., Van Belle, J., and Verbeke, W.

ProCause: Realistic Benchmarking in Prescriptive Process Monitoring
De Moor, J., Stevens, A., De Smedt, J., Weytjens, H., and De Weerd, J.

14:00 – 15:20 Parallel session TB2 – Logistics

Session chair: Y. Wang

Room: H0.06

Designing a decision support tool for strategic waste collection.
De Boeck, J., Dumont, M., Fischer, V., and Pacheco, M.

A mixed integer program for the smart waste collection problem with partial information
Aktas Dejaegere, D., and Vansteenwegen, P.

A Mathematical Model for Optimizing Construction Logistics in Urban Areas
Wang, Y., Caris, A., and Braekers, K.

14:00 – 15:20 Parallel session TB3 – Game theory and decision-making

Session chair: Y. De Smet

Room: H0.04

Envy-Free Pricing in Concentric Seating Arrangements

Van Lent, F., Golak, J., and Grigoriev, A.

Quantifying Core Stability Relaxations in Hedonic Games

Demeulemeester, T., and Peters, J.

Are There Arguments In Favor Of Using PROMETHEE To Rank Alternatives Evaluated On Multiple Conflicting Criteria?

De Smet, Y.

14:00 – 15:20 Parallel session TB4 – Crew scheduling

Session chair: N. De Walsche

Room: A0.24

Crew Allocation and Scheduling Optimization for Freight Trains: A Case Study in Chile

Santibáñez-Molina, J., Acuña, V., and Amaya, J.

Multi-Objective Optimization for the Preventive Tasks Assignment in the Chilean Safety Association

Arenas-Araya, F., Santibáñez-Molina, J., and Amaya, J.

An efficient algorithm for the truck driver scheduling problem

De Walsche, N., Vanden Berghe, G., and Smet, P.

15:20 - 15:40 Break

Ad Fundum

15:40 – 17:00 Parallel session TC1 – Data science: NLP

Session chair: P. Chuor

Room: A0.23

A Deep Learning Approach for Analyzing Visual and Textual Content in Tintin Comics

Saskal, A., Van Camp, T., De Kerpel, L., and Benoit, D.F.

Unlocking Real Estate Insights with Large Language Models

Geerts, M., Reusens, M., Baesens, B., Vanden Broucke, S., and De Weerd, J.

Reimagining Political Alignment: A Novel Framework for Positioning Parties on the Left-Right Spectrum

Van Mulders, D., Bogaert, M., and Van den Poel, D.

Gen AI vs. NLP for Legal Entity Extraction

Chuor, P., and Ittoo, A.

15:40 – 17:00 Parallel session TC2 – Logistics

Session chair: O. Elsherif

Room: H0.06

Multi-objective Traveling Salesman Problem for in-orbit spacecraft routing

Deleye, P., and Defryn, C.

Service network design under uncertainty: Simulating and predicting delay costs

Durán-Micco, J., and Atasoy, B.

Automatic model decomposition in Hexaly

Darlay, J.

Addressing challenges in the vehicle routing problem for grocery delivery

Elsherif, O., and Sörensen, K.

15:40 – 17:00 Parallel session TC3 – Scheduling

Session chair: L. Petit-Jean Genat

Room: H0.04

Investigating the Monte-Carlo Tree Search Approach for the Job Shop Scheduling Problem

Boveroux, L., Ernst, D., and Louveaux, Q.

Fixed Order Scheduling with Deadlines

Berger, A., Rouhani, A., and Schröder, M.

Scheduling system tests with a common deadline at minimum cost

Perneel, E., and Leus, R.

Fast bounds in Hexaly based on single-machine scheduling problems

Petit-Jean Genat, L.

15:40 – 17:00 Parallel session TC4 – Complexity and algorithm analysis

Session chair: S. Miltenburg

Room: A0.24

Dynamic Programming and Block-Cut Tree Decompositions for a Maximum Covering Location-Network Design Problem

Rauh, F., Matuschke, J., and Yaman, H.

Smoothed Analysis of the k-Swap Neighborhood for Makespan Scheduling

Rohwedder, L., Safari, A., and Vredeveld, T.

On the complexity of finding central configurations of the graph-generalized $(n^2 - 1)$ – puzzle

Van Ee, M.

Complexity of fixed order routing

Miltenburg, S., Oosterwijk, T., and Sitters, R.

17:00 - 18:00 ORBEL general assembly

Room: Aula (H0.01)

18:30 **Conference dinner**
Rebelle Maastricht

Friday, 31 January 2025

9:00 - 9:30 **Welcome coffee**
Ad Fundum

9:30 – 10:50 **Parallel session FA1 – Data science: Interpretability**
Session chair: S. De Lange
Room: A0.23

Robustness Analysis of Counterfactual Explanations from Generative Models: A Survey

Sahatova, K., De Smedt, J., and Lu, X.

Evaluating the stability of model explanations in instance-dependent cost-sensitive credit scoring

Ballegeer, M., Bogaert, M., and Benoit, D.F.

Enriching Process Discovery with Contextual Hierarchies

Ahmadi, Z., De Weerd, J., and Serral, E.

The dual quest for interpretability and performance in credit scoring via spline-rule ensembles

De Lange, S., Bogaert, M., De Bock, K., and Van den Poel, D.

9:30 – 10:50 **Parallel session FA2 – Warehousing and inventory**
Session chair: A. Robbes
Room: H0.06

Comparative study on the effects of granting more decision autonomy to human operators in warehousing

De Lombaert, T., Braekers, K., De Koster, R., and Ramaekers, K.

Let Customers Scatter the Inventory: Multi-Objective Storage Location Assignment in Warehouses

Bahadornia, M., Ramaekers, K., Braekers, K., Cornelissens, T., and D’Haen, R.

Multi Product Inventory Routing Problem with Pickup and Delivery

Seeholzer, L., and Vansteenwegen, P.

The joint stochastic multi-period lot sizing and two-dimensional variable-sized cutting stock problem

Robbes, A., and Hadj Salem, K.

9:30 – 10:50 **Parallel session FA3 – Sports scheduling**

Session chair: K. Devriesere

Room: H0.04

Designing a Fair Orienteering Contest Using Bilevel Optimization

Van Bulck, D., Pääkkönen, J., Jacquet, B., and Goossens, D.

Minimal and fair waiting times for single-day sports tournaments with multiple fields

Tercero, L.G., Van Bulck, D., Nießen, F., and Goossens, D.

Fair Schedules for Single Round Robin Tournaments with Ranked Participants

Wessel, S., Hurkens, C., and Spieksma, F.

Maximizing suspense in sports competitions by dynamic scheduling

Devriesere, K., and Goossens, D.

9:30 – 10:50 **Parallel session FA4 – Optimization**

Session chair: C. Renkin

Room: A0.24

Optimising Dark Corridors for Biodiversity Conservation through Public Lighting Management

Bebronne, E., and Limbourg, S.

Applications of CHANAKYA for policy decisions in Leuven.

Malik, G., and Tampere, C.M.J.

Towards a generic circular supply chain optimisation model: a systematic review and methodological outlook

Langenaeker, A., Nimmegeers, P., and Defryn, C.

Optimizing Reverse Logistics for Waste Materials: A Multi-Stage Processing and Transportation Model

Renkin, C., and Limbourg, S.

11:00 – 12:00 **Parallel session FB1 – Forecasting and uncertainty**

Session chair: A. Leribaux

Room: A0.23

Conformal Predictions: Calibrated Decision-Making

Singh, A., Ittoo, A., Ars, P., and Vandomme, E.

Optimizing for forecast stability in distribution-free probabilistic forecasting

Van Belle, J., Wen, H., Verbeke, W., and Pinson, P.

Literature Review Time Series in Process Mining

Leribaux, A., De Weerd, J., and De Smedt, J.

11:00 – 12:00 Parallel session FB2 – Mobility

Session chair: B. Coulier

Room: H0.06

Distributed e-Fuel Hubs (DEFH): A case study of a Belgian Fischer-Tropsch liquids hub

Mokeddem, S., Miftari, B., Dachet, V., Derval, G., and Ernst, D.

Reconstruction and Compression of sparse network constrained trajectory data

Dejaegere, G., Doulkeridis, C., and Sakr, M.

A rollout strategy for electric vehicle charging stations in urban European environments

Coulier, B., Calik, H., Becker, T., and Vanden Berghe, G.

11:00 – 12:00 Parallel session FB3 – Assembly lines

Session chair: G. Gündüz Mengübaşı

Room: H0.04

The strategic assembly line feeding problem

Verplancke, H., Limère, V., Aghezzaf, E.-H., and Thanos, E.

Tactical optimization for part feeding in assembly lines

Porbar, G., Thanos, E., Aghezzaf, E.-H., and Limère, V.

A local-search-based heuristic method for efficient assembly line part delivery

Gündüz Mengübaşı, G., Sörensen, K., and Defryn, C.

11:00 – 12:00 Parallel session FB4 – Data science: NLP

Session chair: A. Thuy

Room: A0.24

Native design bias in Large Language Models

Reusens, M., Borchert, P., De Weerd, J., and Baesens, B.

Making Sense of BERTopic: A Deep Dive into Topic Reduction Techniques

Janssens, W., Bogaert, M., and Van den Poel, D.

Ordinal Regression for Question Difficulty Estimation with Transformer-Based Neural Networks

Thuy, A., Loginova, E., and Benoit, D.F.

12:00 – 13:20 Lunch

Ad Fundum

13:20 – 14:20 **Parallel session FC1 – Machine Learning**

Session chair: Y. De Rocker

Room: A0.23

Learning Analytics Dashboard for Conceptual Modeling Education

Tiukhova, E., Verbruggen, C., De Laet, T., Baesens, B., and Snoeck, M.

Predicting restaurant hygiene scores: an interpretable machine learning approach

Wang, X., Janssens, B., and Bogaert, M.

Predicting core returns in B2B machine operations using machine learning

De Rocker, Y., Janssens, W., Termont, B., Bogaert, M., and Van den Poel, D.

13:20 – 14:20 **Parallel session FC2 – Orbel Award Nominees**

Session chair: R. Leus

Room: H0.06

Minimizing travel duration in inland shipping through strategic departure time scheduling

R. Annaert

A Synthetic Data Based Simulation Approach to Enhance the Spatial Allocation of Police Resources

N. Prakopetz

Electric vehicle routing problems: hoe omspringen met beperkte batterij-capaciteit

O. El Habti

13:20 – 14:20 **Parallel session FC3 – Matchings**

Session chair: R. Zuidwijk

Room: H0.04

On strong integrality properties of the perfect matching polytope

Grappe, R., Lacroix, M., and Pisanu, F.

Maximal Matchings

Trieu, A., Bos, I., Schröder, M., and Vermeulen, D.

The expected size of maximum matchings in bipartite graphs

Zuidwijk, R.

13:20 – 14:20 Parallel session FC4 – Nurse scheduling

Session chair: F. Nießen

Room: A0.24

Constraint evaluation techniques for the nurse rostering problem

Tourlamain, R., Vanden Berghe, G., and Smet, P.

Practical challenges in workforce scheduling

Berghman, L., and Kok, L.

How to optimize the number of nurses in a hospital

Nießen, F., and Paschmanns, P.

14:45 - 15:45 Keynote Anita Schöbel

Sustainable public transport

Session chair: Marjan van den Akker

Room: Aula (H0.01)

15:45 - 16:15 ORBEL Award and closing session

Room: Aula (H0.01)