VeRoLog 2017

Annual Workshop of the EURO Working Group on Vehicle Routing and Logistics optimization (VeRoLog)

10 - 12 July 2017
Amsterdam, The Netherlands

verolog2017.sciencesconf.org

EURO THE ASSOCIATION OF EUROPEAN OPERATIONAL RESEARCH SOCIETIES

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PTV GROUP the mind of movement

VeRoLog EURO Working Group on Vehicle Routing and Logistics Optimization

VU

AMSTERDAM BUSINESS RESEARCH INSTITUTE

CONFERENCE PROGRAM AND PRACTICAL INFORMATION

Dear VeRoLog 2017 participant,

Welcome to the sixth meeting of the EURO Working Group on Vehicle Routing and Logistics optimization (VeRoLog 2017). The VeRoLog conference is an annual meeting bringing together the large community of researchers and practitioners interested in optimizing transport and logistics decision-making problems from a methodological and applied standpoint.

At VeRoLog Amsterdam 2017 you will meet more than 220 participants interested in sharing their latest research findings, discussing your work, and attending the parallel sessions, plenary talks by Guy Desaulniers (GERAD, CAN) and David Pisinger (DTU, DK), and tutorials by Günes Erdogan (University of Bath, UK) and Michael Schneider (RWTH Aachen, D). The VeRoLog competition and industry brainstorming sessions are highly valued, distinguishing features of VeRoLog conferences and, thanks to the help of ORTEC and PTV, we are able to continue this tradition.

In addition to this jam-packed scientific program, we offer a series of social events to share some of the beautiful aspects of our city and give you a chance to (re)charge your batteries. In addition to a welcome reception on Sunday June 9th at the Marriott Renaissance Amsterdam Hotel, we invite you to a boat tour on Monday evening and to a social dinner at the Koepelkerk, one of the prime locations in town, on Tuesday evening. To facilitate your travels in the city (which has far more to offer than we could possibly schedule in three evenings), a 72-hour public transport card is included in your conference packet. Do not hesitate to extend your visit to the city (or to our research group).

We are grateful for the generous support of the sponsors of VeRoLog 2017. These include academic partners Vrije Universiteit Amsterdam, Amsterdam Business Reseach Institute (ABRI), and EURO, as well as industry partners, ORTEC and PTV Group, the strong and continued support of which attest to the relevance of this conference for those in industry. Special thanks are also due to the VeRoLog board and the organizers of VeRoLog Nantes 2016 for their advice and guidance. We are indebted to them and want to extend the favor by offering the same support to the organizers of the next VeRoLog conference. Finally, we express our sincere thanks to the countless individuals that have contributed to VeRoLog 2017.

We wish you all a stimulating conference and a delightful stay in Amsterdam.

Wout, Annelieke, Christos, David, Florence, Maaike, Nienke, Roberto, Said

COMMITTEES

Organizing Committee

- Wout Dullaert (chair)
- Annelieke Baller
- Christos Orlis
- David Lai
- Florence Goes
- Maaike Hoogeboom
- Nienke Hofstra
- Roberto Roberti
- Said Dabia

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- Daniele Vigo, University of Bologna, Italy
- Marielle Christiansen, University of Trondheim, Norway
- Angel Corberan, University of Valencia, Spain
- Wout Dullaert, Vrije Universiteit Amsterdam, the Netherlands
- Richard Eglese, University of Lancaster, U.K.
- Geir Hasle, SINTEF, Norway
- Stefan Irnich, University of Mainz, Germany
- Frederic Semet, Ecole Centrale de Lille, France
- Maria Grazia Speranza, University of Brescia, Italy

THE VENUE

VeRoLog 2017 is hosted by the Logistics Research Group of the Vrije Universiteit Amsterdam, located at De Boelelaan 1105, 1081 HV Amsterdam.

Amsterdam is located in the vicinity of one of Europe's most important airline hubs: Amsterdam Airport Schiphol. All major airlines and many low-cost airlines connect Amsterdam to more than 250 destinations worldwide. The connection between Schiphol airport and Amsterdam Zuid train station is just 7 minutes by train.

From Amsterdam Zuid train station the VU campus can be reached in 10 minutes by foot or via tram or metro. High speed trains connect Amsterdam directly to major European capitals such as Brussels, Paris, and London.

The Vrije Universiteit Amsterdam is located in the South of Amsterdam (right next to the business district) and has a direct connection to the Amsterdam city center (20 minutes by tram or metro).

PUBLIC TRANSPORT

From Amsterdam Central Station

- Metro Tram 51, direction Amstelveen Westwijk (20 minutes), stop at: De Boelelaan/VU
- Tram 5, direction Amstelveen Binnenhof/Stadshart (25 minutes), stop at: De Boelelaan/VU
- Tram 24, direction VUmc (VU Medical Center), final stop

Visit www.9292.nl/en or download the 9292 app

From Amsterdam Zuid Station

- Metro Tram 51 (1 minute), direction Amstelveen Westwijk, stop at: De Boelelaan/VU
- Tram 5 (1 minute), direction Amstelveen Binnenhof/Stadshart, stop at: De Boelelaan/VU
- It's a 10-minute walk to the VU

Visit www.9292.nl/en or download the 9292 app

From Schiphol Airport

- Take the train to Station Amsterdam Zuid (see Public transport: from Amsterdam Zuid Station)

Visit www.ns.nl/en or download the Reisplanner app

Car - The A10 Amsterdam ring road can be reached from all directions. Follow the A10 to the Zuid/Amstelveen exit S108. Turn left at the end of the slip road onto Amstelveenseweg: after about 300 meters (at the VU hospital building) turn left again onto De Boelelaan. Vrije Universiteit Amsterdam can be reached via city routes S108 and S109.

Parking - There is a limited amount of parking space around Vrije Universiteit Amsterdam itself in De Boelelaan, which has parking bays, and also in Karel Lotsylaan. There is paid parking on VU Amsterdam parking lot to the right of the Hospital Outpatient Clinic. There is even more parking space on the east side of Buitenveldertselaan at the junction with Willem van Weldammelaan, within 5 minutes walking distance of Vrije Universiteit Amsterdam. A number of parking places for the handicapped are reserved in front of Vrije Universiteit Amsterdam Main Building.

PRACTICAL INFORMATION

COFFEE BREAKS

Coffee breaks take place in the Foyer (1st floor).

LUNCHES

Lunches take place at The Basket (VU courtyard close to the beach volley courts)

EMERGENCY

In case of emergency, FIRST call the national emergency number **112**. Explain the situation and indicate which service (police/ambulance/fire brigade) you need. Afterwards you can call the VU emergency number outside office hours: **020-6444117**. This is a contact number for further assistance.

LOST SOMETHING?

Find it on ilost.co

SOCIAL PROGRAM

Sunday, July 9, 16:00-19:00

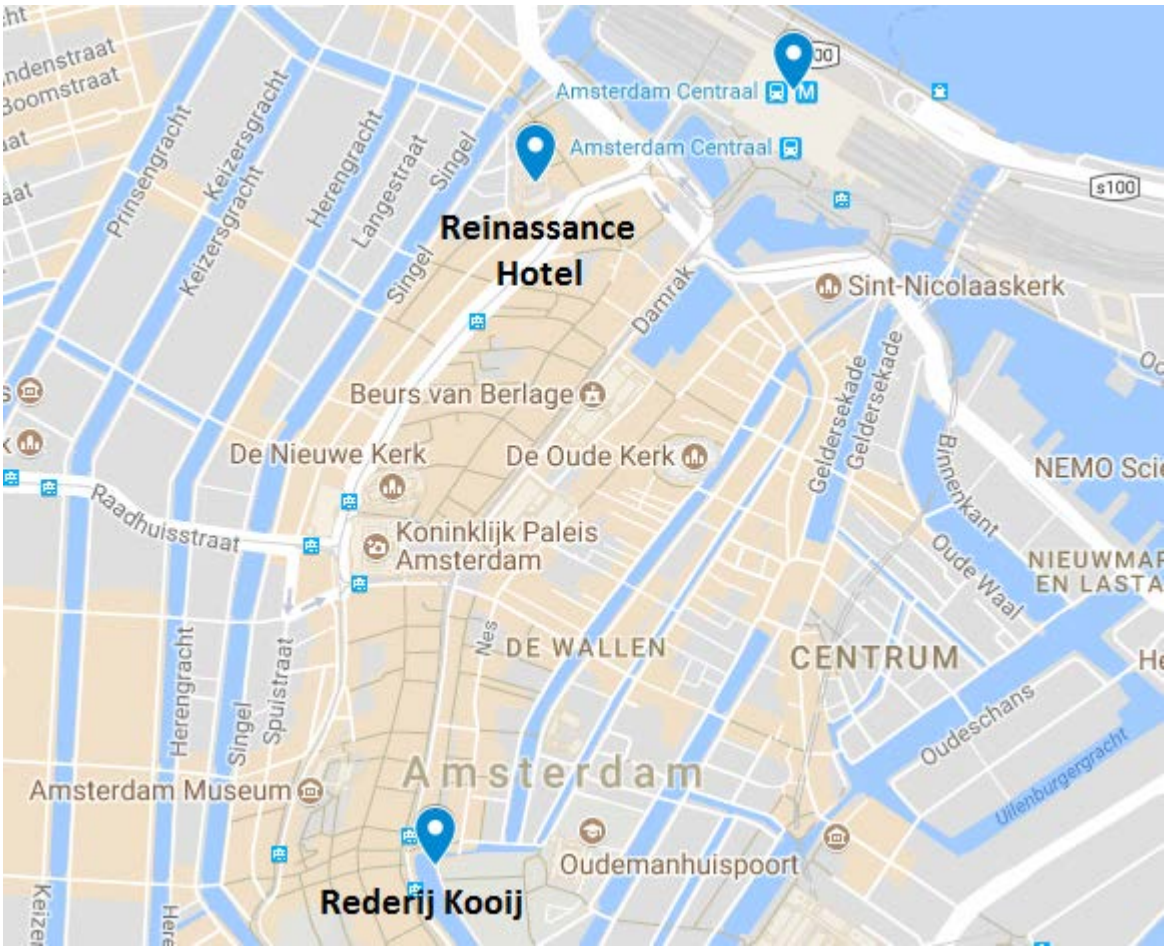
Get-together/registration at the 2B Lounge Bar at the Renaissance Amsterdam Hotel, Kattengat 1, 1012 SZ Amsterdam

Monday, July 10, 20:45-22:30

Canal cruise, departure and arrival at Rederij Kooij (opposite number 125), Rokin, 1012 KK Amsterdam

Tuesday, July 11, 18:45-23:30

Gala Dinner at De Koepelkerk at the Reinassance Amsterdam Hotel, Kattengat 1, 1012 SZ Amsterdam



SCIENTIFIC PROGRAM: OVERVIEW

	MONDAY	TUESDAY	WEDNESDAY
8:30	Registration		
9:00	Opening Session (KC07)	Inventory Routing (KC07) Capacitated VRP (01A33) Modeling and Black Box Opt. (02A33) Shortest Path Problems (02A24) Routing and Packing (02A16)	
9:30	Plenary Session (KC07)		Exact Methods (KC07) Collab. Transp. Logistics (01A33) Rich VRPs (02A33) Bike, Vehicle Sharing (02A24) Freight Transp. (02A00) Real Road Networks (02A16)
10:30	Coffee Break (Foyer)	Coffee Break (Foyer)	
11:00	Inventory Routing (KC07) Bike and Vehicle Sharing (01A33) Column Generation (02A33) Real-Life VRPs (02A24) Multi-objective VRPs (02A16)	Inventory Routing (KC07) Column Generation (01A33) Heuristics (02A33) Electric VRPs (02A24) Waste Management (02A16) Pickup and Delivery (05A24)	Coffee Break (Foyer)
11:30			Plenary Session (KC07)
12:30	Lunch Break (The Basket)	Lunch Break (The Basket)	Lunch Break (The Basket)
13:45	Exact Methods (KC07) Heuristics (01A33) Rich VRPs (02A33) Dynamic VRPs (02A24) Supply Chain Man. (02A00) Passenger Transp. (02A16)	Tutorials (02A00) Brainstorming Sessions (KC07)	TSP Variants (KC07) Green VRPs Logistics (01A33) Heuristics (02A33) Stochastic VRPs (02A24) City Logistics (02A16) Routing Synchron. (05A24)
15:15	Coffee Break (Foyer)	Coffee Break (Foyer)	Closing Session (KC07)
15:45	Green VRPs Logistics (KC07) TSP Variants (01A33) Facility Location (02A33) City Logistics (02A24) Real-Life VRPs (02A00) VRPs Time Windows (02A16)	Maritime Transp. (KC07) Multi-period VRP (01A33) Column Generation (02A33) City Logistics (02A24) Meta-heuristics (02A00)	
16:00			
17:00			
17:15			

PLENARY TALK

Network Design in Liner Shipping

Monday, July 10, 9:30 – 10:30 (Room: KC07)

Chairman: Prof. Daniele Vigo (University of Bologna)

Speaker: Prof. David Pisinger (Technical University of Denmark)

The shipping industry is responsible for around 2.2% of the CO2 emission in the world, and a substantial part of the NOx and SOx emission. Decreasing freight rates and tight regulations for emission makes it difficult to operate liner shipping economically viable. It is therefore necessary to frequently redesign the network to meet customer demands while minimizing the operational costs.

Given a fleet of container vessels and a set of demands to transport, the liner shipping network design problem asks to design a set of scheduled routes, deploy vessels of appropriate size to the routes and decide the speed on each leg, such that all demands can be transported within some pre-defined time-limits. Real-life instances may involve 20.000 demands and 500 vessels pushing the limits of solvers.

In this talk we give an overview of recent solution methods, spanning from branch-and-cut methods, to matheuristics and backbone-based methods. Results from the LINER-LIB benchmark suite will be reported. In the end of the presentation, some parallels will be drawn to the related line planning problem in public transportation.

PLENARY TALK

Branch-price-and-cut for Vehicle Routing: Recent Advances

Wednesday, July 12, 11:30 – 12:30 (Room: KC07)

Chairman: Prof. Stefan Irnich (Johannes Gutenberg University Mainz)

Speaker: Prof. Guy Desaulniers (GERAD – Polytechnique Montréal)

Branch-price-and-cut (BPC) is the leading methodology for solving many vehicle routing problems exactly such as the capacitated vehicle routing problem, the vehicle routing problem with time windows, and the split delivery vehicle routing problem with time windows, to name just a few. It consists of a column generation algorithm embedded in a branch-and-cut framework and involves, thus, several algorithmic components that often need to be specialized for the problem considered. In this talk, we review the main ingredients that are part of the most recent BPC algorithms. Among others, we discuss the ng-route pricing algorithm, the route enumeration procedure, and the non-robust cuts that are defined directly on the master problem variables. We highlight certain tradeoffs that need to be addressed when designing a BPC algorithm. Also, to illustrate the effectiveness of some BPC algorithms, we report recent computational results obtained for different vehicle routing problems. To conclude, we present current challenges that arise from complex vehicle routing problems.

TUTORIAL

Solving Vehicle Routing Problems Using Excel

Tuesday, July 11, 13:45 – 14:30 (Room: 02A00)

Chairman: Prof. Maria Grazia Speranza (University of Brescia)

Speaker: Dr. Gunes Erdogan (University of Bath)

In this tutorial, we will show how to solve Vehicle Routing Problems using VRP Spreadsheet Solver, an Excel workbook with embedded VBA functions to acquire location and distance data from a GIS, solve the problem instance, and display the solution on a map. We will present challenges and associated practical solutions regarding the VRP solution process including the acquisition of GIS data, scenario analyses, and visualization. We will demonstrate the use of a solver on a real-world instance and conclude with future directions for VRP software design.

TUTORIAL

Routing Electric Vehicles: Problem Variants, Methods, and Future Challenges

Tuesday, July 11, 14:30 – 15:15 (Room: 02A00)

Chairman: Prof. Richard Hartl (University of Vienna)

Speaker: Prof. Michael Schneider (RWTH Aachen University)

Electric commercial vehicles (ECVs) have several advantages compared to internal combustion commercial vehicles, like no local greenhouse gas and only minimal noise emissions, but they are still not competitive from a cost point of view. One important aspect in paving the way for their long-term success is their cost-efficient operation in last-mile delivery operations. This entails the investigation of so-called electric vehicle-routing problems (EVRPs), which cover the limited driving range of ECVs and the possibility of recharging their battery at charging stations along the route. In this talk, we give an overview of the variants of ECVs treated in the literature, and we describe important components of successful heuristic solution approaches. In particular, we propose to consider EVRPs as a special variant of VRPs with intermediate stops and to concentrate on the development of more general solution frameworks for this class of problems. Finally, we outline interesting topics for future research.

BRAINSTORMING SESSION

Implementing OR in practice: the human factor

Tuesday, July 11, 13:45 – 14:30 (Room: KC07)

Chairman: Prof. Martin Savelsbergh (Georgia Institute of Technology)

Speakers: Xin Wang and Willemieke van Vliet (ORTEC)

Why does it happen so often that brilliant optimization results are actually perceived as rather poor by various stakeholders in practice (e.g., planners, drivers)? Why, on the contrary, do farmers trust the weather forecast and use it well for their businesses? In other words: what are key factors in absorbing complex models and optimization results, and appreciating the true value of it?

In this session, we will search together for ways to enhance the impact of OR in practice. We will focus on an aspect of implementing OR that has generally been overlooked, but that is crucial for success: the human factor. Guided by several practical examples, we will discuss this topic together and try to identify key factors in making OR implementations a success. These key factors may serve as an agenda for future research.

BRAINSTORMING SESSION

Lost in translation? Customer requirements and analyst modelling

Tuesday, July 11, 14:30 – 15:15 (Room: KC07)

Chairman: Prof. Wout Dullaert (Vrije Universiteit Amsterdam)

Speaker: Werner Heid (PTV Group)

When trying to successfully solve real customer problems we need to master a number of challenges. Customers normally describe their requirements using natural language. Academics rather prefer formal language as a formal specification facilitates the precise definition of the problem and the design of corresponding appropriate mathematical models. Professional analysts, in turn, very often favour semi-formal procedures because they allow a structured information exchange between the involved parties.

The brainstorming session addresses the question how these different degrees of formality should be applied to provide a sufficient amount of accuracy and still encourage the communication between the relevant persons in order to elicit the required information. Real-life examples will be presented and discussed. Sharing lived experiences shall help to detect and avoid common pitfalls during the requirement specification and to develop smart interview techniques that prevent your customer from saying “we don’t want to overcomplicate things”.

TECHNICAL SESSIONS

Program modifications

Despite our best effort, the program may change during the conference due to last-minute cancelations or travel issues. The modifications to the program will be announced every morning. You can also access the modifications online at: verolog2017.sciencesconf.org

Guidelines for session chairs

- For each session, the chair is the last speaker.
- The role of the chair is to coordinate the smooth running of the session.
- Begin and end the session on time.
- Each speaker should be given 22 minutes (including time for questions)
- Introduce each presentation (just the title of the paper and the name of the presenting author).
- Ensure that presentations follow the order shown in the program. This allows for "session jumping". If a speaker cancels or does not attend, the original time schedule should be adhered to rather than shifting every talk forward.

Monday, July 10

11:00-12:30

MA1: Inventory Routing Room: KC07

11:00 - 11:22 **A backlog management approach to reserve capacity for emergency demand: the case of service dispatching in power distribution utilities**
Vinicius Garcia, Federal University of Santa Maria

11:22 - 11:45 **Solution techniques for the Consistent Inventory Routing Problem**
Emilio Jose Alarcon Ortega, University of Vienna

11:45 - 12:07 **A Hybrid Method for the production routing problem with transshipment**
Mustafa Avci, Dokuz Eylül University

12:07 - 12:30 **Inventory routing with pickups and deliveries**
Claudia Archetti, University of Brescia

MA2: Bike and Vehicle Sharing Room: 01A33

11:00 - 11:22 **User-based relocation strategies in free-floating car-sharing systems**
Fabian Rüdel, Chair of Operations Management, RWTH Aachen University

11:22 - 11:45 **A decomposition scheme for service network design of bike sharing systems**
Bruno Albert Neumann Saavedra, Technische Universität Braunschweig

11:45 - 12:07 **Methods for Corporate Mobility as a Service**
Sebastian Knopp, AIT Austrian Institute of Technology

12:07 - 12:30 **Small parcel routing in a crowdsourced physical internet**
Tal Raviv, Department of Industrial Engineering, Tel Aviv University

MA3: Column Generation Room: 02A33

11:00 - 11:22 **Branch-and-Price-and-Cut for the Clustered Vehicle-Routing Problem with Soft Cluster Constraints**
Timo Hintsch, Chair of Logistics Management, Gutenberg School of Management and Economics, Johannes Gutenberg University Mainz

11:22 - 11:45 **A branch and price algorithm for the resource constrained vehicle routing problem**
Neda Tanoumand, Faculty of Engineering and Natural Sciences

11:45 - 12:07 **Bidirectional Labeling in Column-Generation Algorithms for Pickup and Delivery Problems**
Timo Gschwind, Chair of Logistics Management, Gutenberg School of Management and Economics, Johannes Gutenberg University Mainz

12:07 - 12:30 **Exact solution of vehicle routing problems with multigraphs or road-network-type graphs**
Dominique Feillet, Laboratoire d'Informatique, de Modélisation et d'optimisation des Systèmes, École des Mines de Saint-Étienne

MA4: Real-Life VRPs Room: 02A24

11:00 - 11:22 **Vehicle routing for trunk delivery applications**
Gizem Ozbaygin, Department of Industrial Engineering, Bilkent University

11:22 - 11:45 **Promoting inconsistency in security related routing problems by clustering**
Philipp Salzmann, University of Vienna

11:45 - 12:07 **Routing of Multi-Section Vehicles for Delivery of Multiple Products**
Sergey Markov, Department of Applied Mathematics and Computer Science, Belarusian State University

12:07 - 12:30 **A unifying software framework for vehicle routing and logistics**
Neil Urquhart, Edinburgh Napier University

MA5: Multi-objective VRPs Room: 02A16

11:00 - 11:22 **Forming, Scheduling and Routing Field Service Teams for Multi-Skill Tasks with Priority Levels**
Gozde Kutayer Bilgin, TOBB University of Economics and Technology

11:22 - 11:45 **Revisiting the Balanced VRP: A Comparative Study of Alternative Workload Metrics**
Piotr Matl, University of Vienna

11:45 - 12:07 **The Multi-Objective Capacitated Vehicle Routing Problems with Multiple Trips**
Ana D. López-Sánchez, Pablo de Olavide University

12:07 - 12:30 **Path Problems with Additive and Multiplicative Objectives**
Mikhail Kovalyov, United Institute of Informatics Problems

13:45-15:15

MB1: Exact Methods Room: KC07

13:45 - 14:07 **The Electric Autonomous Dial-a-Ride Problem**
Claudia Bongiovanni, Ecole Polytechnique Federale de Lausanne (EPFL)

14:07 - 14:30 **The location-routing covering problem**
Marilène Cherkesly, Université du Québec à Montréal UQAM (Canada)

14:30 - 14:52 **SAT solving for complex routing and scheduling problems**
Stefan Frank, Institute for Logistics and Aviation, TU Dresden

14:52 - 15:15 **The Split Delivery Vehicle Routing Problem with Time Windows and Customer Inconvenience Constraints**
Stefan Irnich, Chair of Logistics Management, Gutenberg School of Management and Economics, Johannes Gutenberg University Mainz

MB2: Heuristics Room: 01A33

13:45 - 14:07 **Heuristics for the traveling salesman problem with release dates and completion time minimization**
Andrea Mor, University of Brescia

14:07 - 14:30 **Value Function Approximation-based Dynamic Look-ahead Policies for Stochastic-Dynamic Inventory Routing in Bike Sharing Systems**
Jan Brinkmann, Technische Universität Braunschweig

14:30 - 14:52 **A hybrid solution approach for the 3L-VRP with simultaneous delivery and pickups**
Henriette Koch, Otto-von-Guericke-University Magdeburg

14:52 - 15:15 **Introducing Fairness in Facility Location Problems**
Carlo Filippi, Department of Economics and Management, University of Brescia

MB3: Rich VRPs Room: 02A33

13:45 - 14:07 **Efficient Move Evaluations for Time-Dependent Vehicle Routing Problems with Route Duration Constraints**
Thomas Visser, Econometric Institute, Erasmus University Rotterdam

14:07 - 14:30 **The Benefits of Flexible Fulfillment Center Assignments in Attended Home Delivery**
Kilian Seifried, Business School, University of Mannheim

14:30 - 14:52 **The Multi-Depot Vehicle Routing Problem with vehicle interchanges**
Victoria Rebillas-Loredo, Universitat Politècnica de Catalunya

14:52 - 15:15 **Aesthetic considerations for the Min-Max K-Windy Rural Postman Problem**
Isaac Plana, Universidad de Valencia

MB4: Dynamic VRPs Room: 02A24

13:45 - 14:07 **Allocating and Transporting Resources to Demand-Locations**
Nitin Ahuja, PTV Group

14:07 - 14:30 **Spatial Information in Offline Approximate Dynamic Programming for Dynamic Vehicle Routing with Stochastic Requests**
Artur Ansmann, Technische Universität Braunschweig Decision Support Group

14:30 - 14:52 **Solving Partially Dynamic Vehicle Routing Problems using Intelligent Multiagent System**
Auro Castiglia, VisiLog Optimization Software for Mobility, Polytechnic School of Engineering - University of São Paulo

14:52 - 15:15 **Combining Parametric and Non-Parametric Value Function Approximation for Dynamic Customer Acceptances in Home Delivery**
Marlin Ulmer, Technische Universität Braunschweig

MB5: Supply Chain Management Room: 02A00

13:45 - 14:07 **A Novel Formulation and a Column Generation Technique for a Rich Humanitarian Logistic Problem**
Ohad Eisenhandler, Tel Aviv University

14:07 - 14:30 **An optimization model for integrating production and distribution planning in furniture companies**
Pedro Miranda, Industrial Engineering Department
Federal University of São Carlos

14:30 - 14:52 **Design and Incentive Decisions in Humanitarian Supply Chains**
Reut Noham, Tel Aviv University

14:52 - 15:15 **Which comes first, delivery or sales?**
Nebojša Gvozdenović, The faculty of Economics Subotica, University of Novi sad

MB6: Passenger Transportation Room: 02A16

13:45 - 14:07 **On the solution of the rolling stock rebalancing problem**
Federico Farina, Danmarks Tekniske Universitet

14:07 - 14:30 **Quality-oriented scheduling procedures for the dial-a-ride problem**
Yves Molenbruch, Hasselt University, Research Foundation Flanders

14:30 - 14:52 **A matheuristic approach for solving the Integrated Timetabling and Vehicle Scheduling Problem**
Joao Paiva Fonseca, Danmarks Tekniske Universitet

14:52 - 15:15 **On-Line Management of a Multi-Layered Personal Transit System**
Martin Repoux, Urban Transport Systems Laboratory, School of Architecture, Civil and Environmental Engineering, Ecole Polytechnique Fédérale de Lausanne

15:45-17:15

MC1: Green VRPs and Logistics Room: KC07

15:45 - 16:07 **The Green Vehicle Routing Problem with Capacitated Alternative Fuel Stations**
Simona Mancini, University of Cagliari

16:07 - 16:30 **Another look at snow removal**
Kaj Holmberg, Linkoping University, Department of Mathematics, Division of Optimization

16:30 - 16:52 **A path-based Mixed Integer Linear Programming formulation for the Green Vehicle Routing Problem**
Ornella Pisacane, Facoltà di Ingegneria, Università Politecnica delle Marche

16:52 - 17:15 **On the Chinese Postman Problem with load-dependent costs**
Angel Corberán, Universidad de Valencia

MC2: TSP Variants Room: 01A33

15:45 - 16:07 **Solving the family traveling salesman problem**
Raquel Bernardino, Centro de Matemática, Aplicações Fundamentais e Investigação Operacional, Faculdade de Ciências, Universidade de Lisboa

16:07 - 16:30 **On asymmetric multi-depot multiple traveling salesmen problem**
Bolor Jargalsaikhan, University of Groningen

16:30 - 16:52 **The roaming salesman problem: Application to election logistics**
Masoud Shahmanzari, Koç University

16:52 - 17:15 **Extended Formulations and Branch-and-Cut Algorithms for the Black-and-White Traveling Salesman Problem**
Luís Gouveia, DEIO, Faculdade de Ciências, Universidade de Lisboa, CMAFCIO

MC3: Facility Location Room: 02A33

15:45 - 16:07 **Optimal charging station placement in a free-floating electric car sharing system**
Georg Brandstätter, University of Vienna

16:07 - 16:30 **A Memetic Algorithm for the Bi-Objective Hub Location-Routing Problem**
Xiao Yang, Equipe Systèmes Logistiques et de Production, LS2N

16:30 - 16:52 **A strategic and tactical facility location problem with mobile equipment**
Olivier Péton, Laboratoire des Sciences du Numérique de Nantes, IMT Atlantique

MC4: City Logistics Room: 02A24

15:45 - 16:07 **Optimization of urban delivery systems with drones**
Mbiadou Saleu Gertrude Raïssa, Laboratoire d'Informatique, de Modélisation et d'optimisation des Systèmes

16:07 - 16:30 **Performance of a deterministic 2e-VRP with synchronization in a real world situation**
Alexandra Anderluh, WU Vienna University of Economics and Business

16:30 - 16:52 **Planning City Logistics in a maritime urban area**
Massimo di Francesco, University of Cagliari

16:52 - 17:15 **A bi-objective two-echelon vehicle routing problem with synchronization and customer-to-echelon assignment**
Vera Hemmelmayr, WU (Vienna University of Economics and Business)

MC5: Real-Life VRPs Room: 02A00

15:45 - 16:07 **Planning of an Offshore Well Plugging Campaign: A Vehicle Routing Approach**
Steffen Bakker, Norwegian University of Science and Technology - NTNU (Norway)

16:07 - 16:30 **Solving a Rich Vehicle Routing Problem Arising in the Steel Industry**
Biljana Roljic, University of Vienna

16:30 - 16:52 **A Multi-objective Dynamic Vehicle Routing Model for Food Rescue and Delivery**
Hanna Grzybowska, University of New South Wales

16:52 - 17:15 **Scheduling Deliveries in Retail: a Case Study**
Yakov Zinder, University of Technology, Sydney

MC6: VRPs with Time Windows Room: 02A16

15:45 - 16:07 **Vehicle routing problem with arrival time diversification**
Maaike Hoogeboom, Vrije Universiteit Amsterdam

16:07 - 16:30 **Neighborhood search approaches for a multi-trip vehicle routing problem with time windows**
Véronique François, HEC Management School of the University of Liege

16:30 - 16:52 **Route Planning of Electric Freight Vehicles by Considering Internal and Environmental Conditions**
Sina Rastani, Sabanci University

16:52 - 17:15 **A Hybrid Approach for the Travelling Salesman Problem with General Time Windows**
Anne Meyer, FZI Research Center for Information Technology

Tuesday, July 11

09:00-10:30

TA1: Inventory Routing Room: KC07

09:00 - 09:22 **Multi-product Multi-vehicle inventory-routing problem considering weight and volume in a wholesale grocery chain.**
Salutino Flores Monroy, Facultad de Ingeniería, UNAM

09:22 - 09:45 **Robust solutions for the Inventory-Routing Problem with uncertain travel times**
Wouter Lefever, Univ. Grenoble Alpes, CNRS, Laboratoire G-SCOP, Department of Industrial Systems Engineering and Product Design, Ghent University

09:45 - 10:07 **A generalized formulation and solution approach for stochastic routing problems**
Iliya Markov, Ecole Polytechnique Federale de Lausanne (EPFL)

10:07 - 10:30 **Exact and heuristic algorithms for the inventory routing problem with logistic ratio**
M. Grazia Speranza, University of Brescia

TA2: Capacitated VRP Room: 01A33

09:00 - 09:22 **Sequential search for the multi-depot vehicle routing problem**
Jean Bertrand Gauthier, Johannes Gutenberg University Mainz, HEC Montréal

09:22 - 09:45 **Vehicle Selection for a Multi-Compartment Vehicle Routing Problem**
Alexander Huebner, Catholic University Eichstaett Ingolstadt

09:45 - 10:07 **Lifted compact formulations for the Capacitated Vehicle Routing problem**
Valeria Leggieri, Faculty of Science and Technology, Free University of Bozen-Bolzano

10:07 - 10:30 **An update on VRP-REP: the vehicle routing problem repository**
Jorge Mendoza, Laboratoire d'Informatique de l'Université de Tours

TA3: Modeling and Black Box Optimization Room: 02A33

09:00 - 09:22 **The Glider Routing and Trajectory Optimisation Problem**
Walton Pereira Coutinho, School of Mathematics, University of Southampton

09:22 - 09:45 **Rail-rail containers transshipment: solution via mathematical programming**
Maria Albareda-Sambola, Departament d'Estadística i Investigació Operativa, Universitat Politècnica de Catalunya

09:45 - 10:07 **Optimizing a reverse logistics system for plastic waste collection: the Netherlands case-study**
Tânia Ramos, Centro de Estudos de Gestão, Instituto Superior Técnico, Universidade de Lisboa

10:07 - 10:30 **A two-commodity flow formulation for the truck and trailer routing problem**
Enrico Bartolini, Deutsche Post Chair of Optimization of Distribution Networks, School of Business and Economics, RWTH Aachen University

TA4: Shortest Path Problems Room: 02A24

09:00 - 09:22 **Optimal resolution of the transport problem from a flow into a RCPSP with routing**
Marina Vinot, Laboratoire d'Informatique, de Modélisation et d'optimisation des Systèmes

09:22 - 09:45 **Alternative Paths for Reliable Vehicle Routing in City Logistics**
Patrick-Oliver Groß, Technische Universität Braunschweig Decision Support Group

09:45 - 10:07 **Multi-criteria tourist trip planning**
Antoine Giret, Laboratoire d'Informatique de l'Université de Tours

10:07 - 10:30 **Asymmetry matters: Dynamic Half-Way Points in Bidirectional Labeling for Solving Shortest Path Problems with Resource Constraints Faster**
Christian Tilk, Chair of Logistics Management, Gutenberg School of Management and Economics, Johannes Gutenberg University Mainz

TA5: Routing and Packing Room: 02A16

09:00 - 09:22 **The capacitated routing problem with profits and service level requirements**
Christos Orlis, Vrije Universiteit Amsterdam

09:22 - 09:45 **A Metaheuristic Approach for the Two-dimensional Loading Vehicle Routing Problem with Heterogeneous Fleet**
David Álvarez Martìnez, Universidad de los Andes

09:45 - 10:07 **Loading Constraints for a Multi-Compartment Vehicle Routing Problem**
Manuel Ostermeier, Katholische Universität Eichstätt-Ingolstadt

10:07 - 10:30 **A new model and strengthening inequalities for the double TSP with multiple stacks**
Michele Barbato, DEIO, Faculdade de Ciências, Universidade de Lisboa, CMAFCIO

11:00-12:30

TB1: Inventory Routing Room: KC07

11:00 - 11:22 **On the complexity of some special cases of the Inventory Routing Problem**
Annelieke Baller, Vrije Universiteit Amsterdam

11:22 - 11:45 **Efficient routes in a Periodic Inventory Routing Problem**
Rosario Paradiso, Department of Mechanical, Energy and Management Engineering, University of Calabria

11:45 - 12:07 **On the effects of day-by-day planning on the global objective in Inventory Routing**
Gerhard Post, ORTEC BV and University of Twente

12:07 - 12:30 **Continuous Time Inventory Routing**
Martin Savelsbergh, Georgia Institute of Technology

TB2: Column Generation Room: 01A33

11:00 - 11:22 **An exact method for bi-objective vehicle routing problems**
Estèle Glize, Laboratoire d'analyse et d'architecture des systèmes

11:22 - 11:45 **An improved Branch-Cut-and-Price algorithm for heterogeneous vehicle routing problems**
Ruslan Sadykov, Institut de Mathématiques de Bordeaux, RealOpt

11:45 - 12:07 **A generalized formulation for vehicle routing problems**
Twan Dollevoet, Econometric Institute, Erasmus University Rotterdam

TB3: Heuristics Room: 02A33

11:00 - 11:22 **Decomposition and heuristics methods for the Pollution-Routing Problem with stochastic speed limits.**
Moncef Ilies Nasri, Southampton Business School, CORMSIS, University of Southampton

11:22 - 11:45 **Two-phase hybrid algorithm for the vehicle routing problem with scarce, reusable resources**
Lucia Paris, Department of Industrial Engineering - Universidad de los Andes

11:45 - 12:07 **A heuristic approach for the vehicle routing problem with scarce, reusable resources**
María Camila Ángel, Department of Industrial Engineering - Universidad de los Andes

12:07 - 12:30 **Arc Routing in Money Collection**
Leonor S Pinto, Universidade de Lisboa, Instituto Superior de Economia e Gestão, Lisboa, Portugal, CEMAPRE

TB4: Electric VRPs Room: 02A24

11:00 - 11:22 **Some recent research on electric vehicle routing**
Samuel Pelletier, Centre Interuniversitaire de Recherche sur les Réseaux d'Entreprise, la Logistique et le Transport, HEC Montréal

11:22 - 11:45 **A Benders Decomposition Approach for Solving the Electric Vehicle Routing Problem with Soft Time Windows**
Soheil Jalili, K. N. Toosi University of Technology, Faculty of Industrial Engineering

11:45 - 12:07 **Strategic planning of electric logistics fleets: A robust location-routing approach**
Maximilian Schiffer, Chair of Operations Management , RWTH Aachen University

12:07 - 12:30 **The electric vehicle routing problem with partial charge, nonlinear charging function, and capacitated charging stations**
Aurélien Froger, Laboratoire d'Informatique de l'Université de Tours

TB5: Waste Management Room: 02A16

11:00 - 11:22 **A heuristic for a bi-objective large scale waste collection problem**
Delgado-Antequera Laura, Departamento de Economía Aplicada (Matemáticas), Universidad de Málaga

11:22 - 11:45 **A multi-move decent algorithm for the No-Split Multi-Compartment Capacitated Arc Routing Problem**
Hani Zbib, Cluster for Operations Research and Logistics - Aarhus University

11:45 - 12:07 **A real-world inventory routing problem for waste collection**
Quentin Tonneau, Equipe Systèmes Logistiques et de Production, LS2N

12:07 - 12:30 **Location and Selective Routing Problem with Profits in Reverse Logistics Networks**
Necati Aras, Bogazici University, Dept. of Indutrial Engineering

TB6: Pickup and Delivery Room: 05A24

11:00 - 11:22 **The Twin Robot Routing Problem**
Oliver Thomasson, University of Bath

11:22 - 11:45 **A pickup and delivery problem in two regions with fixed and flexible long-hauls**
Alina-Gabriela Dragomir, University of Vienna

11:45 - 12:07 **The two-region multi depot pickup and delivery problem**
Adria Soriano, University of Vienna

12:07 - 12:30 **The Pickup and Delivery Problem with time windows, split loads and transshipment - A branch-and-cut solution method**
David Wolfinger, University of Vienna

15:45-16:55

TC1: Maritime Transportation Room: KC07

15:45 - 16:07 **Evaluation of methods for construction of robust supply vessel schedules with discrete-event simulation**
Yauhen Maisiuk, Molde University College Specialized University in Logistics

16:07 - 16:30 **A multiple ship routing and speed optimization problem under time, cost and environmental objectives**
Min Wen, Xi'an Jiaotong-Liverpool University

16:30 - 16:52 **Convex Resource Allocation and Ship Speed Optimization**
Thibaut Vidal, Pontifical Catholic University of Rio de Janeiro

TC2: Multi-period VRP Room: 01A33

15:45 - 16:07 **A Matheuristic for the Multi-Compartment Vehicle Routing Problem with Multiple Periods**
Tino Henke, Otto-von-Guericke University Magdeburg

16:07 - 16:30 **The Periodic Vehicle Routing Problem with Driver Consistency**
Inmaculada Rodríguez-Martín, Departamento de Matemáticas, Estadística e Investigación Operativa, Universidad de La Laguna

16:30 - 16:52 **Metaheuristic approaches for the multi-period vehicle routing problem with synchronization constraints and refuelling**
Emrah Demir, Cardiff Business School, Cardiff University

TC3: Column Generation Room: 02A33

15:45 - 16:07 **Managing Disruptions in the Multi-Depot Vehicle Scheduling Problem**
İbrahim Muter, University of Bath (UK)

16:07 - 16:30 **Branch-and-Price Algorithm for Team Orienteering Problem with Time-Dependent Rewards**
Elena Prishchepo, University of Vienna

16:30 - 16:52 **The time window assignment vehicle routing problem with time-dependent travel times**
Remy Spliet, Econometric Institute, Erasmus University Rotterdam

TC4: City Logistics Room: 02A24

15:45 - 16:07 **Integrating Logistics Optimization into Traffic Management Policies**
Rodrigo Rezende Amaral, Department of Industrial Systems Engineering and Product Design, Ghent University

16:07 - 16:30 **Flexible Time Window Management for Attended Deliveries**
Charlotte Köhler, European University Viadrina, Business Analytics

16:30 - 16:52 **Vehicle Routing for a Food Service Marketplace**
Kavitha Chetana Didugu, Indian Institute of Management

TC5: Meta-heuristics Room: 02A00

15:45 - 16:07 **An Iterated Local Search Algorithm for Multiple Traveling Repairman Problem with Profits**
Mualla Gonca Avci, Dokuz Eylül University

16:07 - 16:30 **Prioritized Routing and Scheduling for Home Healthcare Services**
Sibel Salman, Koç University

16:30 - 16:52 **Route design for mixed fleet of hydrogen and conventional vehicles**
Yuvraj Gajpal, University of Manitoba

Wednesday, July 12

09:30-11:00

WA1: Exact Methods Room: KC07

09:30 - 09:52 **New path elimination constraints for multi-depot routing problems**
Daniel Santos, Faculdade de Ciências

09:52 - 10:15 **Branch-and-Cut for the Split Delivery Vehicle Routing Problem with Time Windows**
Nicola Bianchessi, Chair of Logistics Management, Johannes Gutenberg University

10:15 - 10:37 **A Branch-and-cut algorithm for the Periodic Rural Postman Problem with Irregular Services on Mixed Graphs**
Demetrio Laganà, University of Calabria

10:37 - 11:00 **The Traveling Purchaser Problem with time-dependent quantities**
Renata Mansini, University of Brescia

WA2: Collaborative Transportation and Logistics Room: 01A33

09:30 - 09:52 **Collaborative vehicle routing with excess vehicle capacity in urban last-mile deliveries**
Joydeep Paul, Rotterdam School of Management, Erasmus University Rotterdam

09:52 - 10:15 **A new bidding process for combinatorial transportation auctions**
Margaretha Gansterer, University of Vienna

10:15 - 10:37 **Collaboration through shared-customers in last-mile urban delivery**
Mireia Roca-Riu, ETH Zürich, Institute for Transport Planning and Systems

10:37 - 11:00 **Integrating partner objectives in horizontal logistic optimization models**
Wout Dullaert, Vrije Universiteit Amsterdam

WA3: Rich VRPs Room: 02A33

09:30 - 09:52 **Correlated Orienteering for Planning Emergency Surveillance Flights of Unmanned Aerial Vehicles**
Katharina Glock, FZI Research Center for Information Technology

09:52 - 10:15 **A Generally Applicable Ruin & Recreate Approach for Capacitated Vehicle Routing Problems**
Jan Christiaens, KU Leuven, Combinatorial Optimisation and Decision Support

10:15 - 10:37 **Tiered-Facility Vehicle Routing Problem with Global Cross-Docking**
Anthony Smith, Stellenbosch Unit for Operations Research in Engineering

10:37 - 11:00 **An evolutionary algorithm for the location-allocation-routing problem**
Herminia I. Calvete, Universidad de Zaragoza

WA4: Bike and Vehicle Sharing Room: 02A24

09:30 - 09:52 **Solving the static vehicle sharing rebalancing problem**
Antoine Sarbinowski, Laboratoire d'Informatique, de Modélisation et d'optimisation des Systèmes

09:52 - 10:15 **Owning or sharing autonomous vehicles: comparing different ownership and usage scenarios**
Abood Mourad, Laboratoire Génie Industriel, Institut de Recherche Technologique SystemX

10:15 - 10:37 **Optimizing Real Time Operations of One-way Electric Carsharing Systems**
Burak Boyacı, Lancaster University Management School, Department of Management Science, Centre for Transport and Logistics

10:37 - 11:00 **Solving the one-commodity pickup and delivery location-routing problem by simulated annealing**
Vincent F. Yu, National Taiwan University of Science and Technology

WA5: Freight Transportation Room: 02A00

09:30 - 09:52 **Multi-Depot Inventory Routing Problem in the last-mile delivery: a case of study**
Annarita De Maio, Università della Calabria

09:52 - 10:15 **Air cargo rescheduling for demand fluctuations considering transshipments**
Homero Larrain, Pontificia Universidad Católica de Chile

10:15 - 10:37 **Scheduling synchromodal freight transport using Approximate Dynamic Programming**
Arturo Pérez Rivera, University of Twente - Department of Industrial Engineering and Business Information Systems

10:37 - 11:00 **The vehicle routing problem with time windows and a fragility constraint**
Fausto Errico, Ecole de Technologie Supérieure, Groupe d'Études et de Rercherche en Analyse des Décisions

WA6: Real Road Networks Room: 02A16

09:30 - 09:52 **An Open Source Tool for Generating Arc Routing Instances from Real Street Data**
Oliver Lum, University of Maryland, Applied Mathematics and Scientific Computation

09:52 - 10:15 **System optimal routing of traffic flows with user constraints using linear programming**
Valentina Morandi, University of Brescia

10:15 - 10:37 **Improving a city road network for the Multi-Depot Vehicle Routing Problem**
Corrinne Luteyn, KU Leuven Mobility Research Centre - CIB

10:37 - 11:00 **Optimizing Link Strengthening Decisions to Improve Post-Disaster Road Network Accessibility**
Eda Yucel, TOBB University of Economics and Technology

13:45-15:15

WB1: TSP Variants Room: KC07

13:45 - 14:07 **Orienteering with synchronization constraints in a telescope scheduling problem**
Jorge Riera-Ledesma, Departamento de Ingeniería Informática y de Sistemas, Universidad de La Laguna

14:07 - 14:30 **On solvable cases of the 2-period-balanced-TSP and benchmark test problems**
Vladimir Deineko, Warwick Business School

14:30 - 14:52 **A Lagrange Relaxation for the Orienteering Problem with Hotel Selection and Time Windows**
Ali Divsalar, Babol Noshirvani University of Technology

14:52 - 15:15 **Exact algorithms for the traveling salesman problem with time-dependent service times**
Valentina Cacchiani, DEI, University of Bologna

WB2: Green VRPs and Logistics Room: 01A33

13:45 - 14:07 **Solving the Multi-Depot Vehicle Routing Problem with Sustainability Indicators**
Lorena Reyes-Rubiano, Public University of Navarra

14:07 - 14:30 **Combining pickups and deliveries in vehicle routing -- An assessment of carbon emission effects**
Marcel Turkensteen, Aarhus University

14:30 - 14:52 **Production routing problem with emission minimization**
Leandro Coelho, Laboratoire CIRRELT Université Laval Quebec

WB3: Heuristics Room: 02A33

13:45 - 14:07 **An approach for an Inventory Routing Problem presented in the VeRoLog Solver Challenge 2017**
Alina-Gabriela Dragomir, University of Vienna

14:07 - 14:30 **The r-Depot Interdiction Vehicle Routing Problem with Demand Outsourcing**
Deniz Aksen, Koç University

14:30 - 14:52 **Minimizing Total Latency in Post-disaster Debris Removal**
Meraj Ajam, Koç University

14:52 - 15:15 **An integrated framework for bus driver rostering and re-rostering**
Marta Mesquita, Centro de Matemática, Aplicações Fundamentaise Investigação Operacional, Instituto Superior de Agronomia, Universidade de Lisboa

WB4: Stochastic VRPs Room: 02A24

13:45 - 14:07 **Fairness Aspects of Selective Customer Acceptance Mechanisms in Dynamic Vehicle Routing**
Ninja Soeffker, Technische Universität Braunschweig

14:07 - 14:30 **New Modeling and Solution Approaches for the Vehicle Routing Problem with Stochastic Demands**
Alexandre Florio, University of Vienna

14:30 - 14:52 **Stochastic programming approach for the coupled problem of pre-positioning and distributing resources for disaster response under uncertain demand and travel times**
Camilo Gomez, Department of Industrial Engineering Universidad de los Andes, Center for Applied Optimization and Probability

WB5: City Logistics Room: 02A16

13:45 - 14:07 **Vehicle repositioning within a city**
Mareike Stuecken, University Bielefeld, Department of Business Administration and Economics

14:07 - 14:30 **A new mixed integer programming formulation for the vehicle routing problem with drones**
Felix Tamke, Technische Universität Dresden

14:30 - 14:52 **The vehicle routing problem with locker boxes**
Jasmin Grabenschweiger, University of Vienna

WB6: Routing with Synchronization Room: 05A24

13:45 - 14:07 **Driver and Vehicle Routing Problem**
Bencomo Domínguez-Martín, Departamento de Matemáticas, Estadística e Investigación Operativa, Universidad de La Laguna

14:07 - 14:30 **Optimizing Domestic Road Freight Operations of a 3PL Carrier in Turkey**
Onur Can Saka, Borusan R&D, Koç University

14:30 - 14:52 **A Routing Problem for Restoring Interdependent Infrastructure Systems**
Dilek Gunnec, Department of Industrial Engineering, Ozyegin University

14:52 - 15:15 **Multi-vehicle prize collecting arc routing for connectivity problem**
Vahid Akbari, MEF University