



ISCO 2018

**5th International Symposium
on Combinatorial Optimization**

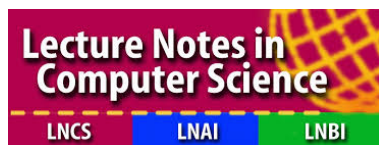
PROGRAM

*Marrakesh, Morocco
April 11-13, 2018*

Organizing Institutions



Ecole nationale
supérieure
d'informatique et
d'analyse des
systèmes (ENSIAS)



Lecture Notes in
Computer Science



Université
Mohammed V de
Rabat



Laboratory for
Analysis and
Modelling of
Decision Support
Systems



Paris Dauphine
University

ISCO 2018 Conference

5th International Symposium on Combinatorial Optimization

April 11-13 2018, Marrakesh, Morocco

Program

Wednesday, April 11			
8:00-9:00	Registration		
9:00-9:30	Opening Session		
9:30-10:30	Invited Lecture 1: Marcia Fampa Room Mimosa		
10:30-11:00	Coffee break		
11:00-12:45	WEA1 - Room Mimosa 1	WEA2 - Room Mimosa 2	WEA3 - Room l'Oranger
	Polyhedral Approaches I	Approximation Algorithms I	Algorithms on Graphs
12:45-14:15	Lunch		
14:15-16:00	WEB1 - Room Mimosa 1	WEB2 - Room Mimosa 2	WEB3 - Room l'Oranger
	Polyhedral Combinatorics	Mixed Integer Programming I	Models and Algorithms for Network Optimization problems
16:00-16:30	Coffee break		
16:30-18:15	WEC1 - Room Mimosa 1	WEC2 - Room Mimosa 2	WEC3 - Room l'Oranger
	Polyhedral Approaches II	Approximation Algorithms II	Metaheuristics
18:30	Welcome reception		

Thursday, April 12			
8:30-9:30	Invited Lecture 2: Friedrich Eisenbrand Room Mimosa		
9:30-10:45	THA1 - Room Mimosa 1	THA2 - Room Mimosa 2	THA3 - Room l'Oranger
	Graph Structures and Polyhedra	Scheduling	Network Design
10:45-11:15	Coffee break		
11:15-13:00	THB1 - Room Mimosa 1	THB2 - Room Mimosa 2	THB3 - Room l'Oranger
	Integer Programming Theory	Routing Problems	Graph Structures
13:00-14:30	Lunch		
14:30-18:30	Social Event: Marrakesh Sightseeing Tour		
20:00	Gala Dinner		

Friday, April 13			
9:00-10:00	Invited Lecture 3: Bernard Gendron Room Mimosa		
10:00-10:30	Coffee break		
10:30-12:15	FRA1 - Room Mimosa 1	FRA2 - Room Mimosa 2	FRA3 - Room l'Oranger
	Online Algorithms	Traveling Salesman Problem	Mixed Integer Programming II
12:15-13:45	Lunch		
13:45-15:30	FRB1 - Room Mimosa 1	FRB2 - Room Mimosa 2	FRB3 - Room l'Oranger
	Graph Partitioning	Polyhedral Approaches III	Mixed Integer Programming III
15:30-16:00	Coffee break		
16:00-17:00	Invited Lecture 4: Franz Rendl Room Mimosa		
17:00-17:30	Closing session		

Plenary Lectures

Challenges in MINLP - The Euclidean Steiner Tree Problem in n-dimensional space

Marcia Fampa (Federal University of Rio de Janeiro, Brazil)

Room: *Mimosa*

Chair: *Jon Lee*

Proximity results and faster algorithms for Integer Programming using the Steinitz Lemma

Friedrich Eisenbrand (EPFL, Lausanne, Switzerland)

Room: *Mimosa*

Chair: *Giovanni Rinaldi*

Lagrangian Relaxations and Reformulations for Network Design

Bernard Gendron (University of Montreal, Canada)

Room: *Mimosa*

Chair: *Marcia Fampa*

Order through partition: A semidefinite Programming Approach

Franz Rendl (University of Klagenfurt, Graz, Austria)

Room: *Mimosa*

Chair: *Abdellatif El Afia*

Sessions

WEA1	Polyhedral Approaches I	Mimosa 1
WEA2	Approximation Algorithms I	Mimosa 2
WEA3	Algorithms on Graphs	l'Oranger
WEB1	Polyhedral Combinatorics	Mimosa 1
WEB2	Mixed Integer Programming I	Mimosa 2
WEB3	Models and Algorithms for Network Optimization problems	l'Oranger
WEC1	Polyhedral Approaches II	Mimosa 1
WEC2	Approximation Algorithms II	Mimosa 2
WEC3	Metaheuristics	l'Oranger
THA1	Graph Structures and Polyhedra	Mimosa 1
THA2	Scheduling	Mimosa 2
THA3	Network Design	l'Oranger
THB1	Integer Programming Theory	Mimosa 1
THB2	Routing Problems	Mimosa 2
THB3	Graph Structures	l'Oranger
FRA1	Online Algorithms	Mimosa 1
FRA2	Traveling Salesman Problem	Mimosa 2
FRA3	Mixed Integer Programming II	l'Oranger
FRB1	Graph Partitioning	Mimosa 1
FRB2	Polyhedral Approaches III	Mimosa 2
FRB3	Mixed Integer Programming III	l'Oranger

WEA1 : Polyhedral Approaches I

Room Mimosa 1

Chair: Nelson Maculan

- Refining Column Generation Subproblems Using Classical Benders' Cuts
Jonas Witt, Marco Lübbecke, Stephen J. Maher.
- An exact column generation-based algorithm for Bi-Objective Vehicle Routing Problems
Estèle Glize, Nicolas Jozefowiez, Sandra Ulrich Ngueveu.
- The Stop Number Minimization Problem: complexity and polyhedral analysis
Mourad Baiou, Rafael Colares, Hervé Kerivin.
- The Next Release Problem: Complexity, Exact Algorithms and Computations
José Carlos Almeida Jr., Felipe De C. Pereira, Marina V. A. Reis, Breno Piva.

WEA2 : Approximation Algorithms I

Room Mimosa 2

Chair: Igor Malinovic

- Efficient Algorithms for Measuring the Funnel-likeness of DAGs
Marcelo Garlet Millani, Hendrik Molter, Rolf Niedermeier, Manuel Sorge.
- On bounded pitch inequalities for the min-knapsack polytope
Yuri Faenza, Igor Malinovic, Monaldo Mastrolilli, Ola Svensson.
- Approximating the Caro-Wei Bound for Independent Sets in Graph Streams
Graham Cormode, Jacques Dark, Christian Konrad.
- A PTAS for the Time-Invariant Incremental Knapsack problem
Yuri Faenza, Igor Malinovic.

WEA3 : Algorithms on Graphs

Room l'Oranger

Chair: Nina Chiarelli

- Efficient Algorithm for Shortest Path in Inner Dualist of Hexagonal Graphs
Faqir M Bhatti, Khawaja M Fahd.
- Graph Orientation with Splits
Yuichi Asahiro, Jesper Jansson, Eiji Miyano, Hesam Nikpey, Hirotaka Ono.
- Even flying cops should think ahead
Anders Martinsson, Florian Meier, Patrick Schnider, Angelika Steger.
- Improved Algorithms for k-Domination and Total k-Domination in Proper Interval Graphs
Valeria Alejandra Leoni, Nina Chiarelli, Tatiana Romina Hartinger, María Inés Lopez Pujato, Martin Milanic.

WEB1 : Polyhedral Combinatorics

Organized by Annegret Wagler

Room Mimosa 2

Chair: Annegret Wagler

- The distance polytope for the vertex coloring problem
Bruno Dias, Rosiane de Freitas, Nelson Maculan, Javier Marrenco.
- Computing the volume of the convex hull of the graph of a trilinear monomial using mixed volumes
Emily Speakman, Gennadiy Averkov.
- A Polyhedral Study of the Connected Assignment Problem in Arrays
Manoel Campelo, Joel Soares.
- Lovász-Schrijver PSD-operator on some graph classes defined by clique cutsets
Annegret Wagler.

WEB2 : Mixed Integer Programming I

Room Mimosa 1

Chair: Lilia Zaourar

- Team Formation on Social Networks
Nihal Berktas, Hande Yaman.
- A New Mixed Integer Linear Program for the Graph Edit Distance Problem
Mostafa Darwiche, Romain Raveaux, Donatello Conte, Vincent T'Kindt.
- Finding Minimum Stopping and Trapping Sets: An Integer Linear Programming Approach
Alvaro Velasquez, K. Subramani, Steven Drager.
- A branch-and-bound procedure for the robust cyclic job shop problem
Idir Hamaz, Laurent Houssin, Sonia Cafieri.

WEB3 : Models and Algorithms for Network Optimization problems

Organized by Paolo Toth

Room l'Oranger

Chair: Paolo Toth

- A p-Median Based Exact Method for the Large-Scale Optimal Diversity Management Problem
Adriano Masone, Antonio Sforza, Claudio Sterle, Igor Vasilyev, Anton Ushakov.
- On the Optimal Cost of the Transportation Problem with Interval Right-Hand-Sides
Raffaele Cerulli, Ciriaco D'Ambrosio, Monica Gentili.
- An exact algorithm for the split-demand one-commodity pickup-and-delivery travelling salesman problem
Hipolito Hernandez Perez, Juan José Salazar González.
- A MILP Formulation for a Multi-Tiered Vehicle Routing Problem with Global Cross-Docking
Anthony Smith, Paolo Toth, Jan H. van Vuuren.

WEC1 : Polyhedral Approaches II

Room Mimosa 1

Chair: Ruslan Sadykov

- The Benders Algorithm for the b-CMS Dual Problem
Eleazar Madriz, Yuri Tavares.
- Primal-dual approach to the multi-activity tour scheduling problem
Stefania Pan, Mahuna Akplogan, Lucas Létocart, Nora Touati, Roberto Wolfler Calvo, Louis-Martin Rousseau.
- Beyond Vehicle Routing: a general purpose branch-cut-and-price code for applications where pricing is a resource constrained shortest path
Artur Pessoa, Ruslan Sadykov, Eduardo Uchoa, Francois Vanderbeck.

WEC2 : Approximation Algorithms II

Room Mimosa 2

Chair: Federico Della Croce

- Approximation algorithm for scheduling a chain of tasks on hybrid platform with energy constraint1
Massinissa Ait Aba, Lilia Zaourar, Alix Munier.
- Polytope Membership in High Dimension
Evangelos Anagnostopoulos, Ioannis Emiris, Vissarion Fisikopoulos.
- 2CSPs all are approximable within some constant differential factor
Sophie Toulouse, Jean-François Culus.
- A tight linear time $13/12$ -approximation algorithm for the P2 — — Cmax problem
Federico Della Croce, Rosario Scatamacchia, Vincent T'Kindt.

WEC3 : Metaheuristics

Room l'Oranger

Chair: Olivier Hudry

- A Heuristic for Maximising Energy Efficiency in an OFDMA System Subject to QoS Constraints
Adam Letchford, Qiang Ni, Zhaoyu Zhong.
- Multi-start local search procedure for the maximum fire risk insured capital problem
Maria Isabel Gomes, Lourdes Belchior Afonso, Nelson Chibeles-Martins, Joana Fradinho.
- Selective and dynamic distribution - Petrol Secondary Distribution
Adnane Elhilali Alaoui, Youssef Benadada.
- Descent with mutations applied to the linear order problem
Olivier Hudry.

THA1 : Graph Structures and Polyhedra

Room Mimosa 2

Chair: Denis Cornaz

- A polyhedral view to vector domination and limited packing
Jose Neto.
- Parameterized Algorithms for Module Map Problems
Frank Sommer, Christian Komusiewicz.
- The minimum rooted-cycle cover problem
Denis Cornaz, Youcef Magnouche.

THA2 : Scheduling

Room Mimosa 1

Chair: François Vanderbeck

- MIP Formulations for Just-in-Time Scheduling with Common Due-Date
Anne-Elisabeth Falq, Pierre Foulhoux, Safia Kedad-Sidhoum.
- A generalized Tool Switching Scheduling Problem with Unlimited Buffers
Khadija Hadj Salem, Yann Kieffer, Luc Libralesso.
- On scheduling a conference program
Philippe Depouilly, Laurent Facq, Adeline Fonseca, Pierre Pesneau, Issam Tahiri, Francois Vanderbeck.

THA3 : Network Design

Room l'Oranger

Chair: Nancy Perrot

- Design of Multi-Echelon, Collaborative and Sustainable Supply Chain Networks
Ouhader Hanan, El Kyal Malika.
- Polyhedral Investigation of The Proactive Countermeasure Selection Problem
Ridha Mahjoub, Mohamed Yassine Naghmouchi, Nancy Perrot.
- Domain Creation in Heterogeneous Mobile Networks: Models and Algorithms
Wesley Da Silva Coelho, Amal Benhamiche, Nancy Perrot.

THB1 : Integer Programming Theory

Room Mimosa 1

Chair: Pierre Fouilhoux

- The distance between optimal IP solutions and optimal solutions of MIP relaxations
Joseph Paat, Robert Weismantel, Stefan Weltge.
- Breaking symmetries for the UCP by intersecting the full orbitope with an hypercube face
Pascale Bendotti, Pierre Fouilhoux, Cecile Rottner.
- Supervised learning with parameter tuning in Branch-and-bound strategies
Mohamed Mustapha Kabbaj, Abdellatif El Afia.
- Characterization and Approximation of Strong General Dual Feasible Functions
Matthias Koeppel, Jiawei Wang.

THB2 : Routing Problems

Room Mimosa 2

Chair: Juan José Salazar

- Maximum concurrent flow with incomplete data
Pierre-Olivier Bauguion, Claudia D'Ambrosio, Leo Liberti.
- Jointly Optimizing Replica Placement, Requests Distribution and Server Storage Capacity on Content Distribution Networks
Raquel Gerhardt, Tiago Neves, Luis Rangel.
- The Exponent of Pheromone Level Adaptation for Ant Colony System Algorithm based Hidden Markov Model for TSP Problems
Safae Bouzbita, Abdellatif El Afia, Rdouan Faizi.

THB3 : Graph Structures

Room l'Oranger

Chair: Kathie Cameron

- Robust Matching Augmentation
Moritz Muehlenthaler, Viktor Bindewald, Felix Hommelsheim, Oliver Schaudt.
- Characterising chordal contact B_0 -VPG graphs
Flavia Bonomo, María Pía Mazzoleni, Mariano Rean, Bernard Ries.
- Cluster Editing with Vertex Splitting
Faisal Abu-Khzam, Judith Egan, Serge Gaspers, Alexis Shaw, Peter Shaw.
- A PPA Episode of Exchange Graphs
Kathie Cameron, Jack Edmonds.

FRA1 : Online Algorithms

Room Mimosa 2

Chair: Sophie Toulouse

- Online Firefighting on Trees
Pierre Coupechoux, Marc Demange, David Ellison, Bertrand Jouve.
- Online correlated orienteering on continuous surfaces
João Pedro Pedroso.
- Preemptively Guessing the Center
Christian Konrad, Tigran Tonoyan.

FRA2 : Traveling Salesman Problem

Room Mimosa 1

Chair: Raffaele Cerulli

- On the probabilistic traveling salesman problem
Soufia Benhida, Arnaud Knippel, Ahmed Mir.
- Multicommodity flow problem with sharing cost
Pierre Laroche, Sébastien Martin, Mohamed Ould.
- Bounds calculation for the Close Enough Traveling Salesman Problem
Raffaele Cerulli, Francesco Carrabs, Carmine Cerrone, Bruce Golden.

FRA3 : Mixed Integer Programming II

Room l'Oranger

Chair: Adam Letchford

- Robust Queue Constrained Packing
Christopher Bayliss, Christine Currie, Antonio Martinez-Sykora, Julia Bennell.
- An Integer Programming Approach to the Student-Project Allocation Problem with Preferences over Projects
David Manlove, Duncan Milne, Sofiat Olaosebikan.
- A Sum-of-Squares Approach to Fairness in Combinatorial Optimisation
Tolga Bektas, Adam Letchford.

FRB1 : Graph Partitionning

Organized by Sonia Haddad Vanier and Viet Hung Nguyen

Room Mimosa 1

Chair: Sonia Haddad Vanier

- Graph Partitioning for System On Chip emulation on Multi FPGA Platforms
Lilia Zaourar, Francois Galea.
- Compact MILP formulations for the p-center problem
Zacharie Ales, Sourour Elloumi.
- Integer Metric Polyhedra: MIP formulations and application to Max-Cut
Viet Hung Nguyen, Michel Minoux.
- New Partition Inequalities for the Unsplittable flow problem
Sonia Haddad Vanier, Arnaud Knippel.

FRB2 : Polyhedral Approaches III

Room Mimosa 2

Chair: Fatiha Bendali

- Alternating current optimal power flow with generator selection
Esteban Salgado, Andrea Scozzari, Fabio Tardella, Leo Liberti.
- On the split-rank of the facet defining inequalities of mixed-integer bilinear covering set
Hamidur Rahman, Ashutosh Mahajan.
- New polyhedral approach for the minimum energy symmetric network connectivity problem in wireless sensor network
Fatiha Bendali, Jean Mailfert, Mourad Baiou, Salsabil Grouche.

FRB3 : Mixed Integer Programming III

Room l'Oranger

Chair: Amel Benhamiche

- An SDP approach for minimizing convex ordered median location problems in finite dimension and with general l_t -norms.
Safae Elhaj-Ben-Ali.
- A multigraph formulation for the Generalized Minimum Spanning Tree Problem
Ernando Gomes De Sousa, Rafael Andrade, Andréa Cynthia Santos.
- A Generalization of the Minimum Branch Vertices Spanning Tree Problem
Massinissa Merabet, Jitamitra Desai, Miklos Molnar.



Invited Speakers

Friedrich Eisenbrand

(EPFL, Lausanne, Switzerland)

Marcia Fampa

(Federal Univ. of Rio de Janeiro, Brazil)

Bernard Gendron

(Univ. of Montreal, Canada)

Franz Rendl

(Univ. of Klagenfurt, Graz, Austria)

Spring School

April 9-10

*Advanced MIP Formulations
and Computations*

by **Juan Pablo Vielma**
Joey Huchette
(MIT, USA)

Conference Chairs

Abdelatif El Afia

(Mohammed V Univ., Rabat, Morocco)

Jon Lee

(Univ. of Michigan, USA)

A. Ridha Mahjoub

(Paris Dauphine Univ., France)

Giovanni Rinaldi

(IASI, Roma, Italy)



Submissions deadline

January 10

Notification to authors

February 20

Early registration deadline

March 6



Program Committee

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