# Martina Cerulli
*Curriculum Vitae*

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✉ *martina_c@hotmail.it*

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## Research interests

- Modeling using Mathematical Programming real world problems
- Bilevel Programming
- Semidefinite Programming
- Semi-infinite Programming
- Developing and implementing new solution algorithms for Bilevel Nonlinear Optimization and their application to: ACOPF, aircraft conflict resolution, power network design, city logistics

## Personal information

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| Date of birth | 24/03/1995 |
| Nationality | Italian |

## Professional Experience

**01/2022– Present** **Postdoctoral Researcher**, *Department of Information Systems, Decision Sciences and Statistics*, ESSEC Business School of Paris, Cergy Pontoise Cedex, France.
Current research involves Bilevel Optimization for city logistics

## Education

**11/2018– 12/2021** **Marie Curie ITN MINOA PhD**, *LIX*, CNRS - École Polytechnique, Palaiseau, France.
**Supervisors:** Prof. Leo Liberti and Prof. Claudia D'Ambrosio
**PhD Thesis:** Bilevel Optimization and Applications

**09/2020– 11/2020** **Guest Scientist**, *Department of Corporate Research and Technology*, Siemens AG, Munich, Germany.
*3 months working on a combined dispatch and market bidding MILP*

**01/2020– 03/2020** **Visiting PhD**, *Department of Mathematics*, Trier University, Trier, Germany.
*3 months working with Prof. Martin Schmidt on bilevel programming with ACOPF constraints at the lower level*

**10/2016– 23/07/2018** **Master's Degree in Management Engineering**, La Sapienza University, Rome,
*Final mark:* 110 cum Laude.
**Master's Thesis** (*under the supervision of Professor Marianna De Santis*): ADMM to solve DNN-SDP relaxations of the Stable Set Problem

**10/2013– 28/09/2016** **Bachelor's Degree in Logistic and Production Management Engineering**, University Federico II, Napoli,
*Final mark:* 110 cum Laude.

**10/2008– 07/2013** **High school diploma**, *Liceo Scientifico Cristoforo Colombo*, Marigliano (NA),
*Final mark:* 100 cum Laude.

## Awards

2022 **IDIA Best Thesis**.
awarded by IP Paris Department of Computer Science, Data and Artificial Intelligence

2021 **EURO YoungWomen4OR 2021-2022**.
awarded by EURO WISDOM Forum

2016 **Wanted the best Scholarship**.
Scholarship for students who have completed their bachelor's degree in Italian universities different from La Sapienza with a mark between 105/110 and 110/110 cum laude.
Grading in list: 12 out of 30

2013 Candidate for the "Alfieri del lavoro" national award as the best student of the C. Colombo high school

## Computer skills

Basic MATLAB
Intermediate C++, Microsoft Office
Advanced PYTHON, AMPL, LATEX

## Languages

Italian **Mother tongue**
English **Advanced** *Cambridge ESOL First Certificate of English (FCE) GRADE A*
French **Intermediate** *Étudier en France: French Intermediate course B1-B2 by Coursera*
Spanish **Basic** *Basic words and phrases only*

## Publications

PhD Thesis M. Cerulli, **Bilevel Optimization and Applications**, 2021 - https://www.theses.fr/2021IPPAX108

International journals M. Cerulli, A. Oustry, C. D'Ambrosio, L. Liberti, **Convergent algorithms for a class of convex semi-infinite programs**, *SIAM Journal on Optimization*, to appear - preprint available at https://hal.archives-ouvertes.fr/hal-03339887

M. Cerulli, L. Liberti, **Polynomial programming prevents aircraft (and other) conflicts**, *Operations Research Letters*, 2021 - https://doi.org/10.1016/j.orl.2021.05.001

M. Cerulli, C. D'Ambrosio, L. Liberti, M. Pelegrín, **Detecting and solving aircraft conflicts using bilevel programming**, *Journal of Global Optimization*, 2021 - https://doi.org/10.1007/s10898-021-00997-1

M. Cerulli, M. De Santis, E. Gaar, A. Wiegele, **Improving ADMMs for Solving Doubly Non-negative Programs through Dual Factorization**, *4OR*, 2020 - https://doi.org/10.1007/s10288-020-00454-x

Encyclopedia entries M. Cerulli, M. Pelegrin, S. Cafiery, C. D'Ambrosio, D. Rey, **Aircraft Conflict Resolution**, in P. Pardalos and O. Prokopyev (eds.) *Encyclopedia of Optimization*, Springer, to appear

M. Cerulli, D. Delle Donne, M. Escobar, L. Liberti, A. Oustry, **Optimal power flow**, in P. Pardalos and O. Prokopyev (eds.) *Encyclopedia of Optimization*, Springer, to appear

Conferences D. Bienstock, M. Cerulli, M. Escobar, L. Liberti, **Power network design with line activity**, in L. Amorosi et al. (eds), *Optimization in Artificial Intelligence and Data Sciences, 1st ed. 2022 (Chap.17)*, AIRO Springer Series, 2022 - https://doi.org/10.1007/978-3-030-95380-5_17

M. Cerulli, C. D'Ambrosio, L. Liberti, **Flying safely by bilevel programming**, in M. Paolucci et al. (eds), *Advances in Optimization and Decision Science for Society, Services and Enterprises, AIRO-ODS19 (Chap.18)*, AIRO Springer Series, 2020 - https://doi.org/10.1007/978-3-030-34960-8_18

M. Cerulli, C. D'Ambrosio, L. Liberti, **On aircraft deconfliction by bilevel programming** on *CTW conference proceedings*, in J. Hurink et al. (eds), *Proceedings of CTW19*, Univ. of Twente, 2019 - https://www.ctw.ewi.utwente.nl/CTW2019ProceedingsFinal.pdf

## Submitted papers

M. Pelegrin, M. Cerulli, **Aircraft conflict resolution: A benchmark generator** in revision for INFORMS Journal on Computing

## Papers in preparation

M. Cerulli, C. D'Ambrosio, L. Liberti, M. Schmidt, **ACOPF in one retailer and several prosumers scenario**

C. Archetti, M. Cerulli, E. Fernández, I. Ljubic **A pricing and routing problem for last-mile delivery**

C. Archetti, M. Cerulli, I. Ljubic, D. Serra, C. Sorgente **The collapsed $k$-core problem**

## Organized workshops

### 2021

04.03–05.03 **MINOA ESR days 2.0** — *a two days workshop on Mixed-Integer Nonlinear Programming and Applications, held online* — https://minoa-itn.fau.de/?page_id=1157

### 2020

23.11–24.11 **MINOA ESR days** — *a two days workshop on Mixed-Integer Nonlinear Programming and Applications, held online* — https://minoa-itn.fau.de/?page_id=1157

## Invitation-only workshops participations

### 2022

30.10–04.11 Dagstuhl Seminar 2244 "Optimization at the Second Level", *Schloss Dagstuhl – Leibniz-Zentrum für Informatik*, Wadern, Germany

### 2020

06.01–10.01 24th Combinatorial Optimization Workshop, *CNRS Centre Paul Langevin*, Aussois, France

### 2019

03.06–08.06 (With the "Oberwolfach Leibniz Graduate Student" grant) Mixed-integer Nonlinear Optimization: a hatchery for modern mathematics, *MFO Oberwolfach Research Institute for Mathematics*, Oberwolfach, Germany

## Presentations (talk, poster..) at conferences and workshops

### 2022

30.08–02.09 ODS 2022 - 51th AIRO International Conference on Optimization and Decision Science, *Florence, Italy*, Talk: **"The collapsed $k$-core problem"**

03.07–06.07 EURO 2022 - 32nd European Conference on Operational Research, *Aalto University, Eespo, Finland* Talk: **"Convergent algorithms to solve a class of bilevel programs with quadratic lower level"**

27.05 EURO WISDOM Forum YoungWomen4OR Online Webinar *"Bilevel optimization"*, Talk: **"A pricing and routing problem for last-mile delivery"**

### 2021

14.09–17.09 ODS 2021 - 50th AIRO International Conference on Optimization and Decision Science, *La Sapienza University of Rome, Italy*, Talk: **"Solving a class of bilevel programs with quadratic lower level"**

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| 11.07–14.07 | EURO 2021 - 31st European Conference on Operational Research, *hybrid conference*, Talk: **"ACOPF in one retailer and several prosumers scenario"** |
| 02.03 | Trends in Mathematical Modelling, Simulation and Optimisation: Theory and Applications, *online-conference organized by the CRC TRR154-2, MINOA, and the ADA Lovelace Center*, Talk: **"Reformulating particular bilevel programs with quadratic lower level"** |

### 2020

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| 15.12 | POC "hors les murs", *Seminaire du groupe POC "Polyèdres et optimisation combinatoire"*, Short talk: **"Two approaches to solve a particular bilevel problem"** |
| 12.10 | ALOP Online Autumn School on Bilevel Optimization, *Trier University*, Elevator Pitch: **"Aircraft Deconfliction via Bilevel programming"** |
| 09.10 | Half-day of online optimization seminars, *LIX - École Polytechnique*, Talk: **"Aircraft Deconfliction Problem"** |

### 2019

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| 04.09–07.09 | 49th Annual Conference of the Italian Operations Research Society ODS 2019, *Genova*, Talk: **"Flying safely by bilevel programming"** |
| 15.07–18.07 | Mixed integer programming workshop 2019, *Massachusetts Institute of Technology*, Poster: **"Aircraft deconfliction by bilevel programming"** |
| 01.07–03.07 | 17th Cologne-Twente Workshop on Graphs and Combinatorial Optimization, *University of Twente*, Talk: **"On aircraft deconfliction by bilevel Programming"** |
| 03.06–08.06 | Mixed-integer Nonlinear Optimization: a hatchery for modern mathematics, *MFO Oberwolfach Research Institute for Mathematics*, Short talk: **"Flying safely on two levels"** |
| 16.01–17.01 | pid19: PhD and Industry Days 2019, *LIX - École Polytechnique*, Talk: **"ADMM to solve DNN-SDP problems"** |

## Schools and workshops attended

### 2022

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| 21.06–22.06 | 2nd EUROYoung workshop held at *INESC TEC and FEUP* in Porto, Portugal |

### 2021

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| 08.02–12.02 | AIRO PhD School 2021 and 5th AIROYoung Workshop on the topic "Optimization and Data Science: Trends and Applications" organized by *Operations Research Group of University "Federico II" of Naples* |

### 2020

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| 12.10–14.10 | ALOP Autumn School on Bilevel Optimization organized by *ALOP Research Training Group at Trier University* |

### 2019

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| 07.10–10.10 | CRM/DIMACS Workshop on Mixed-Integer Nonlinear Programming at *Université de Montréal* |
| 24.06–28.06 | 1st MINOA Summer School "Mixed-Integer Nonlinear Optimization meets Data Science" |
| 07.01–11.01 | 23rd Workshop on Combinatorial Optimization in *Aussois* |

## Editorial activity

Referee for:
- Asia-Pacific Journal of Operational Research
- Mathematical Programming Journal
- Operations Research Letters
- Journal of Global Optimization