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## **Programme at a glance**

| <b>Wednesday, September 5<sup>th</sup></b> |  |  |                                 |                          |   |
|--|--|--|---------------------------------|--------------------------|---|
|  | <b>Aula Embriaco</b>   | <b>Aula Caffaro</b>  | <b>Aula Doria</b>               | <b>Aula Boccanegra</b>   | <b>Aula Fieschi</b>                             |
| <b>9.00 - 10.45</b>                        | <b>Registration</b>  |  |                                 |                          |   |
| <b>10.45 - 11.30</b>                       | Opening session  |  |                                 |                          | <b>Course</b>                                   |
| <b>11.30 - 13.00</b>                       | <b>WM1</b>   | <b>WM2</b>   | <b>WM3</b>                      | <b>WM4</b>               | Quantitative methods for health care management |
|  | Simulation   | Tools for strategic decision making  | Continuous optimization         | Logistics management     |   |
| <b>13.00 - 14.15</b>                       | <b>Lunch</b>   |  |                                 |                          |   |
| <b>14.15 - 15.15</b>                       | <b>Invited lecture 1</b>   | <b>Invited lecture 2</b>   |                                 |                          | <b>Course</b>                                   |
|  | <b>M. Bertocchi</b><br>Risk management: the role of stochastic optimization and statistics | <b>M. S. Rauner</b><br>Challenges for operations research applied to health services in the 21 <sup>st</sup> century |                                 |                          | Quantitative methods for health care management |
| <b>15.15 - 16.45</b>                       | <b>WA1</b>   | <b>WA2</b>   | <b>WA3</b>                      | <b>WA4</b>               |   |
|  | Operations research and risk management  | Case studies from firms  | Nonlinear optimization 1 (PRIN) | Optimization on graphs 1 |   |
| <b>16.45 - 17.15</b>                       | <b>Coffee break</b>  |  |                                 |                          |   |
| <b>17.15 - 19.00</b>                       | <b>Round Table</b>   |  |                                 |                          | <b>Course</b>                                   |
|  | Ricerca Operativa. Cui prodest?<br>I vantaggi per aziende e consumatori                    |  |                                 |                          | Quantitative methods for health care management |
| <b>20.15 - 20.45</b>                       | <b>Welcome cocktail &amp; guided tour at Palazzo Ducale</b>                                |  |                                 |                          |   |
| <b>20.45 - 23.30</b>                       | <b>Social dinner at Palazzo Ducale</b>   |  |                                 |                          |   |

| <b>Thursday, September 6<sup>th</sup></b> |  |   |   |                                   |                                |
|---|--|---|---|-----------------------------------|--------------------------------|
|   | <b>Aula Embriaco</b>   | <b>Aula Caffaro</b>   | <b>Aula Doria</b>                                   | <b>Aula Boccanegra</b>            | <b>Aula Fieschi</b>            |
|   | <b>TM1</b>   | <b>TM2</b>  | <b>TM3</b>  | <b>TM4</b>                        | <b>TM5</b>                     |
| <b>8.45 - 10.15</b>                       | Analysis, optimization and coordination in logistic and production systems (PRIN)  | Hazmat transport 1  | Nonlinear optimization 2 (PRIN)                     | Optimization on graphs 2          | Routing problems               |
| <b>10.15 - 10.45</b>                      | <b>Coffee break</b>  |   |   |                                   |                                |
|   | <b>TM6</b>   | <b>TM7</b>  | <b>TM8</b>  | <b>TM9</b>                        | <b>TM10</b>                    |
| <b>10.45 - 12.15</b>                      | Urban mobility 1 (PRIN)  | Project management  | Nonlinear optimization 3 (PRIN)                     | Combinatorial optimization 1      | Optimization under uncertainty |
| <b>12.15 - 13.15</b>                      | <b>Invited lecture 3</b>   |   |   |                                   |                                |
|   | <b>J. Barceló</b><br>A methodological approach combining macro, meso and micro simulation models for transportation analysis |   |   |                                   |                                |
| <b>13.15 - 14.45</b>                      | <b>Lunch</b>   |   |   |                                   |                                |
|   | <b>TA1</b>   | <b>TA2</b>  | <b>TA3</b>  | <b>TA4</b>                        | <b>TA5</b>                     |
| <b>14.45 - 16.45</b>                      | Urban mobility 2 (PRIN)  | Routing and packing problems in transport systems optimization (PRIN) | Models and algorithms for analysing biological data | Health emergency and management 1 | ILOG session                   |
| <b>16.45 - 17.15</b>                      | <b>Coffee break</b>  |   |   |                                   |                                |
| <b>17.15 – 19.00</b>                      | <b>CIRO meeting</b><br><i>For non-CIRO members: Guided tour of Genova's historical center</i>                                |   |   |                                   |                                |
| <b>19.45 – 23.00</b>                      | <b>AIRO sport: Pétanque tournament &amp; dinner at the Righi hill</b>  |   |   |                                   |                                |

| Friday, September 7 <sup>th</sup> |   |                      |                           |                                   |                      |
|-----------------------------------|---|----------------------|---------------------------|-----------------------------------|----------------------|
|                                   | Aula Embriaco   | Aula Caffaro         | Aula Doria                | Aula Boccanegra                   | Aula Fieschi         |
| 8.45 - 10.15                      | <b>FM1</b>  | <b>FM2</b>           | <b>FM3</b>                | <b>FM4</b>                        | <b>FM5</b>           |
|                                   | Intelligent integrated systems and technologies                                   | Hazmat transport 2   | Mixed integer programming | Game theory 1                     | Telecommunications 1 |
| 10.15 - 10.45                     | <b>Coffee break</b>   |                      |                           |                                   |                      |
| 10.45 - 12.15                     | <b>FM6</b>  | <b>FM7</b>           | <b>FM8</b>                | <b>FM9</b>                        | <b>FM10</b>          |
|                                   | Energy management   | Maritime logistics 1 | Freight logistics         | Combinatorial optimization 2      | Telecommunications 2 |
| 12.15 - 13.15                     | <b>Invited lecture 4</b>  |                      |                           |                                   |                      |
|                                   | <b>G. Laporte.</b><br>A short history of arc routing, in honour of Leonhard Euler |                      |                           |                                   |                      |
| 13.15 - 14.45                     | <b>Lunch</b>  |                      |                           |                                   |                      |
| 14.45 - 16.45                     | <b>FA1</b>  | <b>FA2</b>           | <b>FA3</b>                | <b>FA4</b>                        | <b>FA5</b>           |
|                                   | Scheduling  | Maritime logistics 2 | PHD dissertations         | Health emergency and management 2 | MAXIMAL session      |
| 16.45 - 17.15                     | <b>Coffee break</b>   |                      |                           |                                   |                      |
| 17.15 – 19.00                     | <b>AIRO meeting</b>   |                      |                           |                                   |                      |
| 19.15 – 21.30                     | <b>Acquario: Guided tour &amp; dinner</b>   |                      |                           |                                   |                      |
| 21.30 – 24.00                     | <b>Boat trip: Fireworks in Recco bay</b>  |                      |                           |                                   |                      |

| Saturday, September 8 <sup>th</sup> |   |                      |                                      |                 |                        |
|-------------------------------------|---|----------------------|--------------------------------------|-----------------|------------------------|
|                                     | Aula Embriaco   | Aula Caffaro         | Aula Doria                           | Aula Boccanegra | Aula Fieschi           |
| 9.00 - 11.00                        | <b>SM1</b>  | <b>SM2</b>           | <b>SM3</b>                           | <b>SM4</b>      | <b>SM5</b>             |
|                                     | Metaheuristics in combinatorial optimization                              | Maritime logistics 3 | Network design                       | Game theory 2   | Computational learning |
| 11.00 – 11.30                       | <i>Coffee break</i>   |                      |                                      |                 |                        |
| 11.30 – 13.00                       | <b>SM6</b>  | <b>SM7</b>           | <b>SM8</b>                           | <b>SM9</b>      |                        |
|                                     | Stable sets algorithms and polytopes                                      | Railway optimization | Financial and marketing applications | Game theory 3   | Data mining            |
| 13.00 – 13.15                       | Closing session   |                      |                                      |                 |                        |
| 14.30 – 18.30                       | <i>Boat trip to Camogli, Punta Chiappa &amp; S. Fruttuoso, with bathe</i> |                      |                                      |                 |                        |

**Wednesday, September 5<sup>th</sup>**

## **INVITED LECTURE 1**

**Chair: Francesco Archetti**

*Room: Embriaco Time: 14.15-15.15*

**Marida Bertocchi.** Risk management: the role of stochastic optimization and statistics

## **INVITED LECTURE 2**

**Chair: Yasar Ozcan**

*Room: Caffaro Time: 14.15-15.15*

**Marion Sabine Rauner.** Challenges for operations research applied to health services in the 21st century.

## **COURSE**

### **Quantitative methods for health care management**

*Room: Fieschi Time: 9.00-18.00*

1. **Ugo Luigi Aparo**, Direttore Sanitario IDI (Istituto Dermopatico dell'Immacolata) Roma. Clinica, Ricerca, Ricaduta industriale.
2. **Roberto Berchi**, Docente di Master dell'Università La Sapienza, Roma. Applicazione dei modelli di simulazione nello studio delle epidemie e nell'analisi organizzativa di un ospedale.
3. **Lorenzo Brunetta**, Università di Padova. Turnazione ottima del personale in un reparto ospedaliero.
4. **Paolo Dell'Olmo**, Università La Sapienza, Roma. Integrazione dei servizi nell'azienda sanitaria.
5. **Giorgio Romanin Jacur**, Università di Padova. Modello generalizzato per la simulazione di servizi di pronto soccorso in condizioni normali e di maxi-emergenza, con esempi applicativi ad alcuni ospedali del Veneto.
6. **Marion Rauner**, Università di Vienna. A survey of application to health care of quantitative methods.
7. **Nicoletta Ricciardi**, Università La Sapienza, Roma. La logistica nei sistemi sanitari.
8. **Bruno Simeone**, Università La Sapienza, Roma. La metodologia DEA per la valutazione di unità organizzative: il caso dei reparti ospedalieri.
9. **Pietro Terna**, Università di Torino. Modelli di simulazione agent-based e applicazione allo studio del servizio 118 di Torino.
10. **Angela Testi**, Università di Genova. - La valutazione delle performance delle liste di attesa per ricoveri elettivi. - Scheduling e programmazione attività sale operatorie.

## ROUND TABLE

### Ricerca operativa. Cui prodest? I vantaggi per aziende e consumatori

**Chair: Umberto Torelli**

*Room: Embriaco Time: 17.15-19.00*

## WM1: Simulation

**Chair: Roberto Berchi**

*Room: Embriaco Time: 11.30-13.00*

1. **Lorenzo Brunetta**, Giovanni Andreatta, Luca Righi. SPADE: Supporting platform for airport decision-making and efficiency analysis.
2. Stefano Armenia, **Riccardo Onori**, Francesco Torino, Luigi Torino. A system dynamics approach to a chemist's inventory and finance management.
3. **Stefano Armenia**, Alessandro Nanni, Fabrizio Baldoni, Moreno Angelini. Securitization of future credits in a public administrations tax-collection process: A system-dynamics approach.
4. **Roberto Berchi**, Fabrizio Pregliasco, Giovanni Sesana. Short term flu effects forecast: MeteoFlu.

## WM2: Tools for strategic decision making

**Chair: Beniamino Paoletti**

*Room: Caffaro Time: 11.30-13.00*

1. **Marco Carcieri**. The rules approach applied to the alarm operative management problem.
2. **Tommaso Anzidei**. Architecture of a business-rules-oriented OR system.
3. **Luigi Luce**. Measure to know, understand, evaluate, share, generate consensus, delegate, ... take conscious decisions.
4. **Beniamino Paoletti**. A business-rules approach paradigm for OR model.

## **WM3: Continuous optimization**

**Chair: Emilio Spedicato**

*Room: Doria Time: 11.30-13.00*

1. Matteo Fischetti, **Michele Monaci**. Enhanced light robustness.
2. **Albino Moino Marazzato**. Linear programming: A new approach.
3. Giorgio Gnecco, **Marcello Sanguineti**, Riccardo Zoppoli. Suboptimal solutions to dynamic optimization problems: extended Ritz method versus approximate dynamic programming.
4. **Emilio Spedicato**, Antonino Del Popolo. Use of ABS methods in Newton's method for the primal-dual interior point method.

## **WM4: Logistics management**

**Chair: Giuseppe Confessore**

*Room: Boccanegra Time: 11.30-13.00*

1. **Walter Vassallo**. A-B Landbridge: Project on logistics connections in Central Europe.
2. **Maurizio Bielli**, Alessandro Bielli. Management of innovation paths in collaborative enterprise networks
3. **Marco Loni**. Processi logistici e tecniche gestionali di un operatore logistico.
4. Giuseppe Confessore, Graziano Galiano, **Giuseppe Stecca**. A general-purpose order batching application for picking operations in a warehouse.

## **WA1: Operations research and risk management**

**Chair: Rossella Giacometti**

*Room: Embriaco Time: 15.15-16.45*

1. Alessandro Staino, Ivar Massabò, **Sergio Ortobelli**. Portfolio selection with subordinated Levy processes.
2. **Daniele Toscani**, Nico Di Domenica, Enza Messina, Francesco Archetti. Hidden Markov models for scenario generation within a simulation framework.
3. **Marina Resta**, Stefano Santini. Risk management via robust optimization for hydrothermal generation portfolios.
4. **Rossella Giacometti**, Svetlozar Rachev, Anna Chernobai, Marida Bertocchi, Giorgio Consigli. Heavy-tailed distributional model for operational losses.

## WA2: Case studies from firms

**Chair: Daniela Ambrosino**

*Room: Caffaro Time: 15.15-16.45*

1. Mauro Bruzzone, **Roberto Mosca**. Uso dei metodi quantitativi in Coop Liguria.
2. Elio Bertoni, **Franco Gallarati**. La logistica distributiva di Saiwa dalla gestione diretta all'outsourcing personalizzato.
3. Claudio Coradeschi, **Maria Luisa Martinengo**. Studio sulla valutazione del valore di SAP Service Part Planning.
4. Simonetta Canepa, **Laura Sanguineti**. Progetto HASTUS – Il trasporto pubblico locale a Genova.

## WA3: Nonlinear optimization 1 (PRIN)

**Chair: Mauro Passacantando**

*Room: Doria Time: 15.15-16.45*

1. **Gianpaolo Liuzzi**, Stefano Lucidi, Veronica Piccialli. A DIRECT-based approach exploiting local minimizations for the solution of large scale global optimization problems.
2. **Andrea Cassioli**, Andrea Grosso, Abdur Jalal Uddin Jamali, Marco Locatelli, Fabio Schoen. Heuristic global optimization approaches for large scale sensor location problems
3. Immanuel Bomze, Florian Frommlet, **Marco Locatelli**. Improving Schrijver bound by copositivity cuts.
4. Luigi Grippo, Laura Palagi, **Veronica Piccialli**. An unconstrained minimization method for solving low rank SDP relaxations of the max-cut problem.

## WA4: Optimization on graphs 1

**Chair: Raffaele Cerulli**

*Room: Boccanegra Time: 15.15-16.45*

1. **Francesco Carrabs**, Raffaele Cerulli, Monica Gentili. The minimum colored maximum matching.
2. Raffaele Cerulli, Manlio Gaudio, **Monica Gentili**. A Lagrangean approach to the bounded-degree spanning tree problem.
3. Pasquale Avella, **Maurizio Boccia**, Igor Vasilyev. A general cutting plane algorithm for the set covering problem.
4. Alberto Ceselli, **Roberto Cordone**. Additive bounds for the singly constrained assignment problem.

**Thursday, September 6<sup>th</sup>**

### **INVITED LECTURE 3**

**Chair: Paolo Dell'Olmo**

*Room: Embriaco Time: 12.15-13.15*

**Jaume Barceló.** A methodological approach combining macro-, meso- and micro-simulation models for transportation analysis

### **TM1: Analysis, optimization and coordination in logistic and production systems (PRIN)**

**Chair: Riccardo Minciardi**

*Room: Embriaco Time: 8.45-10.15*

1. **Alessandro Agnetis**, Gianluca De Pascale, Marco Pranzo. Decentralized protocols for the coordination of multiple agents.
2. Mariagrazia Dotoli, **Maria Pia Fanti**, Carlo Meloni, Agostino Mangini. A multi-level approach for network design of supply chain.
3. **Dario Bauso**, Raffaele Pesenti. On the optimality of robust control policies via quadratic zero-sum differential games.
4. Davide Giglio, **Riccardo Minciardi**, Simona Sacone, Silvia Siri. Modelling and optimization of multi-class production nodes in distributed systems.

### **TM2: Hazmat transport 1**

**Chair: Massimiliano Caramia**

*Room: Caffaro Time: 8.45-10.15*

1. **Giovanni Storchi**, Angélica Lozano, Ángeles Muñoz. Location of emergence points for assisting hazmats transportation accidents in urban areas.
2. **Emmanuel Garbolino**, Roberto Sacile, Samuel Olampi, Angela Tomasoni, Chiara Bersani, Nicolas Alexandre, Eva Trasforini, Mauro Benza, Davide Giglio. Definition of a spatial decision support system for public authorities, civil protection and highway companies dedicated to the crisis management in the case of hazmat transportation road accident in a dense urbanized area in the French Riviera.
3. **Giampaolo Centrone**, Raffaele Pesenti, Walter Ukovich. Ricerca e sviluppo di un sistema per il monitoraggio del trasporto delle merci pericolose sulla rete autostradale conforme alle norme ADR 2007.
4. Massimiliano Caramia, Stefano Giordani, **Antonio Iovanella**. A multi-objective approach for hazardous materials routing.

## TM3: Nonlinear optimization 2 (PRIN)

**Chair: Veronica Piccialli**

*Room: Doria Time: 8.45-10.15*

1. **Franca Rinaldi**, Fabio Schoen, Marco Sciandrone. Nonlinear programming for minimizing nonzero variables in linear systems.
2. Luigi Grippo, **Arnaldo Risi**. A class of incremental methods for least squares problems.
3. **Barbara Panicucci**, Mauro Passacantando, Massimo Pappalardo. A globally convergent descent method for nonsmooth variational inequalities.
4. Manlio Gaudioso, **Giovanni Giallombardo**, Giovanna Miglionico. Incremental methods for convex min-max and applications.

## TM4: Optimization on graphs 2

**Chair: Francesco Maffioli**

*Room: Boccanegra Time: 8.45-10.15*

1. Gaia Nicosia, Gianpaolo Oriolo, Andrea Pacifici, Laura Sanità, **Ezio Sperduto**. Swapping failing arcs in shortest path arborescences.
2. **Tatiana Bassetto**, Francesco Mason. The 2-period balanced travelling salesman problem.
3. Raffaele Cerulli, Monica Gentili, **Andrea Raiconi**. An exact approach for the minimum labelling Hamiltonian cycle problem.
4. Edoardo Amaldi, **Francesco Maffioli**. On minimum reload cost flows and paths.

## TM5: Routing problems

**Chair: Roberto Tadei**

*Room: Fieschi Time: 8.45-10.15*

1. **Jesús González-Feliu**. Teodor Gabriel Crainic, Guido Perboli, Roberto Tadei, Daniele Vigo. The two-echelon capacitated vehicle routing problem.
2. Claudia Archetti, Dominique Feillet, Alain Hertz, **Maria Grazia Speranza**. The capacitated team orienteering and profitable tour problems.
3. **Alberto Ceselli**, Giovanni Righini, Matteo Salani. A column generation algorithm for a rich vehicle routing problem.
4. **Roberto Baldacci**, Nicos Christofides, Aristide Mingozzi. An exact algorithm for the vehicle routing problem based on the set partitioning formulation with additional cuts.

## TM6: Urban mobility 1 (PRIN)

**Chair: Paolo Dell'Olmo**

*Room: Embriaco Time: 10.45-12.15*

1. Giuseppe Bruno, Gennaro Improta, **Antonino Sgalambro**. Algorithms for the multisource quickest path problem.
2. Daniela Ambrosino, Anna Sciomachen, **Silvio Villa**. Stability of the best choice modal change nodes in urban transportation networks.
3. Raffaele Cerulli, **Carmine Cerrone**, Monica Gentili. A platform for the design and experimental evaluation of graph algorithms.
4. Renato De Leone, **Cinzia Lazzari**. Variants of rollout algorithms for DAR problems.

## TM7: Project management

**Chair: Stefano Giordani**

*Room: Caffaro Time: 10.45-12.15*

1. Lucio Bianco, **Massimiliano Caramia**. A new formulation of the resource-unconstrained project scheduling problem with generalized precedence relations to minimize the completion time.
2. Giuseppe Confessore, **Giacomo Liotta**, Silvia Rismondo. A model for evaluating the benefits of collaboration in the logistic activities management.
3. **Mauro Scarioni**. Using large scale analytical application in customer traditional approach.
4. Massimiliano Caramia, **Stefano Giordani**. A fast metaheuristic for scheduling independent tasks with multiple modes.

## TM8: Nonlinear optimization 3 (PRIN)

**Chair: Giovanni Giallombardo**

*Room: Doria Time: 10.45-12.15*

1. Giovanni Fasano, **Massimo Roma**. Iterative computation of approximate inverse preconditioners for nonconvex unconstrained optimization.
2. Manlio Gaudioso, **Enrico Gorgone**, Luca Lupia. Variants of the Barzilai-Borwein method for unconstrained minimization.
3. Fabrizio Angiulli, **Annabella Astorino**. Classification problems via SVM and nearest neighbor condensation.
4. Manlio Gaudioso, **Walaa Khalaf**, Calogero Pace. SVM classification in the design of an electronic nose.

## TM9: Combinatorial optimization 1

**Chair: Giovanni Rinaldi**

*Room: Boccanegra Time: 10.45-12.15*

1. Philippe Baptiste, Federico Della Croce, **Andrea Grosso**, Vincent T'Kindt. Sequencing a single machine with due dates and deadlines: An ILP-based approach.
2. Alessandro Agnetis, **Marta Flamini**, Gaia Nicosia, Andrea Pacifici. A branch and bound algorithm for a generalized job shop scheduling problem.
3. Roberto Baldacci, **Aristide Mingozzi**. A unified exact method for solving different classes of vehicle routing problems.
4. Luigi De Giovanni, Ferdinando Pezzella, Marc Pfetsch, Giovanni Rinaldi, **Paolo Ventura**. The open stack problem.

## TM10: Optimization under uncertainty

**Chair: Marcello Sanguineti**

*Room: Fieschi Time: 10.45-12.15*

1. **Cristiano Cervellera**, Danilo Macciò, Marco Muselli. Deterministic learning for the solution of multistage stochastic optimal control, with an application to an inventory forecasting problem.
2. **Antonio Manca**, Paola Zuddas. A multi-airport dynamic network flow model with capacity uncertainty: Formulation.
3. Giovanni Sechi, **Paola Zuddas**. Water system management under uncertainty conditions.
4. **Angelo Alessandri**, Marta Cuneo, Marcello Sanguineti. Approximation of nonlinear least-squares solutions in the presence of disturbances.

## TA1: Urban mobility 2 (PRIN)

**Chair: Maurizio Bielli**

*Room: Embriaco Time: 14.45-16.45*

1. Maurizio Boccia, **Antonio Sforza**, Claudio Sterle. Flow intercepting facility location models and methods for communication and transportation network problems.
2. **Umberto Ferraro Petrillo**, Antonino Sgalambro. Exploiting infomobility to support the planning and the management of evacuation processes.
3. **Maurizio Bruglieri**, Alberto Colorni, Diego Ciccarelli, Alessandro Luè, Giovanni Righini, Alberto Bosio. An optimization algorithm for a dial-a-ride system.
4. **Davide Anghinoni**, Federico Coscia, Paolo Dell'Olmo, Umberto Ferraro Petrillo. Utocity. Sperimentation problems in infomobility systems.
5. Sebastiano Durante, **Alexio Picco**. GuidoTiGuida, il portale per i servizi di infomobilità per la Regione Liguria.

## **TA2: Routing and packing problems in transport systems optimization (PRIN)**

**Chair: Daniele Vigo**

*Room: Caffaro Time: 14.45-16.45*

1. **Andrea Bettinelli**, Alberto Ceselli, Giovanni Righini. Branch-and-price algorithm for the variable-size bin packing problem with minimum filling constraint.
2. Michelangelo Conforti, **Marco Di Summa**, Fritz Eisenbrand, Laurence Wolsey. Dual network formulations of mixed-integer sets.
3. Roberto Baldacci, **Maria Battarra**, Daniele Vigo. Valid inequalities for the fleet size and mix vehicle routing problem with fixed costs.
4. Albert Einstein, Fernandez Muritiba, Manuel Iori, **Enrico Malaguti**, Paolo Toth. Lower and upper bound for the bin packing problem with conflicts.
5. **Guido Gentile**, Daniele Vigo. CITYGOODS: An integrated model for city logistics.

## **TA3: Models and algorithms for analysing biological data**

**Chair: Enza Messina**

*Room: Doria Time: 14.45-16.45*

1. **Elisabetta Fersini**, Cristina Manfredotti, Enza Messina. Relational K-means for gene expression profiles and drug activity pattern analysis.
2. Paola Bertolazzi, Serena Daguanno, Giovanni Felici, **Paola Festa**. Clustering and optimization in genetic data: the problem of TAG-SNPs selection.
3. **Giovanni Valbusa**, Maria Luisa Lavitrano, Francesco Archetti. Identification of gene and pathways influencing the drug resistance of cancer cell lines using evolutionary strategies and KNN.
4. **Stefano Moretti**. Game theory applied to tumor microarray data for gene selection.
5. **Francesco Archetti**, Ilaria Giordani, Leonardo Vanneschi. Docking energy assessment by multi-criteria genetic programming.

## **TA4: Health emergency and management 1**

**Chair: Angela Testi**

*Room: Boccanegra Time: 14.45-16.45*

1. **Mauro Moruzzi**. Presa in carico del cittadino, pianificazione della capacità produttiva e modelli di code nei sistemi CUP di ultima generazione.
2. Paola Facchin, Anna Ferrante, **Elena Rizzato**, Giorgio Romanin Jacur, Laura Salmaso. Allocazione ottima di nuclei urbani a punti nascita in un'area geografica.
3. Francesca Guerriero, **Rosita Guido**. Mathematical models for the radiotherapy treatment scheduling.
4. Angela Testi, **Elena Tanfani**. The Master Surgical Schedule Problem (MSSP): An economical perspective.
5. **Yasar Ozcan**. Decision theory applications in health care management.

## **TA5: ILOG session**

*Room: Fieschi Time: 14.45-16.45*

**Friday, September 7<sup>th</sup>**

## **INVITED LECTURE 4**

**Chair: Paolo Toth**

*Room: Embriaco Time: 12.15-13.15*

**Gilbert Laporte.** A short history of arc routing in honour of Leonhard Euler

## **FM1: Intelligent integrated systems and technologies**

**Chair: Marco Boero**

*Room: Embriaco Time: 8.45-10.15*

1. Francesco Buemi, Andrea Porcile, **Stefano Gatti**, Stefania Scopelliti. Increasing safety in tunnels using video analysis.
2. **Giuseppe Casalino**. Evoluzione delle iniziative di ricerca e sviluppo e trasferimento tecnologico in Liguria: L'esperienza SIIT
3. **Silvano Cincotti**. La ricerca sulle organizzazioni complesse nel Distretto SIIT
4. **Marco Boero**. Transport processes innovation: solutions and technologies for flexible transport of people and goods in urban areas.

## **FM2: Hazmat transport 2**

**Chair: Giovanni Storchi**

*Room: Caffaro Time: 8.45-10.15*

1. Lucio Bianco, Massimiliano Caramia, **Stefano Giordani**. A bilevel model for hazmat shipment global routing.
2. Chiara Bersani, Riccardo Minciardi, Roberto Sacile, Laeya Taremi, **Angela Tomasoni**, Eva Trasforini. Risk based multi route selection in hazardous material transportation on road.
3. Ángeles Muñoz, **Angélica Lozano**, Giovanni Storchi. Urban paths for hazmat transportation, considering inhabitants as well as travelers exposure.
4. **Diego Ciccarelli**, Alberto Colorni, Alessandro Luè. A GIS-based travel planner for hazardous material transportation.

## FM3: Mixed integer programming

**Chair: Matteo Fischetti**

*Room: Doria Time: 8.45-10.15*

1. Alessandro Agnetis, **Enrico Grande**, Andrea Pacifici. Optimal demand allocation with fixed charge and latency functions.
2. Matteo Fischetti, **Domenico Salvagnin**. A local dominance procedure for mixed-integer linear programming.
3. **Andrea Lodi**, Matteo Fischetti. Three simple MIP heuristics.
4. **Andrea Tramontani**, Andrea Lodi, Matteo Fischetti. On the strengthening of mixed integer Gomory cuts.

## FM4: Game theory 1

**Chair: Stefano Benati**

*Room: Boccanegra Time: 8.45-10.15*

1. **Stefano Vannucci**. Virtuous circles and contested identities: On collective identification procedures with independent qualified certification.
2. Stefano Moretti, Stef Tijs, **Rodica Branzei**, Henk Norde. Cost monotonic “construct and charge” rules for connection situations.
3. **Elisa Caprari**, Fioravante Patrone, Lucia Pusillo, Stef Tijs, Anna Torre. Share opportunity sets and cooperative games.
4. **Stefano Benati**, Romeo Rizzi. Methods for computing power indices on graphs.

## FM5: Telecommunications 1

**Chair: Mario Marchese**

*Room: Fieschi Time: 8.45-10.15*

1. Gennaro Boggia, **Pietro Camarda**, Luigi Alfredo Grieco. Dynamic bandwidth allocation algorithms based on HCF in 802.11 WLANs.
2. **Paolo Nobili**, Valeria Leggieri, Chefi Triki. Mathematical models for the multicasting problem in wireless networks.
3. Luigi Chisci, Romano Fantacci, **Tommaso Pecorella**. Quality of service and fairness for dynamic bandwidth allocation.
4. **Franco Davoli**, Raffaello Secchi. Multivariable optimal control of traffic queues in satellite access networks.

## FM6: Energy management

**Chair: Chefi Triki**

*Room: Embriaco Time: 10.45-12.15*

1. Mario Innorta, Filomena Petronio, **Maria Teresa Vespucci**. Medium-term scheduling of a set of interconnected hydro power plants.
2. **Matteo Tesser**, Adela Pagès, Narcís Nabona. A structural equilibrium model for long-term power planning in a liberalized electricity market.
3. Nicola Sorrentino, **Nadia Scordino**, Chefi Triki, Patrizia Beraldi, Roberto Musmanno. Retail risk management in the competitive electricity market.
4. **Luca Coslovich**, Raffaele Pesenti, Giovanni Piccoli, Walter Ukovich. Efficiency in the Italian electricity distribution sector: A data envelopment analysis approach.

## FM7: Maritime logistics 1

**Chair: Maria Flavia Monaco**

*Room: Caffaro Time: 10.45-12.15*

1. Maria Fernanda Ramalhoto, **Rossella Burroano**. The SQM framework and its role in the improvement and innovation of the sea port structure and logistics.
2. Annunziata Cascone, Alfredo Cutolo, Benedetto Piccoli, **Luigi Rarità**. Evolution of traffic flows through macroscopic models: Case study of a harbour.
3. Claudio Ferrari, **Manuela Basta**. Application of price cap regulation and DEA technique on port concession: The case of Genoa's container terminal.
4. **Walter Ukovich**, Paolo Paganelli, Furio Bressanutti, Martina Coretti. Un progetto ICT per la gestione del traffico intermodale nel porto di Trieste.

## FM8: Freight logistics

**Chair: Alberto Colorni**

*Room: Doria Time: 10.45-12.15*

1. Giuseppe Confessore, **Graziano Galiano**, Silvia Rismondo, Raffaele Maccioni. Solving the assignment problem distribution in Metrocargo intermodal service.
2. **Luca Caviglione**, Cristiano Cervellera. Optimization of a peer-to-peer system for efficient content replication over vehicular networks.
3. **Maurizio Bruglieri**, Alberto Colorni, Fabiano Cattaneo. A particular assignment problem arising in the collection of electric and electronic device waste (RAEE).
4. **Bruno Flach**, Pedro Cunha, Marcus Poggi de Arãgao. Optimization of linehaul network operations for less-than-truckload carriers.

## FM9: Combinatorial optimization 2

**Chair: Federico Della Croce**

*Room: Boccanegra Time: 10.45-12.15*

1. **Mauro Russo**, Antonio Sforza. Improved upper bounds for the two-dimensional guillotine cutting stock problem.
2. **Roberto Marcellino**, Guido Perboli, Roberto Tadei. Scoring-based heuristics for the three-dimensional orthogonal balanced knapsack problem.
3. **Marco Antonio Boschetti**, Lorenza Montaletti. Heuristic and exact methods for the strip packing problem.
4. Fabio Colombo, **Marco Trubian**. On the cardinality constrained SSTDMA problem

## FM10: Telecommunications 2

**Chair: Franco Davoli**

*Room: Fieschi Time: 10.45-12.15*

1. Mario Marchese, **Maurizio Mongelli**. Real-time bandwidth control for QoS mapping of loss and delay constraints over satellite independent service access points.
2. **Paolo Detti**, Gaia Nicosia, Andrea Pacifici, Mara Servilio. Radio resource allocation in OFDMA cellular systems.
3. **Sandro Bosio**, Di Yuan. Optimization of multiple-frequency WLAN design.
4. Paolo Giaccone, **Emilio Leonardi**, Fabio Neri. On the interaction between TCP-like sources and throughput-efficient scheduling policies.

## FA1: Scheduling

**Chair: Gianpaolo Ghiani**

*Room: Embriaco Time: 14.45-16.45*

1. **Carlo Filippi**, Giorgio Romanin-Jacur. Approximate algorithms for high-multiplicity parallel machines scheduling problems.
2. **Emanuela Guerriero**. Scheduling in dial indexed production lines.
3. **Giuseppe Lancia**, Franca Rinaldi, Paolo Serafini. A compact optimization approach for job-shop problems.
4. Ramesh Bollapragada, Federico Della Croce, **Marco Ghirardi**. The economic lot scheduling problem: a recovery beam search approach.
5. Gianpaolo Ghiani, Emanuele Manni, **Antonella Quaranta**, Chafi Triki. Heuristics for the shift scheduling problem in the same-day courier industry.

## **FA2: Maritime logistics 2**

**Chair: Marcello Sammarra**

*Room: Caffaro Time: 14.45-16.45*

1. **Massimo Di Francesco**, Teodor Gabriel Crainic, Paola Zuddas. Maritime reposition of empty containers: A case-study.
2. Pietro Canonaco, Pasquale Legato, **Rina Mary Mazza**. Yard crane management by simulation and optimization.
3. Angelo Alessandri, Cristiano Cervellera, Marta Cuneo, **Mauro Gaggero**, Aldo Filippo Grassia, Giuseppe Soncin. Model-based control of container handling in intermodal terminals for performance optimization.
4. **Francesco Parola**, Anna Sciomachen. Modal split evaluation of a maritime container terminal.
5. Chiara Menti, **Giorgio Romanin Jacur**. Modelli e simulazione delle operazioni di banchina in un terminal container marittimo.

## **FA3: PhD dissertations**

**Chair: Guido Perboli**

*Room: Doria Time: 14.45-16.45*

1. **Simona Benigno**. Modelli di revenue management per il noleggio di mezzi di trasporto.
2. **Annamaria Barbagallo**. Regularity results for evolutionary variational and quasi-variational inequalities and applications to dynamic equilibrium problems.
3. **Valentina Cacchiani**. Models and algorithms for combinatorial optimization problems arising in railway applications.
4. **Valeria Leggieri**. Multicast problems in telecommunication networks.
5. **Giacomo Liotta**. Integrated management of logistic processes throughout the product life cycle.
6. **Enrico Malaguti**. The vertex coloring problem and its generalizations.

## **FA4: Health emergency and management 2**

**Chair: Giovanni Righini**

*Room: Boccanegra Time: 14.45-16.45*

1. Linda Salustri, Paola Sbandi, Roberto Brocato, **Vanda De Angelis**, Giovanna Jona Lasinio. Modelling and simulating the processes of an accident and emergency department.
2. Roberto Berchi, **Giovanni Sesana**, Andrea Pagliosa, Giancarlo Fontana. Evaluating new processes for acute myocardial infarction health emergency.
3. **Marcello Montefiori**, Marina Resta. A computational approach for the health care market
4. **Roberto Aringhieri**, Giuliana Carello, Daniela Morale. Ambulance location through optimization and simulation: The case of Milano urban area.
5. Alberto Ceselli, Roberto Cordone, Andrea Pincioli, **Giovanni Righini**, Marco Trubian. Optimization of emergency health-care systems in Milan: An on-going project.

## **FA5: MAXIMAL session**

**Room: Fieschi Time: 14.45-16.45**

**Saturday, September 8<sup>th</sup>**

## **SM1: Metaheuristics in combinatorial optimization**

**Chair: Massimo Paolucci**

*Room: Embriaco Time: 9.00-11.00*

1. **Roberto Montemanni**, Derek Smith, Luca Gambardella. Ant colony systems for large sequential ordering problems.
2. Davide Anghinolfi, Massimo Paolucci, Simona Sacone, **Silvia Siri**. An ant colony approach for the operational planning of freight intermodal transportation.
3. Ferdinando Pezzella, **Luigi De Giovanni**, Gionata Massi. An adaptive genetic algorithm for the cutting-pattern sequencing problem.
4. **Demetrio Laganà**, Francesco Mari, Roberto Musmanno, Ornella Pisacane. ANTURPP: An ant colony heuristic for the undirected rural postman problem.
5. Davide Anghinolfi, **Massimo Paolucci**. A discrete particle swarm optimization algorithm for total weighted tardiness scheduling problems.

## **SM2: Maritime logistics 3**

**Chair: Anna Sciomachen**

*Room: Caffaro Time: 9.00-11.00*

1. Daniela Ambrosino, **Davide Anghinolfi**, Massimo Paolucci, Anna Sciomachen. A tabu-search approach for the master bay plan problem.
2. Maria Flavia Monaco, **Marcello Sammarra**. Scheduling and dispatching models for routing straddle carriers at a container terminal.
3. **Ilaria Vacca**, Michel Bierlaire, Matteo Salani. Yard optimization at a sea container terminals.
4. **Luigi Moccia**. A new model for the yard management in a transshipment container terminal.
5. Consolato Benedetto, Salvatore Greco, Domenico Iero, Daniele Labate, **Vincenzo Perri**. RTG/shuttle carrier mixed to a traditional straddle carrier as a new operating concept to handle containers in a transshipment container terminal.

## SM3: Network design

**Chair: Maria Grazia Scutellà**

*Room: Doria Time: 9.00-11.00*

1. Alfredo Cutolo, Ciro D'Apice, **Raffaella Frattaruolo**, Rosanna Manzo. Conservation laws models for logistic design of supply networks.
2. Teodor Gabriel Crainic, **Fausto Errico**, Federico Malucelli, Maddalena Nonato. Towards designing flexible transportation systems.
3. Ersilia Liguigli, Francesca Montagna, **Maria Franca Norese**, Fabio Salassa. A DSS to support the design of complex systems.
4. Gianpaolo Oriolo, **Laura Sanità**. Robust network design.
5. **Daniela Ambrosino**, Anna Sciomachen, Maria Grazia Scutellà. Location of regional depots in supply networks.

## SM4: Game theory 2

**Chair: Vito Fragnelli**

*Room: Boccanegra Time: 9.00-11.00*

1. Alessandro Agnetis, Gianluca De Pascale, **Marco Pranzo**. Computation of fair solutions in scheduling bargaining problems
2. Dario Bauso, **Raffaele Pesenti**. Generalized person-by-person optimization in team problems with binary decisions
3. Dario Bauso, Elena Moretti, Raffaele Pesenti, **Gabriella Stecco**. A competitive routing game
4. **Lina Mallozzi**. Giochi noncooperativi di localizzazione
5. Vito Fragnelli, **Simona Sanguineti**. A game-theoretic model for improving a railway timetable

## SM5: Computational learning

**Chair: Silvia Canale**

*Room: Fieschi Time: 9.00-11.00*

1. **Vera Kůrková**. Complexity of data with respect to a type of neural-network computational units
2. **Marco Campi**. Classification with guaranteed probability of error
3. **Giorgio Gnecco**, Marcello Sanguineti. Deriving approximation error bounds via Rademacher's complexity and learning theory
4. **Silvia Canale**, Antonio Sassano. Heuristic approach to training 0-norm support vector machines

## **SM6: Stable sets algorithms and polytopes**

**Chair: Gianpaolo Oriolo**

*Room: Embriaco Time: 11.30-13.00*

1. Monia Giandomenico, Adam Letchford, Fabrizio Rossi, **Stefano Smriglio**. Computational study of linear relaxations for the stable set problem.
2. Gianpaolo Oriolo, **Ugo Pietropaoli**, Gautier Stauffer. On the recognition and the stable set problem for fuzzy circular interval graphs.
3. Anna Galluccio, **Claudio Gentile**, Paolo Ventura. Gear composition and the stable set polytope.
4. **Gianpaolo Oriolo**, Ugo Pietropaoli, Gautier Stauffer. A new algorithm for the stable set problem on claw-free graphs.

## **SM7: Railway optimization**

**Chair: Paolo Toth**

*Room: Caffaro Time: 11.30-13.00*

1. **Valentina Cacchiani**, Alberto Caprara, Paolo Toth. Freight transportation in railway networks.
2. Matteo Fischetti, Domenico Salvagnin, **Arrigo Zanette**. Robust train timetabling.
3. **Laura Galli**, Alberto Caprara, Paolo Toth. Improving on train platforming models.
4. **Susanna Cappelletti**. The rules approach applied to the fleet planning problem.

## **SM8: Financial and marketing applications**

**Chair: Daniela Favaretto**

*Room: Doria Time: 11.30-13.00*

1. **Marcello Falasco**, Marco Cardinali, Enrico Guzzini. Industrial investment planning: Effects on firm performance and profitability.
2. **Laura Di Giacomo**. Dynamic pricing in parimutuel derivative call auctions.
3. Renata Mansini, **Barbara Tocchella**. Lagrangean relaxation applied to the winner determination problem in single-unit combinatorial auctions.
4. **Daniela Favaretto**, Bruno Viscolani. Advertising and production of a seasonal good for a heterogeneous market.

## SM9: Game theory 3

**Chair: Fioravante Patrone**

*Room: Boccanegra Time: 11.30-13.00*

1. **Lorenzo Cioni**. Coalition dynamics in environmental problem solving
2. Rodica Branzei, **Marco dall'Aglio**, Stef Tijss. A cooperative game in fair division
3. **Vito Fragnelli**, Maria Erminia Marina. On use and misuse of fair division
4. Fioravante Patrone, **Silvia Villa**. Kidney exchange: The cross-over program

## SM10: Data mining

**Chair: Giovanni Felici**

*Room: Fieschi Time: 11.30-13.00*

1. Alice Bossi, **Enrico Faggioli**, Piercarlo Fantucci, Fabio Stella. Molecular data mining for selecting HIF-1 $\alpha$  ligands.
2. Bruno Simeone, Giovanni Felici, **Vincenzo Spinelli**. A generalized agglomerative algorithm for box clustering approach in logic mining.
3. Dimitar Kapashikov, Luca Tosi, **Fabio Stella**. Comparison of time series and data mining models to forecast car counts in urban area.
4. Paola Bertolazzi, **Giovanni Felici**, Giuseppe Lancia. Barcode analysis with optimized logic formulas.

# Social events

## Wednesday 5

*Welcome cocktail & guided tour at Palazzo Ducale*

-Time and place: 20.15 at Palazzo Ducale (about 800 mt from the conference site, 15 minutes walking)

*Social Dinner at Palazzo Ducale*

-Time and place: 20.45 at Palazzo Ducale (about 800 mt from the conference site, 15 minutes walking)

## Thursday 6

*Art and history tour of Genova: guided tour (Only for non-CIRO members)*

-Time and place: 17.15 in front of the conference site

*AIRO SPORT: Pétanque tournament & dinner at the Righi hill*

-Time and place

19.45: Meeting in Largo Zecca (departure of the Righi funicular) about 500 mt from the conference site (10 minutes walking). Funicular to the Righi hill and panoramic walk (10 minutes) to the Società Bocciofila S. Paolo.

20.00-21.00: Buffet (typical ligurian specialties).

21.00-22.00: Pétanque tournament.

23.00: Back to Largo Zecca with the last evening funicular

## Friday 7

*Acquario: Guided tour & dinner*

-Time and place: 19.15 in front of the Acquario (about 200 mt from the conference site, 5 minutes walking). A special tour for childrens has been organized.

*Fireworks boat Trip in Recco's bay*

-Time and place: 21.30 in front of the Acquario (about 200 mt from the conference site, 5 minutes walking).

## Saturday 8

*Boat trip to Camogli, Punta Chiappa & San Fruttuoso, with bathe*

-Time and place: 14.30 in front of the Acquario (about 200 mt from the conference site, 5 minutes walking)