



ECCO XXVIII - 2015

28th Conference of the European Chapter on Combinatorial Optimization

*Dept. of Economics and Business
University of Catania
May 28th - 30th, 2015*



Program Committee

Salvatore Greco (Chairman)	University of Catania & University of Portsmouth
Benedetto Matarazzo (Chairman)	University of Catania
Jacek Blazewicz	Poznan University of Technology
Van-Dat Cung	Universite de Grenoble
Alain Hertz	Ecole Polytechnique de Montréal
Silvano Martello	University of Bologna
Paolo Toth	University of Bologna

Organizing Committee

Salvatore Greco (Chairman)	University of Catania & University of Portsmouth
Benedetto Matarazzo (Chairman)	University of Catania
Silvia Angilella	University of Catania
Salvatore Corrente	University of Catania
Alfio Giarlotta	University of Catania

Contents

1	Location and Transportation	3
1.1	Conference Venue and local information	3
1.2	Travel to Catania	4
1.3	Transport from the airport to the conference venue	4
2	Schedule Overview	5
2.1	Registration	5
3	Social Program	6
4	Session Overview	7
4.1	Thursday, May 28th, 2015	7
4.2	Friday, May 29th, 2015	14
4.3	Saturday, May 30th, 2015	15
5	Abstracts	19
5.1	Thursday Morning Plenary Talk	19
5.2	Thursday Morning Sessions	19
5.3	Thursday Afternoon Plenary Talk	31
5.4	Thursday Afternoon Sessions	32
5.5	Friday Morning Plenary Talk	48
5.6	Friday Morning Sessions	49
5.7	Saturday Morning Plenary Talk	56
5.8	Saturday Morning Sessions	57

1. Location and Transportation

1.1 Conference Venue and local information

The conference will take place in Palazzo delle Scienze. It is located in the centre of Catania (Corso Italia, 55), close to the court, and was completed in the 1940. Today, it is the venue of Department of Economics and business.

The University of Catania is the oldest university in Sicily, and the 13th oldest in Italy. Its establishment dates back to 1434. It is composed of twenty departments, and students attending its courses are about 60,000. Catania is the second most populated city of Sicily and it is sited at the foot of Etna, the highest active volcano in Europe born from a submarine eruption 500-600 thousand years ago, and it is on the Ionian sea. The rich history and culture of the town is due to different occupations of Greeks, Romans, Arabs, Normans, Svevians, Aragonites, Angioi and Spanish, bringing with them their uses and knowledge inherited from Catania. Monuments and churches present in the city are the result of these different cultures. The city centre has been inserted in the World Heritage list of UNESCO and many important monuments can be visited there like the Duomo of Catania, Piazza Stesicoro, Ursino Castle, Palazzo del Seminario, Porta Uzeda, Palazzo degli Elefanti, the Cathedral, piazza teatro Bellini, Benedettini monastery only to mention some of them. Some interesting sight-seeing walks of the town can be visited at the following webpage.

Catania is well connected with many other interesting sites. Buses for Etna, the airport, Palermo and various nearby towns depart from the squares near the railway station (there are several different bus lines with offices in front of the main square). Fontanarossa Airport is only about 20 minutes from Catania. There are also fairly frequent train departures to Taormina, Siracusa, Messina and the mainland. From Catania you can reach other wonderful places to visit and enjoy: Acitrezza, Aci Castello, Taormina for their seaside; Enna, the highest Italian province (931 metres), Piazza Armerina very well known for its churches and mosaics, Modica for the baroque churches and its chocolate well-known over the world, Siracusa for its archeological sites and museums, Ragusa, Noto, Erice, and many other wonderful places.

If you would like to combine good views to good dishes, then Catania is perfect for your scope. At every corner of the town you can find places where you can taste delicious plates like Pasta Norma (from one of the finest works of the famous composer Vincenzo Bellini), "arancini" (very tasteful rice balls), "pasta con le sarde", caponata, crespelle, "cannoli di ricotta", cassata, dishes based on the original pistacchio of Bronte and many other dishes.

1.2 Travel to Catania

The airport of Catania (one airport under two names: “Vincenzo Bellini”, new name, or “Fontanarossa”, former name) is well connected by several daily flights from the airports of Roma or Milano and other many Italian airports. There are also direct flights from/to some major European cities (London, Paris, Bruxelles, Munich, Madrid, Barcelona, Zurich, etc.).

1.3 Transport from the airport to the conference venue

Arriving at the airport of Catania you can take the city bus Alibus (there is one every 20 minutes) to reach the conference venue (Corso Italia stop) or the other suggested hotels (piazza Trento and piazza Verga stop), or you can take a taxi. Conference participants can also land to Palermo airport or to Trapani airport. If you land to Trapani airport, first you have to go to Palermo by bus and then to reach Catania you can take a bus. After arriving at the railway station you need to take the tube or the bus to reach conference venue (Palazzo delle Scienze) or the hotels.

2. Schedule Overview

Wednesday, May, 27th	16:00 - 19:30	Registration opens
Thursday, May, 28th	09:00 - 09:30	Conference Opening
	09:30 - 10:30	Plenary Talk by Jack Edmonds Coffee Break
	11:00 - 12:30	Morning Sessions Lunch Break
	14:00 - 15:00	Plenary Talk by Erwin Pesch Coffee Break
	15:30 - 17:30	Afternoon Sessions
Friday, May, 29th	09:00 - 10:00	Plenary Talk by Roman Słowiński Coffee Break
	10:30 - 12:00	Morning Sessions Lunch Break
	14:30 - 23:00	Social Activities
Saturday, May, 30th	09:00 - 10:00	Plenary Talk by Tamás Kis Coffee Break
	10:30 - 12:30	Morning Sessions
	12:30 - 12:45	Closing Session
	12:45 - 14:00	Lunch Break

Your name badge serves as a coffee and lunch voucher.

2.1 Registration

Conference material will be provided upon check-in at our registration desk. You can check in to the conference at the conference venue starting from Wednesday Afternoon. Last-minute changes to the conference program will be posted at the registration desk. If you need help with anything please also report to the registration desk.

Wednesday, May 27th	16:00 - 19:30	<i>Palazzo delle Scienze, Corso Italia 55, Catania</i>
Thursday, May 28th	08:30 - 17:30	<i>Palazzo delle Scienze, Corso Italia 55, Catania</i>
Friday, May 29th	08:30 - 14:30	<i>Palazzo delle Scienze, Corso Italia 55, Catania</i>

3. Social Program

The social activities, that will take place in Taormina on Friday, May 29th, will start at 14:30 from the “Palazzo delle Scienze”.

We shall visit the Ancient Greek theatre and, then, we shall enjoy together the social banquet that will be held at the “Porta Messina” restaurant.

4. Session Overview

4.1 Thursday, May 28th, 2015

Conference Opening

Chair: Salvatore Greco, Benedetto Matarazzo

09:00 - 09:30	Michela Cavallaro	Director of the Department of Economics and Business / University of Catania
	Silvano Martello	ECCO board

Plenary Talk

Chair: Silvano Martello

09:30 - 10:30	Existential Polytime and Polyhedral Combinations	(→p.19)
	<i>Jack Edmonds (York University)</i>	

Thursday, May 28th, 2015: Morning Sessions

Thursday 11:00 - 12:30, Session 1

Chair: Chris Potts

11:00 - 11:30	Novel Formulations for General Stackelberg Games and Stackelberg Security Games	(→p.19)
	<i>Carlos Casorrán-Amilburu, Bernard Fortz, Martine Labbé and Fernando Ordonez</i>	
11:30 - 12:00	Pairing Games and Markets	(→p.19)
	<i>Ahmet Alkan and Alparslan Tuncay</i>	
12:00 - 12:30	Supplier Competition with Option Contracts for Discrete Blocks of Capacity	(→p.20)
	<i>Edward Anderson, Bo Chen and Lusheng Shao</i>	

Thursday 11:00 - 12:30, Session 2

Chair: Alain Hertz

11:00 - 11:30	Dominating induced matchings in graphs containing no long claw	(→p.21)
	<i>Alain Hertz, Vadim Lozin, Bernard Ries, Victor Zamaraev and Dominique de Werra</i>	
11:30 - 12:00	Asymptotically optimal algorithm for random UNI(0,1) k-cycles cover of the undirected graph	(→p.21)
	<i>Edward Kh. Gimadi</i>	
12:00 - 12:30	Complexity results on dominating codes in graphs	(→p.21)
	<i>Olivier Hudry and Antoine Lobstein</i>	

Thursday 11:00 - 12:30, Session 3

Chair: Hande Yaman

11:00 - 11:30	Traveling Salesman Problem with Sales	(→p.22)
	<i>Hande Yaman</i>	
11:30 - 12:00	Bin Packing and Cutting Stock Problems: Mathematical Models and Exact Algorithms	(→p.23)
	<i>Maxence Delorme, Manuel Iori and Silvano Martello</i>	
12:00 - 12:30	Online Algorithms for the Newsvendor Problem	(→p.23)
	<i>Esther Mohr</i>	

Thursday 11:00 - 12:30, Session 4

Chair: Vitaly Strusevich

11:00 - 11:30	Differential Approximation Schemes for Minimizing Quadratic Boolean Functions and Their Scheduling Applications	(→p.24)
	<i>Rebecca Sarto Basso and Vitaly Strusevich</i>	
11:30 - 12:00	Scheduling fixed position maintenance operations	(→p.25)
	<i>Maciej Drozdowski, Florian Jaehn and Radoslaw Paszkowski</i>	
12:00 - 12:30	Metaheuristics for discrete-continuous project scheduling with activities of identical processing rates	(→p.25)
	<i>Grzegorz Waligóra</i>	

Thursday 11:00 - 12:30, Session 5

Chair: Marek Mika

-
- | | | |
|---------------|---|---------|
| 11:00 - 11:30 | Robust Multicast Capacity with Network Coding | (→p.27) |
| | Mohammad Raayatpanah, Hossein Ghasvari and Salman Khodayifar | |
| 11:30 - 12:00 | Project scheduling problem with transportation network and on/off energy consumption model | (→p.27) |
| | <i>Marek Mika</i> | |
| 12:00 - 12:30 | Polynomial Time Approximation Scheme for Euclidean Minimum-weight k-Size Cycle Cover Problem on the plane | (→p.28) |
| | <i>Michael Khachay and Katherine Neznakhina</i> | |
-

Thursday 11:00 - 12:30, Session 6

Chair: Peter Gritzmann

-
- | | | |
|---------------|--|---------|
| 11:00 - 11:30 | Approximation of the Largest Common Point Set Problem for an Application in Sheet Metal Forming | (→p.28) |
| | Peter Gritzmann, <i>Michael Ritter</i> and Felix Schmiedl | |
| 11:30 - 12:00 | FPTAS for special case of a quadratic Euclidean bi-partitioning problem | (→p.29) |
| | Alexander Kelmanov and <i>Vladimir Khandeev</i> | |
| 12:00 - 12:30 | NP-hardness of Euclidean Balanced Variance-based bi-Clustering Problem with Given Center of one Cluster | (→p.29) |
| | Alexander Kelmanov and <i>Artem Pyatkin</i> | |
-

Thursday 11:00 - 12:30, Session 7

Chair: Gebrail Bekdaş

11:00 - 11:30	Optimization of Tuned Mass Dampers for Mechanical Systems Subjected to Different Excitations	(→p.30)
	<i>Gebrail Bekdaş and Sinan Melih Nigdeli</i>	
11:30 - 12:00	The p-maxian Problems	(→p.30)
	<i>Mohammadreza Galavii</i>	
12:00 - 12:30	Efficiency of computer-aided platforms in supporting optimisation of media planning	(→p.31)
	<i>Włodzimierz Rembisz, Szczepan Ruman and Jakub Gwizdak</i>	

Plenary Talk

Chairman: Jacek Blazewicz

14:00 - 15:00	Optimization Problems in Intermodal Transport	(→p.31)
	<i>Erwin Pesch (Universität Siegen)</i>	

Thursday, May 28th, 2015: Late Afternoon Sessions

Thursday 15:30 - 17:30, Session 1

Chair: Hadrien Mélot

15:30 - 16:00	Minimum number of non-equivalent colorings for graphs with maximum degree at most $n-3$	(→p.32)
	<i>Romain Absil, Eglantine Camby, Alain Hertz and Hadrien Mélot</i>	
16:00 - 16:30	Cycle polytope on bipartite graph	(→p.32)
	<i>Lamia Aoudia, Méziane Älder and Viet Hung Nguyen</i>	
16:30 - 17:00	Adapted Floyd-Warshall Algorithm for Solving a Problem of Traveling Visitor	(→p.33)
	<i>Milan Djordjevic</i>	
17:00 - 17:30	Linearizable quadratic minimum spanning tree problems and related polynomially solvable special cases	(→p.33)
	<i>Ante Custic and Abraham Punnen</i>	

Thursday 15:30 - 17:30, Session 2

Chair: Malgorzata Sterna

15:30 - 16:00	Late Work Scheduling in On-Line Mode (→p.34) <i>Malgorzata Sterna, Xin Chen, Xin Han and Jacek Blazewicz</i>
16:00 - 16:30	On polynomial asymptotically optimal algorithms for some hard routing problems (→p.34) <i>Edward Kh. Gimadi and Oxana Tsidulko</i>
16:30 - 17:00	Exact solution procedures for the resource-constrained project scheduling problem with general temporal constraints and calendars (→p.35) <i>Stefan Kreter and Jürgen Zimmermann</i>
17:00 - 17:30	New mathematical models for order acceptance and scheduling problems (→p.36) <i>Saeed Saffari and Ceyda Oguz</i>

Thursday 15:30 - 17:30, Session 3

Chair: Gebrail Bekdaş

15:30 - 16:00	A Memetic Algorithm for the periodic Inventory Routing Problem (IRP) (→p.37) <i>Ioannis Mitsopoulos and Stella Sofianopoulou</i>
16:00 - 16:30	Variable neighborhood search heuristics for a test assembly design problem (→p.37) <i>Mariona Vilà and Jordi Pereira</i>
16:30 - 17:00	Optimum Structural Design of Pin-Jointed Plane Frames Using the Flower Pollination Algorithm (→p.38) <i>Sinan Melih Nigdeli, Gebrail Bekdaş and Xin-She Yang</i>
17:00 - 17:30	Heuristic approach for peptide assembly problem (→p.38) <i>Marcin Borowski</i>

Thursday 15:30 - 17:30, Session 4

Chair: Jadranka Skorin-Kapov

15:30 - 16:00	Reliability Evaluation for coded packet networks <i>Mohammad Raayatpanah</i>	(→p.39)
16:00 - 16:30	On Monotonicity in Steiner Tree Network Games <i>Darko Skorin-Kapov and Jadranka Skorin-Kapov</i>	(→p.39)
16:30 - 17:00	Network construction problems with due dates <i>Igor Averbakh and Jorge Pereira</i>	(→p.40)
17:00 - 17:30	A fast polynomial time algorithm for minimum flow problem on dynamic network flows with time varying bounds <i>Salman Khodayifar</i>	(→p.40)

Thursday 15:30 - 17:30, Session 5

Chair: Leo Liberti

15:30 - 16:00	Generalized power diagrams, balanced k-means, and the representation of polycrystals <i>Peter Gritzmann</i>	(→p.41)
16:00 - 16:30	Generalizing facets of the Hop-Constrained Path Polytope <i>Wolfgang F. Riedl</i>	(→p.41)
16:30 - 17:00	Discretization vertex orders in distance geometry <i>Leo Liberti, Andrea Cassioli, Oktay Gunluk and Carlile Lavor</i>	(→p.41)
17:00 - 17:30	A discrete optimization approach for tracking particles in plasma <i>Andreas Alpers and Peter Gritzmann</i>	(→p.42)

Thursday 15:30 - 17:30, Session 6

Chair: Bo Chen

15:30 - 16:00	Valid inequalities for the pooling problem	(→p.42)
	<i>Claudia D'Ambrosio, James Luedtke and Jeff Linderoth</i>	
16:00 - 16:30	An Approximation for Single-Channel Multi-Server Queues with Generally Distributed Inter-Arrival and Service Times	(→p.43)
	<i>Carlos Chaves and Abhijit Gosavi</i>	
16:30 - 17:00	Sectorization: measures and an electromagnetism based approach	(→p.43)
	<i>José Soeiro Ferreira and Ana Maria Rodrigues</i>	
17:00 - 17:30	Benders Cuts for Power System Design - A Geometric Perspective	(→p.44)
	<i>Paul Stursberg</i>	

Friday 15:30 - 17:30, Session 7

Chair: Marta Szachniuk

15:30 - 16:00	Combinatorial models of the protein substructures alignment	(→p.44)
	<i>Piotr Lukasiak, Maciej Antczak and Marta Kasprzak</i>	
16:00 - 16:30	Applications of RNA trigonometric model	(→p.45)
	<i>Marta Szachniuk, Tomasz Zok and Maciej Antczak</i>	
16:30 - 17:00	New in silico approach to assess RNA secondary structures with non-canonical base pairs	(→p.46)
	<i>Natalia Szostak, Agnieszka Rybarczyk, Maciej Antczak, Tomasz Zok, Mariusz Popena, Ryszard Adamiak, Jacek Blazewicz, and Marta Szachniuk</i>	
17:00 - 17:30	De novo genome assembly with the acceleration of GPU computing	(→p.47)
	<i>Aleksandra Swiercz, Michal Kierzynka, Wojciech Frohmberg, Piotr Zurkowski, Jacek Blazewicz, Marta Kasprzak and Pawel Wojciechowski</i>	

4.2 Friday, May 29th, 2015

Plenary Talk

Chairman: Benedetto Matarazzo

- 09:00 - 10:00 **Preference-driven evolutionary multiobjective combinatorial optimization with Choquet integral preference model** (→p.48)
Roman Słowiński (Poznan University of Technology and Polish Academy of Sciences)
-

Friday, May 29th, 2015: Morning Sessions

Friday 10:30 - 12:00, Session 1

Chair: Jan Weglarz

- 10:30 - 11:00 **Heuristic approaches for solving a machine scheduling problem with additional doubly-constrained resource** (→p.49)
Rafal Rozycki and Jan Weglarz
- 11:00 - 11:30 **Stability Analysis of Scenarios based Solutions for Robust Unrelated Parallel Machines Scheduling** (→p.50)
Widad Naji, Van-Dat Cung and Marie-Laure Espinouse
- 11:30 - 12:00 **Single machine scheduling to minimize total earliness-tardiness with unavailability period** (→p.52)
Enrique Gerstl and Gur Mosheiov
-

Friday 10:30 - 12:00, Session 2

Chair: Michel Minoux

Friday 10:30 - 12:00, Session 3

Chair: Edward Kh. Gimadi

10:30 - 11:00	A MIP formulation and heuristic for a dynamic distribution network design problem - Case study in the automotive industry <i>Mouna Kchaou Boujelben, Celine Gicquel and Michel Minoux</i>	(→p.53)
11:00 - 11:30	An Exact Enumerative Algorithm for Counting Independent Sets <i>Guillermo De Ita, Raymundo Marcial-Romero and Yolanda Moyao</i>	(→p.54)
11:30 - 12:00	Euclidean k-cycles cover problem on maximum: asymptotically optimal approach <i>Edward Kh. Gimadi and Ivan A. Rykov</i>	(→p.55)

Friday 10:30 - 12:00, Session 4

Chair: Mario Pavone

10:30 - 11:00	Optimization-based heuristic for the Asymmetric Capacitated Vehicle Routing Problem <i>Valeria Leggieri and Mohamed Haouari</i>	(→p.55)
11:00 - 11:30	An intelligent extension of Variable Neighbourhood Search for labelling graph problems <i>Sergio Consoli and José Andrés Moreno Pérez</i>	(→p.55)
11:30 - 12:00	A binary artificial bee colony algorithm for optimal wind turbine placement in wind farms <i>Alkin Yurtkuran and Erdal Emel</i>	(→p.56)

4.3 Saturday, May 30th, 2015

Plenary Talk

Chairman: Salvatore Greco

09:00 - 10:00	Machine scheduling with non-renewable resources <i>Tamás Kis (Hungarian Academy of Sciences)</i>	(→p.56)
---------------	--	---------

Saturday, May 30th, 2015: Morning Sessions

Saturday 10:30 - 12:30, Session 1

Chair: Paolo Toth

-
- | | | |
|---------------|--|---------|
| 10:30 - 11:00 | A Unified Method for Constrained Assortment and Pricing Problems under the Consumer Choice Models | (→p.57) |
| | <i>Ruxian Wang</i> | |
| 11:00 - 11:30 | Rolling horizon approaches to the aircraft sequencing problem | (→p.57) |
| | Fabio Furini, Martin Philip Kidd, Carlo Alfredo Persiani and <i>Paolo Toth</i> | |
| 11:30 - 12:00 | Workload Balancing at Intermodal Container Terminals and Sea Ports | (→p.58) |
| | <i>Dominik Kress</i> , Sebastian Meiswinkel and Erwin Pesch | |
| 12:00 - 12:30 | Polynomially Solvable Knapsack Type Problems with Box Constraints on Combinatorial Structures | (→p.58) |
| | <i>Evgeny Gurevsky</i> , Sergey Kovalev and Mikhail Kovalyov | |
-

Saturday 10:30 - 12:30, Session 2

Chair: José Figueira

10:30 - 11:00	Resource constrained multiobjective linear assignment problem	(→p.59)
	<i>Zohra Aoudia and Meziane Aider</i>	
11:00 - 11:30	Linear bilevel programs with multiple objectives at both levels	(→p.59)
	<i>Majid Zohrehbandian</i>	
11:30 - 12:00	Multi-objective optimization in partitioning the healthcare system of Parana State in Brazil	(→p.60)
	<i>José Figueira, Maria Teresinga Arns Steiner, Dilip Datta, Pedro José Steiner Neto and Cassius Tadeu Scarpin</i>	
12:00 - 12:30	Warehouse Selection based on Fuzzy ELECTRE	(→p.60)
	<i>Babak Daneshvar Rouyendegh and Yousef Daneshvar Rouyandozagh</i>	

Saturday 10:30 - 12:30, Session 3

Chair: Van-Dat Cung

10:30 - 11:00	Mathematical models and approaches in problem of volume planning of ISS cosmonauts trainings	(→p.61)
	<i>Sergey Bronnikov, Alexander Lazarev, Nikolai Morozov, Maksim Kharlamov and Denis Yadrentsev</i>	
11:00 - 11:30	Analytical Results for Online Conversion - An Introduction to Balanced Analysis	(→p.61)
	<i>Günter Schmidt</i>	
11:30 - 12:00	Advanced web-site based trading platforms: Cloud Brokering, Internet Shopping, and more...	(→p.62)
	<i>Jedrzej Musial</i>	

Saturday 10:30 - 12:30, Session 4

Chair: Armen Asratian

10:30 - 11:00	A generic approach for heterogeneous scheduling	(→p.63)
	<i>Giorgio Lucarelli, Denis Trystram and Frederic Wagner</i>	
11:00 - 11:30	Single machine scheduling: an upper bound on maximum lateness	(→p.63)
	<i>Alexander Lazarev and Dmitry Arkhipov</i>	
11:30 - 12:00	Transformations of edge colorings of graphs and their application in scheduling	(→p.64)
	<i>Armen Asratian and Carl Johan Casselgren</i>	

Saturday 10:30 - 12:30, Session 5

Chair: Gur Mosheiov

10:30 - 11:00	Hybrid approach for the reconstruction of homogenous images	(→p.64)
	<i>Fethi Jarray and Ghassen Tlig</i>	
11:00 - 11:30	Tag clouds for the web as an optimization problem	(→p.64)
	<i>Jakub Marszalkowski, Łukasz Rusiecki, Hubert Narożny and Maciej Drozdowski</i>	
11:30 - 12:00	Interdiction of a CPM Project and Its Implications Within the Scope of Project Management	(→p.65)
	<i>Fatih Kasimoglu, Ibrahim Akgun</i>	
