

Leo Liberti

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At a glance (May 13, 2021)			
<i>Endowments</i>	<i>Postdoc/Ph.D.</i>	<i>Refereed publications</i>	<i>Google Scholar H-index</i>
3.6MEUR	37	230	41

Main research interests

- Reformulations in mathematical programming
- Mixed-Integer Nonlinear Programming (MINLP), global and combinatorial optimization
- Distance geometry and bioinformatics
- Complex industrial systems and sustainable development

Education

2007	HDR	Paris-Dauphine University, Paris, France	-
2004	Ph.D.	Imperial College London (UK)	-
1997	Master (Mathematics)	University of Turin (Italy)	110/110 cum Laude
1995	B.Sc. (Mathematics)	Imperial College London (UK)	First Class
1992	European Baccalaureat	European School, Culham (UK)	78/100

- HDR¹ thesis title: *Reformulation Techniques in Mathematical Programming*.
Awarded on: 19th November 2007.
Awarded by: Paris-Dauphine University, France.
Coordinator: V. Paschos.
Jury: Ph. Baptiste, A. Billionnet, A. Lisser, T. Westerlund.
Referee reports: N. Maculan, Ph. Michelon, H. Serali.
- Ph.D. thesis title: *Reformulation and Convex Relaxation Techniques for Global Optimization*.
Awarded on: 15th March 2004.
Awarded by: CPSE, Imperial College London, UK.
Supervisor: Prof. C. Pantelides.
Examiners: Prof. T. Westerlund, Prof. E.N. Pistikopoulos.

Employment History

¹*Habilitation à Diriger des Recherches*, a diploma that must be obtained prior to applying to Professorships in France.

Full-time:

2015-now	Research Director at CNRS (affiliation: LIX), France
2012-2015	Research Staff Member at IBM T.J. Watson Research Center, USA
2010-2012	Professor ^a at LIX, École Polytechnique, France.
2006-2010	Assistant Professor ^b at LIX, École Polytechnique, France.
2005-2006	Post-doc at LIX, École Polytechnique, France.
2003-2005	Post-doc at DEI, Politecnico di Milano, Italy.
1999-2003	Research assistant (RA1B) at CPSE, Imperial College London, UK.
1998-1999	Compulsory military service in Italy.
1997-1998	Computer science teacher at the CSEA school, Turin, Italy (www.csea.it).

^a*Professeur Chargé de Cours*, equivalent to *Professeur des Universités de 2ème classe*. In France, this is considered a “full professor” position.

^b*Maître de Conférence*.

Part-time:

2015-now	Professor ^a at Ecole Polytechnique, France.
2003-2005	Lecturer at Politecnico di Milano, Italy.
2001-2008	Co-founder of the Ipnos Partnership, London, UK (www.ipnos.co.uk).
2000-2002	Co-founder of IrisTech S.r.l., Italy (www.iris-tech.net).
1999-2004	Network administrator, Imperial College London.
1994-1997	Programming consultant, Imperial College London.

Research Activities

- *Reformulations in mathematical programming*. Mathematical Programming (MP) is a formal language for describing optimization problems. A MP consists of parameters (encoding the problem instance), decision variables (encoding the solution), objective functions and constraints. Limited to functional forms which can be represented by Directed Acyclic Graphs (DAGs) the leaves of which are parameters and variables, the other nodes being the operators, a *reformulation* is a computable transformation of a MP P into another MP Q which shares some mathematical property \mathcal{P} with P (e.g. $\mathcal{P} \equiv$ “all optima of Q are optima of P ”). Publications: [2, 5, 8, 9, 149, 222, 152, 7, 20, 19, 22, 21, 155, 12, 23, 29, 31, 34, 35, 37, 165, 166, 168, 44, 42, 43, 174, 54, 47, 176, 177, 175, 230, 130, 232, 61, 193, 76, 133, 66, 238, 77, 83, 84, 86, 87, 89, 91, 92, 93, 94, 95, 96, 97, 98, 99, 120, 135, 136, 137, 138, 140, 142, 196, 202, 206, 207, 208, 210, 243, 214, 246, 215, 248, 249, 250, 264]. Software: ROSE [193, 136]. Patents: [253]. Funding: [6, 7, 14, 11, 12, 13, 21, 24, 28, 32].
- *Global optimization and Mixed-Integer Nonlinear Programming*. Deterministic ε -approximate (spatial Branch-and-Bound) and heuristic solution algorithms for nonconvex Mixed-Integer Nonlinear Programs (MINLP). Publications: [2, 4, 6, 145, 148, 149, 222, 20, 17, 156, 31, 171, 228, 53, 54, 47, 113, 177, 68, 61, 58, 188, 116, 76, 189, 117, 118, 66, 238, 77, 81, 83, 85, 87, 92, 93, 94, 96, 97, 98, 99, 103, 268, 123, 106, 135, 137, 140, 141, 142, 199, 202, 205, 215, 216, 218, 248, 250, 265, 266]. Software: COUENNE [81], RECIPE [68, 205], *ooOPS* [266]. Funding: [7, 14, 18, 20, 39].
- *Combinatorial optimization*. Mixed-Integer Linear Programming (MILP) solution techniques: branching on general disjunctions, spherical cuts, symmetry-breaking, convex hull, binary quadratic programs; clustering by modularity maximization; problems on graphs: covering by bipartite graphs, shortest paths on dynamic graphs, minimum fundamental cycle bases; kissing numbers. Publications: [152, 7, 22, 155, 12, 28, 23, 157, 34, 226, 37, 165, 168, 38, 40, 39, 50, 174, 49, 131, 55, 57, 48, 129, 178, 172, 115, 182, 132, 71, 64, 75, 78, 67, 69, 70, 79, 80, 82, 88, 89, 91, 100, 102, 119, 121, 122, 124, 135, 192, 239, 240, 241, 208, 209, 210, 211, 212, 213, 214, 244, 245, 246, 92, 219, 247, 220, 221, 251, 262, 264]. Software: minfcb [82]. Patent: [255]. Funding: [3, 19, 23, 35, 36, 3].
- *Distance geometry and bioinformatics*. Protein structure from NMR data, morphogenesis, Hartree-Fock equations. Publications: [1, ??, 5, 146, 143, 10, 14, 20, 24, 11, 16, 18, 26, 25, 158, 125, 104, 105, 160, 30, 33, 31, 224, 164, 225, 163, 36, 170, 41, 229, 38, 173, 45, 46, 112, 127, 128, 60, 129, 180, 181, 65, 51, 52, 59, 184, 231, 234, 186, 62, 187, 63, 194, 74, 72, 73, 83, 85, 90, 93, 101, 139, 141, 197, 198, 200, 201, 203, 242, 206, 207, 216, 217, 263]. Software: branchprune, MD-jeep [194, 263]. Funding: [4, 17, 29, 30, 33].

- *Complex industrial systems.* Applications of optimization to complex systems arising in industry: efficient routing on traffic-dependent road networks, gamma knife configuration, optimization of a biomass production process, optimized platforming, verification of embedded code, recommender systems (and other subjects). Publications: [2, 150, 149, 222, 223, 27, 155, 154, 12, 159, 10, 31, 34, 161, 162, 32, 37, 165, 168, 167, 169, 171, 228, 44, 42, 39, 114, 178, 56, 179, 182, 183, 235, 236, 190, 189, 191, 79, 86, 87, 88, 137, 195, 204, 240, 209, 211, 213, 244, 215]. Patents: [254, 255]. Funding: [1, 5, 9, 8, 11, 15, 19, 22, 25, 26, 27, 31, 34, 35, 36, 37, 38, 39].
- *Optimization and Sustainable Development.* Research on the application of optimization methods to sustainable development applications: transportation and energy. Publications: [8, 154, 12, 31, 165, 168, 167, 169, 171, 42, 47, 178, 185, 233, 261]. Funding: [1, 8, 11, 15, 12, 22, 18, 16].
- *Natural Language Processing.* Research on natural language and computational linguistics. Publications: [144, 147, 10, 151]. Funding: [2].

Grants and sponsorships

1. *RTE 2.* Alternating current optimal power flow (PI, 75KEUR, 3 years starting 2020).
2. *OneTeam.* Design and implementation of a chatbot for client service (PI, 54KEUR, 3 years starting 2020).
3. *D-ICE.* Optimal trajectories for hybrid ocean vessels (co-PI, 54KEUR, 4 years starting 2020).
4. *MultiBioStruct.* ANR (PRCI) project on structural bioinformatics, in partnership with Taiwan's Academia Sinica, led by IRISA (local PI for LIX WP, 108KEUR, 4 years starting 2019).
5. *Crédit Agricole.* Optimization methods for real-time fraud detection (PI, 420KEUR, 3 years started 2019).
6. *DigiCosme.* Sparse Wars, Episode II: Parsimony Battles (PI, 50KEUR, 1 year started 2019).
7. *MINOA.* Marie-Curie ITN on Mixed-Integer Nonlinear Programming (participant for CNRS, 260KEUR, 1 Ph.D. fellowship, 4 years, started 2018).
8. *RTE 1.* Quantile regression in large energy datasets; at LIX, École Polytechnique (PI, 13KEUR, 1 year started 2017).
9. *CISCO Foundation.* Optimal deployment of wireless networks; at LIX, École Polytechnique (PI, 95KUSD, 1 year, started 2017).
10. *IRT SystemX.* Multi-modal transport network control: planning the last-mile transportation mode; at LIX, École Polytechnique (PI, 61KEUR, 4 years, started 2017).
11. *Siebel Energy Institute.* Quantile regression in large energy datasets; at LIX, École Polytechnique (PI, 50KUSD, 6 months, started 2017).
12. *PGMO.* Diagonally dominant programming for Optimal power flow problems; at LIX, École Polytechnique (PI, 12KEUR, 1 year, started 2016).
13. *IBM France.* PhD studentship on Business Rules reformulation; at LIX, École Polytechnique (PI, 45KEUR, 3 years, started 2014).
14. *MINO.* Marie-Curie ITN on Mixed-Integer Nonlinear Programming (local PI for École Polytechnique, 200KEUR, 1 Ph.D. fellowship, 4 years, started 2012).
15. *SO Grid.* Smart grid prototype with power line communications (workpackage leader, 200KEUR, 3 years, started 2012).
16. *MSR Thesis Grant.* Microsoft Research PhD thesis award about optimization and simulation; at LIX, École Polytechnique (PI, 3 years starting 2012, 100KEUR).
17. *Bip:Bip.* ANR project on bioinformatics led by Institut Pasteur (LIX workpackage leader, 119KEUR, 5 years, started 2012).
18. *IFPen.* PhD studentship on black-box MINLP techniques applied to reservoir engineering; at LIX, École Polytechnique (PI, 30KEUR, 3 years, started 2011).
19. *Mediamobile.* PhD studentship on multimodal shortest paths on large dynamic graphs research; at LIX, École Polytechnique (co-PI, 57KEUR, 3 years, started 2009).
20. *EWMINLP10 workshop sponsorship* from IBM and TOTAL, 2010, 6KEUR (co-PI).
21. *ARM.* Digiteo "Emergence" project on Reformulations in Mathematical Programming, 3 years starting sept. 2009, 109KEUR (PI).

22. *OSD*. Microsoft Chair on Sustainable Development, 4 years starting 2009, 540KEUR (PI).
23. *CTW09 workshop sponsorship*. Digiteo support for scientific events, 7.5KEUR (PI).
24. *RMNCCO*. Digiteo “Senior Chair” on Reformulations in Mathematical Programming, 4 years starting march 2009, 250KEUR (PI).
25. *ASOPT*. ANR project on software verification, 3 years starting sept. 2008, around 700KEUR (5 partners).
26. *PASO*. Digiteo Emergence project on software verification, 2 years starting july 2008, 110KEUR (4 partners).
27. *FLUCTUAT*. Digiteo OMTE project on software verification, 1 year starting june 2008, around 50KEUR (2 partners).
28. *Digiteo Visiting Professor sponsorship*. Funding for inviting Prof. P. Hansen (GERAD, Canada) at LIX for 6 months in 2008/2009.
29. *X Visiting Professor sponsorship*. Funding for inviting Prof. C. Lavor (UniCamp, Brazil) at LIX for a 2-months period in 2009.
30. *CNRS Visiting Professor sponsorship*. Funding for inviting Prof. C. Lavor (UniCamp, Brazil) at LIX for a 3-months period in 2008.
31. *EDONA*. Paris Region System@tic project, part of Num@tec Automotive, for co-operative R&D in car electronics. Consortium of 19 industrial and academic partners; at LIX, École Polytechnique (PI for LIX Work Package, 56KEUR, 24 months starting 2007).
32. *ARS*. ANR (Agence Nationale de la Recherche) project on Automatic Reformulation Search; at LIX, École Polytechnique (PI for the whole project, 118KEUR, 36 months starting 2007).
33. *Morphex*. EU project on the transition from genetic to morphological features in living beings: *in silico* simulations; at LIX, École Polytechnique (co-PI for the Work Package in which LIX participates, around 100KEUR, 24 months starting 2007).
34. *Post-doctoral fellowship fundings, complex industrial systems*. A post-doctoral fellowship on the subject of complex industrial systems awarded by the Ile-de-France region; at LIX, École Polytechnique (co-PI, 72KEUR, 18 months starting 2007).
35. *Mediamobile*. PhD studentship on shortest paths on large dynamic graphs research; at LIX, École Polytechnique (PI, 45KEUR, 3 years, starting 2006).
36. *Shortest paths on large dynamic graphs*. Partial real-time traffic information is interpreted as a dynamic (time) cost on a geographical graph representing the French route network. Computing shortest paths in such a graph is a challenging practical problem. This project is industrially sponsored by Mediamobile and organised within the framework of the Chaire Thales, LIX, École Polytechnique (PI, 20KEUR, early 2006).
37. *System@tic/Usine logicielle*. Ile-de-France project for the ParisTech competitiveness pole; focusing on verification and validation of software systems; at LIX, École Polytechnique (scientific adviser, around 120KEUR, 60 months started early 2006).
38. *Complex industrial systems*. A complex industrial system can be seen as a collection of hypergraphs which model all the relationships among the different agents. From this model it is possible to formulate related (nonlinear) scheduling and classification problems. This project is led by Prof. D. KroB (LIX, École Polytechnique) and sponsored by Thales Group (around 1MEUR over 5 years, on the grant 2005-2009).
39. *Biomass-based energy production*. Energy can be produced by processing biomass-based materials, including wasted alimentary fats and unused agricultural products. The planning and running of such an industrial plant requires the use of optimization. This is an industrially sponsored project in collaboration with TechnoPlan, a small Milan firm which received a regional grant for building such plants throughout many Italian regions (co-PI, 30KEUR, 2005-2006).
40. *Ipnos partnership*. Founded in London, UK in 2001, with three partners. Management and design of computer networks. Research and development of B2B paradigm on-line software packages. Net revenue: around 35K GBP / year (co-founder and partner at 45%), until 2006.
41. *IrisTech s.r.l.* Founded in Milan, Italy in 2000, with two partners. Website hosting for medium-sized businesses. Net revenue: 50K euro / year. Co-founder and partner at 20% until 2002.

Prizes

- **IFORS Distinguished Lectureship at APORS 2018²**
- IBM Faculty Award (nov. 2015).
- “Best of computing” notable article mention awarded by the ACM Computing Reviews’ 19th *Annual Best of Computing* to 45 — awarded³ to 87 among all papers and books in computing (broadly defined, includes science and technology) published during 2014.
- Co-winner [61] of the best paper award for the Journal of Global Optimization in 2012 (chosen over 140 papers).
- Glover-Klingman prize for the best paper [64] published on the “Networks” journal published by Wiley in 2012 (voted best over 60 papers).
- 2nd position in the “Modularity Clustering Quality Challenge” section of the 10th *DIMACS Implementation Challenge* 2012.
- 2nd “Robert Faure” ROADEF prize 2009 (this is the tri-ennial prize of the French OR society, with three laureates at each edition).
- “Best poster” prize at Digiteo Annual Forum 2008.
- IMA (Institute for Mathematics and Applications) Prize for “exceptional performance” on completion of the B.Sc.

Administrative responsibilities

- President of the recruitment/search committee for an assistant professorship (MCF) at the Comp. Sci. Dept. of Ecole Normale Supérieure (LIENS), 2018.
- Evaluation of research projects for Holland (NWO), 2017-.
- Evaluation of research projects for Chile (FONDECYT), 2017-.
- Member of the board of the Doctoral School in Computer Science of the University of Pisa, Italy, 2017-.
- **CNRS National Committee Member for Computer Science, nominated to section 6 of the Institute of Computer Science (INS2I), 2016-2021** (considered a major administrative service by CNRS).
- Siebel Energy Institute (funding program for energy), campus lead, 2015-.
- Evaluation of projects for Brazil (CNPq), 2015-2020.
- Member of the Goldstine Fellowship recruiting committee (IBM Research), 2013-2014.
- PGMO (funding program for optimization) scientific committee, 2012-2015.
- Recruitment/search committee for Rennes University (assistant prof./MCF), 2011.
- **Vice-president of the Comp. Sci. Department at Ecole Polytechnique, 2010-2012.**
- **Director of Microsoft-CNRS Chair “Optimization and Sustainable Development”, 2010-2014.**
- **Founder and head of the “System Modelling and Optimization (SYSMO) research team at LIX, Ecole Polytechnique, 2010-2012.**
- Evaluation of projects/researchers for Italy (PRIN/MIUR/ANVUR), 2009-.
- Digiteo (funding agency) program committee, 2008-2009.
- Recruitment/search committee for Paris 6 University, 2007-2010.
- Recruitment/search committee for Paris-Sud University, 2007-2008.
- Recruitment/search committee for LIX, Ecole Polytechnique, 2006-2015.

Academic communities

²ifors.org/ifors-distinguished-lectures/

³www.computingreviews.com/recommend/bestof/notableitems.cfm?bestYear=2014&more=yes.

- JOGO Best Paper Award 2019 jury member sites.google.com/site/jogobestpaper/
- “DIMACS/Simons Collaboration in Bridging Continuous and Discrete Optimization” Steering Committee member dimacs.rutgers.edu/DIMACS-SimonsOptim/
- “DIMACS 2018-2020 Special Focus on Bridging Continuous and Discrete Optimization” Organizing Committee member dimacs.rutgers.edu/SpecialYears/2018_Optimization/
these two DIMACS initiatives were partly spawned by the DGTA16 workshop I organized at DIMACS in 2016, for which I obtained NSF funding through a US-based colleague
- European Doctoral Dissertation Award (EDDA) committee member for 2013.
- INFORMS Optimization Society Vice-president for global optimization, 2013-2015.
- COIN-OR (open-source optimization software) Foundation member 2012-.

Editorial responsibilities

- Reviewer for *Mathematical Reviews* 2015-2018
- Associate Editor for *Operations Research Letters* – ORL – (Elsevier) 2013-.
- Associate Editor for *EURO Journal of Computational Optimization* – JCO – (Springer) 2012-.
- Associate Editor for *Computational Management Science* – CMS – (Springer) 2011-.
- **Editor-in-Chief** (with S. Martello and T. Marchant) of *4OR* (Springer) 2010-2016. *During my tenure, the journal’s impact factor rose from 0.323 (2011) to 1.371 (2015).*
- Editor of *Discrete Applied Mathematics* – DAM – (Elsevier) 2010-.
- Associate Editor for *International Transactions in Operational Research* – ITOR – (Wiley) 2007-2016.
- Associate Editor for *Journal of Global Optimization* – JOGO – (Springer) 2006-.
- Guest co-editor of special issues in various journals, see the relevant section in the publications list below.
- Referee for many international journals and conferences.

Conference organization

- Programme Committee member for LION15 2021 (LNCS Proceedings)
- Programme Committee member for ESA 2021, Algorithmic Engineering Track B (LIPIcs)
- Scientific Committee member for ISMP 2021 (MINLP Track in Discrete Optimization Cluster)
- Program Committee member for MOTOR 2021 (LNCS Proceedings)
- Program Committee member for ICVNS 2020 (LNCS Proceedings)
- Program Committee member for GOW 2020 (a.k.a. HUGO20)
- Program Committee member for ISCO 2020 (LNCS Proceedings)
- Program Committee member for CTW 2020
- Program Committee member for CTW 2019
- General co-chair for the Oberwolfach workshop on MINLP 2019
- Program Committee member for WCGO 2019
- Program Committee member for GOW 2018 (a.k.a. LeGO20)
- **General chair for CTW 2018**
- Scientific Committee member for ISMP 2018 (stream 4,f)
- Program Committee member for ISCO 2018 (LNCS Proceedings)
- Program Committee member for IWOBIP 2018
- Program Committee member for ICVNS 2018
- Program Committee member for LAWCG 2018
- General co-chair for GOR DG workshop 2017
- Program Committee member for FCT 2017 (LNCS Proceedings)
- Program Committee member for ROADEF 2017

- Program Committee member for GOW 2016
- General co-chair for the DGTA workshop on Distance Geometry at DIMACS, 2016
- Program Committee member for ISCO 2016
- General co-chair for the Oberwolfach workshop on MINLP 2015
- Program Committee member for BIOINFORMATICS 2015
- Program Committee member for Int. Conf. on Variable Neighbourhood Search (ICVNS) 2014
- Program Committee member for BIOINFORMATICS 2014
- Program Committee member for ISCO 2014 (LNCS Proceedings)
- Track chair (Global optimization and MINLP) for INFORMS 2013
- Organizing committee co-chair for CWMINLP 2013
- Program Committee member for SEA 2013 (LNCS Proceedings)
- Program Committee member for ESA 2013 (LNCS Proceedings)
- Track co-chair (Global optimization and MINLP) for ICCOPT 2013
- **Program Committee co-chair for ATMOS 2012** (OASICs Proceedings)
- Program Committee member for the Symp. on Experimental Algorithms (SEA), 2012 (LNCS Proceedings)
- Program Committee member for MECVNS 2012
- Program Committee member for MatHeuristics 2012 international workshop
- Program Committee member of the Int. Conf. on Op. Res. and Enterprise Syst. (ICORES), 2012
- Program Committee member of the Eur. Symp. on Computer Aided Process Eng. (ESCAPE), 2012
- Organization of the workshop Pretty Structures 2011 (IHP, Paris, May 2011, with J. Edmonds)
- Track co-chair (Global optimization and MINLP) for EURO 2010
- Organizing committee co-chair for Oberwolfach Workshop “Exploiting Symmetry in Optimization” (2010)
- Organizing committee co-chair for CPAIOR 2010 satellite workshop HybridNL
- Chair of the 6th Optimeo Day (Paris, 2010)
- Organizing committee member for Complex Syst. Design & Manag. conf. (CSDM) 2010
- Program Committee member for MatHeuristics 2010 international workshop
- Organizing committee co-chair for TOGO10 international workshop on Global Optimization, August 2010
- Scientific committee member of the international conference ICOSC2010, July 2010
- Organizing committee co-chair for EWMINLP10 international workshop on MINLPs, April 2010
- **General chair for CTW 2009**
- Organizing committee co-chair for CPAIOR 2009 satellite workshop BR-OPT
- Chair of the 1st Optimeo Day (Paris, 2008)
- Program and organizing committee member of the “Colloque d’Automne du LIX”, 2007
- Steering committee member for CTW workshops, 2007-
- Program committee member of Mini Euro Conf. on Variable Neighbourhood Search (MECVNS) 2005
- Organizing committee of Cologne-Twente Workshop (CTW) on graphs and comb. opt. (CTW), 2004

Conference attendance

This list only includes events where I gave a talk or organized sessions/tracks/the event. A “plenary” is an invited research or tutorial talk longer than the majority of other talks at a workshop or conference. An “all-invited” workshop or conference only consists of invited (and possibly plenary) talks.

- Winter School on Geometric Constraint Systems, Jan. 2021, Toronto
<http://www.fields.utoronto.ca/activities/20-21/constraint-school>
plenary tutorial speaker (3h), “*Research School*” at *Fields Institute Toronto*, online
- Deep Learning for Graphs (DL4G20), April 2020
satellite workshop of the Web Conference 2020 (WEB20)
www.aminer.cn/dl4g_www2020 accepted contribution, **online**

- Mixed-Integer Games, Maastricht, The Netherlands, Sept. 2020
sites.google.com/view/mixedintegergames, **plenary speaker** *first edition*
[cancelled because of COVID-19 epidemic]
- Discrete Optimization and Machine Learning, Tokyo, Japan, July 2020
doml.zib.de, **invited speaker** *around 60 participants; all-invited*
[cancelled because of COVID-19 epidemic]
- Optimization Days, Montreal, Canada, Apr. 2020, **plenary speaker**
symposia.gerad.ca/jopt2020 [cancelled because of COVID-19 epidemic]
- Journées de Géométrie Algorithmique (JGA), Mar. 2020, conferences.cirm-math.fr/2164.html
plenary tutorial speaker, “*Research School*” at CIRM Luminy
- MINLP Theory and Computation, Montreal, Canada, Oct. 2019, **invited speaker**
main event of a “thematic month” dedicated to MINLP at CRM Montreal; all-invited
- First Joint Meeting Brazil-France in Mathematics, Rio de Janeiro, Brazil, July 2019
invited to a special session on graphs
- Discrete Optimization and Machine Learning, Tokyo, Japan, July 2019
www.cas.mcmaster.ca/deza/tokyo2019.html, **invited speaker**
around 60 participants; all-invited [could not go for family reasons]
- SIAM-AG19, Bern, Switzerland, July 2019, mathsites.unibe.ch/siamag19/
SIAM conference in applied algebraic geometry
- DGTA19, DIMACS, Rutgers University, USA, June 2019,
dimacs.rutgers.edu/events/details?eID=322, **plenary speaker**
distance geometry theory and applications workshop; around 40 participants; all-invited.
- Oberwolfach workshop on MINLP, Germany, June 2019, www.mfo.de/occasion/1923, **co-chair**
2nd mixed-integer nonlinear programming Oberwolfach workshop; around 55 participants; all-invited.
- IPCO19, Ann Arbor, USA, May 2019, umich.edu/ipco2019conf/accepted.html
the most selective conference in mathematical programming
- COW19, Aussois, France, Jan. 2019, www.iasi.cnr.it/aussois/web/home/program/year/2019,
invited speaker, *annual combinatorial optimization workshop; around 100 participants; all-invited*
- GeometricRig18 at Schrödinger Institute, Vienna, Austria, Sept. 2018, www.maths.lancs.ac.uk/nixon/ESI/,
plenary speaker
Geometric Rigidity workshop; around 50 participants; most speakers are invited, plenaries a subset.
- APORS18, Kathmandu, Nepal, Aug. 2018, apors2018-nepal.org/speakers/, **IFORS Distinguished Lecturer** (also see the “Prizes” section)
Triennial conference of the Asia-Pacific Operations Research Societies (APORS) organization
- Discrete Optimization and Machine Learning (DOML), Tokyo, Japan, July 2018,
www.cas.mcmaster.ca/deza/tokyo2018.html, **invited speaker**, *around 60 participants; all-invited*
- SIAM-AN18, Portland (OR), USA, July 2018, www.siam.org/Conferences/CM/Main/an18, *session chair*
Annual meeting of the Society of Industrial and Applied Mathematics.
- ISMP18, Bordeaux, France, July 2018, ismp18.sciencesconf.org, *cluster co-organizer*
International Symposium in Mathematical Programming, main (large, non-selective) conference in mathematical programming, around 1500 talks.
- CTW18, Paris, France, June 2018, ctw18.lipn.univ-paris13.fr, *general chair*
Cologne-Twente workshop on graphs and combinatorial optimization workshop series started by U. Faigle in 1990s; around 70 participants.
- Haifa Workshop on Interdisciplinary Applications of Graphs Combinatorics and Algorithms, Haifa, Israel, May 2018, cri.hevra.haifa.ac.il, **plenary speaker**
annual graph workshop series started by M. C. Golumbic in 2000; around 40 participants.
- Optimization and Discrete Geometry Theory and Practice, Tel Aviv, Israel, Apr. 2018,
www.cas.mcmaster.ca/deza/tau2018.html, **invited speaker**, *around 40 participants; all-invited.*
- Dagstuhl Workshop on MINLP, Dagstuhl, Germany, Feb. 2018, www.dagstuhl.de/18081, **invited speaker**
1st mixed-integer nonlinear programming Dagstuhl workshop; around 60 participants; all-invited.
- GOR-DG17, Bad Honnef, Germany, Nov. 2017, www.lix.polytechnique.fr/liberti/dg17, **co-chair**
distance geometry workshop at the Physikzentrum Bad Honnef; around 30 participants; all-invited.

- ISORA17, Lima, Peru, Oct. 2017, isora2017.imca.edu.pe, **plenary speaker**
regularly occurring nonlinear control and optimization conference; around 80 participants.
- CNMAC17, S. José dos Campos (SP), Brazil, Sep. 2017, 2017.cnmac.org.br, **plenary speaker**
annual national computational and applied mathematics conference in Brazil.
- AIRO17, Sorrento, Italy, Sept. 2017
annual national operations research conference in Italy.
- ECM17, Hong Kong, China, May-June 2017
3rd conference on engineering and computational mathematics.
- MOMI17 Applied-Industrial Mathematics Workshop/PhD. School, Sophia-Antipolis, France, Feb. 2017, phd-seminars-sam.inria.fr/monde-des-mathematiques-appliquees-momi2017, **plenary speaker**
1st PhD-organized workshop at INRIA Sophia-Antipolis; around 50 participants; all-invited.
- COW17, Aussois, France, Jan. 2017, www.iasi.cnr.it/aussois/web/home/program/year/2017,
plenary speaker, *annual combinatorial optimization workshop; around 100 participants; all-invited; plenary talks introduced in 2016; gave rise to invited survey [21]*
- DGD16, Rennes, France, Dec. 2016, forum.cs-dc.org/topic/517, **plenary speaker**
around 30 participants; all-invited.
- INFORMS16, Nashville, USA, Nov. 2016
annual national operations research conference in USA.
- GOW16, Braga, Portugal, Sept. 2016
(almost) annual global optimization workshop.
- ICCOPT16, Tokyo, Japan, August 2016
three-yearly conference on continuous optimization.
- DGTA16, DIMACS, NJ, USA, July 2016, dimacs.rutgers.edu/archive/Workshops/Distance/, **co-chair**
distance geometry theory and applications workshop; around 50 participants; all-invited.
- GeometricRig16 at IMCS, Edinburgh, UK, June 2016, www.icms.org.uk/workshop.php?id=383 (stale link), **invited speaker**, *Geometric Rigidity workshop; around 60 participants; all-invited.*
- ECCO16, Budapest, Hungary, May 2016, ecco2016.weebly.com, **plenary speaker**
29th conference of the European Chapter in Combinatorial Optimization; around 120 participants.
- CTW16, Gargnano, Italy, June 2016.
- ISCO16, Vietri, Italy, May 2016
4th international symposium on combinatorial optimization.
- AASS16 at IMPA, Rio de Janeiro, Brazil, March 2016, svan2016.sciencesconf.org, **invited speaker**
Analysis and applications of stochastic systems; around 80 participants.
- IWOBIP16, Monterrey, Mexico, March 2016, bi-level.fcfm.uanl.mx/index.php/en/, **plenary speaker**
1st int. workshop on bilevel programming, around 50 participants.
- COW16 Combinatorial Optimization Workshop, Aussois, France, Jan. 2016, www.iasi.cnr.it/aussois/web/home/program/year/2016, **invited speaker**,
annual combinatorial optimization workshop; around 100 participants; all-invited
- INFORMS15, Philadelphia, USA, Nov. 2016
annual national operations research conference in USA.
- Oberwolfach workshop on MINLP, Germany, Oct. 2015, www.mfo.de/occasion/1543, **co-chair**
1st mixed-integer nonlinear programming Oberwolfach workshop; around 55 participants; all-invited.
- AIRO15, Pisa, Italy, September 2015, www.airo.org/conferences/airo2015 (stale link), **plenary speaker**
annual national operations research conference in Italy; around 250 participants.
- JPOC9, Le Havre, France, June 2015, www.lamsade.dauphine.fr/poc/jpoc9, **plenary speaker**
journées polyèdres et optimisation combinatoire; around 40 participants.
- MIP15, Chicago, USA, June 2015, sites.google.com/site/mipworkshop2015, **invited speaker**
annual workshop on mixed-integer programming; around 80 participants; all-invited.
- ECCO15, Catania, Italy, May 2015, *session chair*
28th conference of the European Chapter in Combinatorial Optimization.
- EWGLA15, Budapest, Hungary, May 2015, math.bme.hu/ewgla2015, **plenary speaker**
22nd workshop of the Euro Working Group on Locational Analysis; around 50 participants.

- MINLP15, Sevilla, Spain, March 2015, www.imus.us.es/MINLP15/, **invited speaker**
2nd Sevilla workshop on Mixed-Integer Nonlinear Programming; around 40 participants; all-invited.
- Many Faces of Distances, Campinas, Brazil, October 2014, www.ime.unicamp.br/workshop_distances, **plenary speaker**, *Workshop on distance geometry; around 60 participants; all-invited.*
- MAGO14, Global Optimization Workshop, Sept. 2014
(almost) annual global optimization workshop.
- ICM14, Seoul, South Korea, August 2014, *session chair*
the four-yearly International Congress of Mathematicians.
- IFORS14, Barcelona, Spain, July 2014, *session chair*
congress of the international federation of operations research societies.
- CMU-MINLP Workshop, Pittsburgh, USA, June 2014, minlp.cheme.cmu.edu/2014, **invited speaker**
Mixed-Integer Nonlinear Programming workshop at CMU; around 70 participants; all-invited.
- SIAM14 Optimization Conference, San Diego, USA, May 2014
three-yearly SIAM conference on optimization.
- IOS14 INFORMS Optimization Society conference, Houston, USA, Mar. 2014
INFORMS Optimization Society conference.
- GOR91 on Deterministic Global Optimization, Bad Honnef, Germany, Dec. 2013,
www.gor-ev.de/wp-content/uploads/2016/08/PMO-91.pdf, **invited speaker**
Global optimization workshop at Physikzentrum Bad Honnef; around 30 participants; all-invited.
- OSE13, Åbo (Turku), Finland, Nov. 2013, blogs.abo.fi/ose/annual-seminar-2013, **plenary speaker**
Annual seminar of the Optimization and System Engineering group at Åbo University; this is a one-day workshop organized around a prominent invited researcher; around 30 participants; all-invited.
- INFORMS13, Minneapolis, USA, Oct. 2013, *track organizer*
annual national operations research conference in USA.
- DGA13, Manaus, Brazil, June 2013, dga2013.icomp.ufam.edu.br, **plenary speaker**
workshop on distance geometry and applications; around 50 participants; all-invited.
- CLAIO/SBPO, Rio de Janeiro, Brazil, Sept. 2012
joint operations research conference in Brazil.
- PGM0, Paris, France, Sept. 2012, www.fondation-hadamard.fr/fr/pgmo-conferences/pgmo-previous-events
invited speaker, *1st workshop organized by Programme Gaspard Monge pour l'Optimisation.*
- ISMP12, Berlin, Germany, August 2012, *session chair*
three-yearly international symposium on mathematical programming.
- GOW12, Natal, Brazil, June 2012, gow12.dca.ufrn.br (stale link), **plenary speaker**
(almost) annual global optimization workshop; around 80 participants.
- GSC12, Univ. d'Artois, France, June 2012, www.gsc2012.org (stale link), **plenary speaker**
green supply chain workshop; around 100 participants.
- CTW12, Munich, Germany, May 2012, *session chair.*
- LION6, Paris, Jan. 2012, link.springer.com/content/pdf/bfm%3A978-3-642-34413-8%2F1.pdf (p. XVI), **plenary speaker**, *6th conference on learning and intelligent optimization; around 80 participants.*
- INFORMS11, Charlotte, USA, Nov. 2011
annual national operations research conference in USA.
- BALCOR11, Thessaloniki, Greece, Sept. 2011, balcor.uom.gr, **plenary speaker**
10th Balkan Operations Research conference; around 100 participants.
- MIP11, Waterloo, Canada, June 2011, www.math.uwaterloo.ca/mip2011, **invited speaker**
annual workshop on mixed-integer programming; around 80 participants; all-invited.
- CTW11, Frascati, Italy, June 2011.
- HybridNL11, Berlin, Germany, May 2011, sites.google.com/site/hybridnl2011, **plenary speaker**
satellite workshop of Constraint Programming Artificial Intelligence Operations Research (CPAIOR) conference 2011; around 30 participants; all-invited.

- Pretty Structures 2011, Paris, France, May 2011, www.lix.polytechnique.fr/liberti/pretty_structures/, **invited speaker**
a workshop on combinatorics I co-organized at IHP with J. Edmonds, and where I gave an invited speakership: what happened was that I was invited as a speaker while, behind the scenes, Jack fought with every candidate co-organizer he tried to work with; all abandoned the endeavour, and eventually Jack's wife Kathie Cameron asked me to step in as a special favor — thus I was co-organizer and invited speaker at the same time; around 50 participants; all-invited.
- AUSSOIS11 Combinatorial Optimization Workshop, Aussois, France, Jan. 2011. **Invited speaker**
annual combinatorial optimization workshop; around 100 participants; all-invited.
- ORBEL10, Ghent, Belgium, Feb. 2011 **Plenary speaker**
annual national operations research society conference in Belgium; around 200 participants.
- COCOA10, Kona, USA, Dec. 2010
Combinatorial Optimization and Applications workshop.
- ewMINLP-Seville, Seville, Spain, Dec. 2010 **Invited speaker**
1st Sevilla workshop on Mixed-Integer Nonlinear Programming; around 40 participants; all-invited.
- ICMS10, Kobe, Japan, Sept. 2010
International Conference on Mathematical Software — a satellite workshop of the International Conference of Mathematicians
- TOGO10, Toulouse, France, August 2010. **Co-chair**
(almost) annual global optimization workshop.
- OPTSYM10, Oberwolfach, Germany, August 2010. **Co-chair**
Oberwolfach mini-workshop on symmetry in discrete optimization
- ICCOPT10, Santiago, Chile, July 2010
three-yearly conference on continuous optimization.
- EURO10, Lisbon, Portugal, July 2010. *Track organizer.*
three-yearly conference of the EURO operations research society
- ALIO/INFORMS10, Buenos Aires, Argentina, June 2010
Combined conference of the ALIO and INFORMS operations research societies
- CTW10, Köln, Germany, May 2010.
- SEA10, Ischia, Italy, May 2010
Symposium on Experimental Algorithms.
- EWMINLP10, Marseille, France, April 2010. **Co-chair**
European Workshop on mixed-integer nonlinear programming.
- ISCO10, Hammamet, Tunisia, Mar. 2010
International Symposium on Combinatorial Optimization.
- JFRO10, Paris, France, March 2010. **Plenary speaker**
Journées Francophones en Recherche Operationnelle.
- ROADEF10, Toulouse, France, Feb. 2010
annual national operations research society conference in France.
- AUSSOIS10 Combinatorial Optimization Workshop, Aussois, France, Jan. 2010. **Invited speaker**
annual combinatorial optimization workshop; around 100 participants; all-invited.
- SOBRAPO09 Brazilian OR conference, Bahia, Brazil, Sept. 2009. **Plenary speaker**
annual national operations research society conference in Brazil; around 300 participants; gave rise to invited survey [73]
- ISMP09 Conference, Chicago, USA, August 2009. *Session chair*
three-yearly international symposium on mathematical programming.
- MOPTA09 Conference, Lehigh, USA, August 2009
annual Lehigh Valley conference on optimization theory and applications
- IFIP09 Conference, Buenos Aires, Argentina, July 2009. **Plenary speaker** (replacing a missing plenary speaker)
24th IFIP TC7 Conference on System Modelling and Optimization; around 150 participants.
- JPOC6 Workshop, Bordeaux, France, June 2009. **Plenary speaker**
Journées sur les polyèdres et l'optimisation combinatoire.

- CTW09, Paris, France, June 2009. **General Chair.**
- CIMINLP Workshop, Bordeaux, France, March 2009. **Invited speaker**
workshop on Computational Issues in mixed-integer nonlinear programming; around 30 participants
- IMA MINLP Conference, Minneapolis, USA, Nov. 2008. **Invited speaker**
workshop on mixed-integer nonlinear programming at the Institute of Mathematics and Applications; around 60 participants.
- COCOA08, St. John's, Canada, Aug. 2008
Combinatorial Optimization and Applications workshop.
- SAGO08, Kruger Park, South Africa, July 2008
(almost) annual global optimization workshop.
- AAIM08, Shanghai, China, June 2008
workshop on algorithmic aspects in information and management.
- CTW08, Gargnano, Italy, May 2008.
- NCP07, Rouen, France, Dec. 2007
workshop on nonconvex programming
- INFORMS07, Seattle, USA, Nov. 2007
annual national operations research conference in USA
- CTW07, Enschede, The Netherlands, May 2007. *Session chair.*
- ISMP06, Rio de Janeiro, Brazil, Aug. 2006. *Session chair*
three-yearly international symposium on mathematical programming.
- EURO06, Reykjavik, Iceland, July 2006. *Session chair*
three-yearly conference of the EURO operations research society
- ROADEF, Lille, France, Feb. 2006
annual national operations research society conference in France.
- MEC VNS, Tenerife, Spain, Nov. 2005. *Session chair*
Mini EURO Conference on Variable Neighbourhood Search
- EURO-ALIO 2005, Paris, France, Oct. 2005
combined EURO and ALIO operations research societies conference
- GO05, Almeria, Spain, Sept. 2005
(almost) annual global optimization workshop.
- AIRO05, Camerino, Italy, Sept. 2005. *Session chair*
annual national operations research conference in Italy.
- AIRO04, Lecce, Italy, Sept. 2004
annual national operations research conference in Italy.
- COLOQUIO SMP, Lima, Peru, July 2004. **Plenary speaker**
national colloquium of operations research in Peru.
- ERICE04, Erice, Italy, June 2004
workshop on continuous optimization at the Erice conference center.
- CTW04, Menaggio, Italy, June 2004. *Session chair.*
- SYM-OP-IS, Herceg-Novi, Serbia and Montenegro, Oct. 2003
annual national operations research conference in Serbia.
- ICOOC, Ulaanbaatar, Mongolia, Aug. 2002. *Session chair*
international conference on optimization and optimal control.
- IFORS Conference, Edinburgh, UK July 2002
congress of the international federation of operations research societies.
- SIAM Conference on Optimization, Toronto, Canada, May 2002
three-yearly SIAM conference on optimization.

Visiting terms and seminars

Note: Visits of one month or longer are emphasized in boldface.

- ORFE, Princeton University (2019, 1 seminar, invited by Amir Ali Ahmadi⁴).
- IEOR, Columbia University, USA (2019, **4 months**, visiting prof. supported by the Columbia Alliance).
- Dept. of Eng., Univ. Politecnica delle Marche, Italy (2018, **1 month**, invited by F. Marinelli).
- Dept. of Comp., Imperial College London (2018, 1 seminar, invited by Ruth Misener).
- IASI, CNR, Rome, Italy (2018, **1 month**, invited by Claudio Gentile).
- IRT-SystemX, France (2018, 1 seminar, invited by Patrice Aknin).
- IASI, CNR, Italy (2017, 1 seminar, invited by Claudio Gentile).
- Dept. of Mathematics, Univ. Catania, Italy (2017, 1 seminar, invited by Patrizia Daniele).
- Dept. of Comp. Science, Univ. Milano, Italy (2017, 1 seminar, invited by Roberto Cordone).
- Dept. of Automatic and Management Engineering (DIAG), Univ. di Roma “La Sapienza”, Italy (2017, 1 seminar, invited by Laura Palagi).
- School of Economics, Univ. di Roma “La Sapienza”, Italy (2017, **1 month** visiting professorship, invited by Fabio Tardella).
- Dept. of Comp. Sci., Pontificia Universidade Católica (PUC), Rio de Janeiro, Brazil (2017, 1 seminar, invited by Thibaut Vidal).
- Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil (2017, 1 week, invited by Claudia Sagastizábal).
- Dept. of Mathematics, Queen Mary University of London (QMUL), UK (2017, 1 seminar, invited by Bill Jackson).
- ISE, University of Washington, Seattle, USA (2016, 1 seminar, invited by Zelda Zabinski).
- POC seminar, Paris, France (2016, 1 seminar, invited by Mourad Baiou).
- MEMOTEF, Università “La Sapienza”, Rome, Italy (2016, 1 seminar, invited by Fabio Tardella).
- AVT, RWTH Aachen, Germany (2016, 1 seminar, invited by Alexander Mitsos).
- IEOR, Columbia University, USA (2015, 1 seminar, invited by Dan Bienstock).
- IBM TJ Watson Research Center, USA (2015, 1 seminar, invited by Sanjeeb Dash).
- Yahoo! Labs, USA (2015, 1 seminar, invited by Edo Liberty).
- DIMACS, Rutgers University, USA (2015, **1 month**, co-sponsored by DIMACS).
- LIPN, Université Paris 13 (2015, 1 seminar, invited by Roberto Wolfler).
- University of Tokyo, Japan (2015, 1 seminar, invited by Hiroshi Imai and JFLI).
- IMECC, University of Campinas (SP), Brazil (2015, **2 months**, visiting chair under *Chaires Françaises dans l'état de São Paulo*).
- Instituto Nacional de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil (2015, 1 week, invited by Mikhail Solodov).
- Paris Research Center, Huawei (2015, 1 seminar, invited by Amaya Nogales-Gomez).
- CPSE, Imperial College London (2015, 1 seminar, invited by Ruth Misener).
- FranceLab, IBM (2015, 1 seminar, invited by Christian de Sainte-Marie).
- Operations Research and Financial Engineering, Princeton University (2015, 1 seminar, invited by Amir Ali Ahmadi).
- Chemical Engineering, MIT (2014, 1 seminar, invited by Paul Barton).
- Chemical Engineering, Carnegie-Mellon university (2014, 1 seminar, invited by Nikolaos Sahinidis).
- GERAD, Montreal (2013, 1 week, invited by Pierre Hansen).
- Lehigh University (2013, 1 seminar, invited by Ted Ralphs).
- Rutgers University (2013, 1 seminar, invited by Farid Alizadeh).
- New York University (2013, 1 seminar, invited by Michael Pinedo).
- Singapore University of Technology and Design (2013, 1 week, invited by Giacomo Nannicini).
- DIIGA, Università Politecnica delle Marche (2012, 1 seminar, invited by Fabrizio Marinelli).
- Comp. Sci. Dept., IIT Delhi (2012, 1 seminar, invited by Naveen Garg).
- LIPN, Université Paris 13 (2011, 1 seminar, invited by R. Wolfler Calvo).

⁴I was told I was the only departmental seminar lecturer invited twice in the history of the ORFE department.

- COPPE, Universidade Federal do Rio de Janeiro; and IMECC, Universidade Estadual de Campinas (2011, 1 month, 2 seminars, invited by N. Maculan and C. Lavor).
- Lebanese-American University (2011, 1 seminar, invited by Faisal Abukhzam).
- CERFACS, Toulouse, France (2010, 1 seminar, invited by A. Mucherino).
- IMECC-Universidade do Estado de Campinas, São Paulo, Brazil (2010, 1 week, invited by C. Lavor).
- Tepper School of Business, Carnegie-Mellon University (2009, 1 seminar in the Tepper Research Seminar series).
- Chemical Engineering, Carnegie-Mellon University (2009, 1 seminar, invited by I. Grossmann).
- Gaz de France, Paris (2008, 1 seminar, invited by M.C. Plateau)
- T.J. Watson IBM Research Center, Yorktown Heights (2007, 1 seminar, invited by J. Lee).
- LIF, Université de Marseille à Luminy (2007, 1 seminar, invited by G. Cornuéjols).
- Università di Roma “La Sapienza” (2007, 1 seminar, invited by G. Patrizi).
- PRISM, Université de Versailles (2007, 1 seminar, invited by I. Tseveendorj).
- LAMSADE, Université Paris IX - Dauphine (2006, 1 seminar, invited by V. Paschos).
- LIAFA, Université Paris 6 (2006, 1 seminar, invited by M. Habib).
- COPPE, Universidade Federal do Rio de Janeiro (2006, 1 month, invited by N. Maculan).
- LINA, Université de Nantes (2006, 1 seminar, invited by X. Gandibleux).
- LRI, Université Paris 11 (2006, 1 seminar, invited by B. Rozoy).
- LIP6, Université Paris 6 (2006, 1 seminar, invited by F. Sourd).
- Conservatoire National d’Arts et Métiers (2006, 1 seminar, invited by A. Billionnet).
- LIPN, Université Paris 13 (2006, 1 seminar, invited by G. Plateau).
- Università degli Studi di Milano (2005, seminar, invited by M. Trubian).
- Academy of Sciences of Belgrade (2003-2004, 4 times, 1 week each time, 6 seminars, invited by N. Mladenović).
- COPPE, Universidade Federal do Rio de Janeiro (2004, **1 month**, invited by N. Maculan).
- Universidade do Estado do Rio de Janeiro (2004, 2 weeks, invited by C. Lavor).
- Universidad de Lima (2004, 1 week, invited by W. Sosa).
- Politecnico di Milano (2001-2002, twice, 2 seminars, invited by E. Amaldi).
- Università di Torino (2001, 1 seminar, invited by M. Locatelli).
- Università di Firenze (2001, 1 seminar, invited by F. Schoen).
- Università di Pisa (2001, 1 seminar, invited by G. Gallo).

Teaching experience

Note: The teaching material for the courses can be downloaded from www.lix.polytechnique.fr/liberti/teaching.

1. Administrative responsibilities.

- Organizer of the Optimization track in the master program in Computer Science at École Polytechnique, 2020-
- Co-organizer of a course in Text Mining and Natural Language Processing at Ecole Polytechnique, 2017-.
- Co-organizer of the “Master Parisien en Recherche Operationnelle” (MPRO — Paris Master in OR), 2011-2012.
- Vice-president of the Computer Science Department at Ecole Polytechnique, 2010-2012.
- Co-organizer of the specialization “Optimization, Communication, Signal” with F. Bonnans, 2008-2009.

2. Courses taught

- **Advanced Mathematical Programming.** Given at IEOR, Columbia University, 3 students. Lectures+Exercises: 54h. Level: Ph.D.

- **Large-scale Mathematical Programming.** Given at DIX, École Polytechnique (yearly since 2016). Around 20 students. Lectures+Exercises: 36h. Level: M.Sc.
- **Data Science.** Given at DIX, École Polytechnique, assistant to F. Nielsen (2015). 260 students. Exercises: 32h. Level: B.Sc.
- **Distance Geometry.** Graduate-level mini-course given at: (a) MFD14 workshop at the University of Campinas (Brazil) in 2014, (b) LIX Ecole Polytechnique in 2015, (c) Institut Pasteur in 2015, (d) Columbia University in 2015. 40 students. Lectures: 9h. Level: M.Sc., Ph.D. and over.
- **Natural Language Processing.** A mini-course about IBM Watson Technologies, given at LIX Ecole Polytechnique in 2015. 20 students. Lectures: 9h. Level: B.Sc., M.Sc., Ph.D.
- **Advanced Mathematical Programming.** Given within the MPRO programme, Conservatoire National d'Arts et Métiers. 15 students. Lectures: 8h. Level: M.Sc.
- **Operations Research and Sustainable Development.** Given within the MPRO programme, Conservatoire National d'Arts et Métiers. 15 students. Lectures: 8h. Level: M.Sc.
- **Fundamentals of programming and algorithms,** Given at DIX, École Polytechnique, 2 times. 250 students, Lectures: 18h. Course level: B.Sc.
- **Algorithms, Networks, Languages.** Given at DIX, École Polytechnique, assistant to B. Werner. Lectures and exercises: 12h. Level: B.Sc.
- **Software engineering.** Given at DIX, École Polytechnique, 4 times, with D. Krob. Course level: M.Sc.
- **Optimization: Modelling and Software.** Given at DIX, École Polytechnique, 3 times. Course level: M.Sc.
- **Operations Research.** Given at DIX, École Polytechnique, for the Master “Ingegnerie de Systèmes Industriels Complexes” (ISIC), 3 times. Course level: M.Sc.
- **Scheduling, linear programming and network flows.** Given at Paris VI University for the “Master Parisien en Recherche Informatique” (MPRI), 1st semester 2006-2007, 2007-2008 with C. Dürr and Ph. Baptiste. 35 students. Course level: M.Sc.
- **Introduction to C++ (Online).** For DIX/DMAP, École Polytechnique.
- **Introduction to C++.** Given at DMAP, École Polytechnique, 6 times. Course level: B.Sc.
- **Introduction to C++ for Java Users.** Given at DIX, École Polytechnique, 4 times. Course level: B.Sc.
- **Principles of Programming Languages.** Given at DIX, École Polytechnique, 2nd semester 2005-2006. Assistant to G. Dowek. 180 students. 40 hours computer lab (Java). Course level: B.Sc.
- **Constraints and combinatorics.** Given at DIX, École Polytechnique, II semester 2005-2006, with Ph. Baptiste. 20 students. 3 hours lecture, 3 hours computer lab (CPLEX). Course level: M.Sc.
- **Fundamental Computer Science.** End-of-course project for the course INF431 given at DIX, École Polytechnique, II semester 2005-2006.
- **Advanced Operations Research.** Given at Politecnico di Milano, II semester 2004-2005. Assistant to E. Amaldi. 50 students. 14 hours lecture, 10 hours computer lab (MatLab). *Syllabus:* Convexity, nonlinear optimisation models, unconstrained and constrained nonlinear optimisation algorithms, saddle point theory. I had a substantial part in planning the course contents. Course level: M.Sc.
- **Fundamentals of Operations Research.** Given 6 times at Politecnico di Milano (campus Milano and campus Como) as assistant to two professors:
 - E. Amaldi. *Syllabus:* Graph theory (trees, paths, networks) linear optimisation (models, simplex algorithm, duality), combinatorial optimisation (models, cutting plane, branch-and-bound).
 - F. Malucelli. *Syllabus:* Graph theory (trees, paths, networks) linear optimisation (models, simplex algorithm, duality), combinatorial optimisation (models, cutting plane, branch-and-bound, heuristics).
- (a) I semester 2004-2005. Assistant to F. Malucelli. 150 students. Lectures: 4 hours. Computer labs: 20 heures (AMPL). Course level: B.Sc.
- (b) I semester 2004-2005. Assistant to E. Amaldi. 200 students. Lectures: 14 hours. Computer labs: 10 hours (AMPL). Course level: M.Sc.
- (c) II semester 2003-2004. Assistant to E. Amaldi. 100 students. Lectures: 14 hours. Computer labs: 10 heures (AMPL). Course level: B.Sc.
- (d) I semester 2003-2004. Assistant to F. Malucelli. 150 students. Lectures: 4 hours. Computer labs: 20 hours (XPress-MP). Course level: M.Sc.

- (e) I semester 2003-2004. Assistant to E. Amaldi. 150 students. Lectures: 12 hours. Computer labs: 12 hours (AMPL). Course level: B.Sc.
- (f) II semester 2002-2003. Assistant to E. Amaldi. 100 students. Lectures: 14 hours. Computer labs: 10 hours (AMPL). Course level: B.Sc.
- **Global optimization.** Mini-course given at Lima University in July 2004. 30 students. Lectures: 9 hours. *Syllabus*: Nonlinear models, main local nonlinear optimisation methods, algorithms in global optimisation. Material: monograph “Introduction to Global Optimization” published by SMP Press, Lima 2004. Course level: M.Sc. and Ph.D.
- **Introduction to C++.** Given at Imperial College London during the II semester 2001-2002. Assistant to C. Pantelides. 100 students. Lectures: 4 hours. Computer labs: 12 hours (Visual C++). *Syllabus*: C++ Syntax, examples, data structures, classes, inheritance, software architecture. Course level: B.Sc.
- **Using the computer.** Given three times to the personnel of my regiment (Engineer Corps) during the military service, sept/oct 1998. Sponsored by the European Project “Euroformazione Difesa”. Each edition of the course had 30 students, 10 hours of lessons and 10 hours of computer labs. *Syllabus*: Using Windows and Office. Course level: secondary school. I was also the main administrative liaison between the Regiment, the Defence Ministry Office and the supporting professional institute.
- **Design and implementation of websites.** Given at the CSEA professional institute (Turin, Italy) in January 1998. 20 students. Lessons: 10 hours. Computer labs: 10 hours. *Syllabus*: Server-client communication model, HTTP protocol, syntax, introduction to dynamic websites. Course level: professional course for B.Sc. graduates.
- **Introduction to logic.** Given at the CSEA professional institute (Turin, Italy) in november 1997. 30 students. Lessons: 25 hours. *Syllabus*: boolean logic. Course level: professional course for people with A-levels.
- **Operating systems.** Given at the CSEA professional institute (Turin, Italy) in october 1997. 40 students. Lessons: 20 hours. Computer labs: 10 hours (Linux). *Syllabus*: taxonomy of operating systems, introduction to unix-like OSes, installation of Linux. Course level: professional course for people with A-levels.
- **Introduction to the computer.** Given at the CSEA professional institute (Turin, Italy) in september 1997. 40 students. Lessons: 20 hours. Computer labs: 10 hours. *Syllabus*: DOS, Logo, Basic. Course level: professional course for people with A-levels.

Supervision and tutoring

- Ph.D. students
 1. **2020-**: Co-supervision (with C. D’Ambrosio) of the Ph.D. thesis of Antoine Oustry. Topic: Mathematical Programming and the Alternating Current Optimal Power Flow. Partly funded by RTE.
 2. **2020-**: Co-supervision (with C. D’Ambrosio and S. Vanier) of the Ph.D. thesis of Liding Xu. Topic: Nonconvex Mixed-Integer Nonlinear Programming. Funded by Ecole Polytechnique
 3. **2020-**: Supervision of the Ph.D. thesis of Nabil M. Boukhatem. Topic: Design and implementation of an innovative chatbot for client service. Funded by OneTeam.
 4. **2020-**: Co-supervision (with C. D’Ambrosio) of the Ph.D. thesis of Maxime Dupuy. Topic: Hybrid ocean routing. Funded by D-ICE.
 5. **2018-**: Co-supervision (with C. D’Ambrosio) of the Ph.D. thesis of Martina Cerulli. Topic: Bilevel mixed-integer nonlinear optimization with applications. Funded by the H2020 MINOA project.
 6. **2017-**: Co-supervision (with C. D’Ambrosio and A. Frangioni) of the Ph.D. thesis of Gabriele Iomazzo. Topic: Machine Learning to tune the parameters of mixed-integer optimization solvers. Funded by Ecole Polytechnique.
 7. **2014-2017**: Supervision of the Ph.D. thesis of Olivier Wang. Topic: automatic reformulation of Business Rules programs. CIFRE Ph.D. sponsored by IBM France (*currently at Dassault Systems*).
 8. **2014-2016**: Co-supervision (with C. D’Ambrosio and A. Frangioni) of part of the Ph.D. thesis of Kostas Tavlaridis-Gyparakis. Topic: the Unit Commitment Problem in the energy industry. Funded by the University of Pisa, Italy.

9. **2013-2016:** Co-supervision (with C. D’Ambrosio) of the Ph.D. thesis of Youcef Sahraoui. Topic: Optimization problems arising from hydroelectric generating plants. CIFRE Ph.D. sponsored by EDF.
 10. **2013-2017:** Co-supervision (with C. D’Ambrosio) of the Ph.D. thesis of Luca Mencarelli. Topic: Mixed-Integer Nonlinear Programming. Funded by the FP7 MINO project (*currently postdoc at Ecole des Ponts*).
 11. **2012-2016:** Co-supervision (with Y. Hamadi) of the Ph.D. thesis of Vu Khac Ky. Topic: optimization techniques for “smart buildings”. Funded by Microsoft Research (*currently faculty at FPT University, Vietnam*).
 12. **2012-2017:** Co-supervision (with N. Maculan) of the Ph.D. thesis of G. Dias. Topic: reformulations in mathematical programming. Funded by a Brazilian fellowship.
 13. **2011-2015:** Supervision of the Ph.D. thesis of C. Lizon. Topic: black-box MINLP methods applied to reservoir engineering. Funded by IFPen.
 14. **2010-2013:** Co-supervision (with P. Hansen) of the Ph.D. thesis of C. Lucas. Topic: Spectral graph theory. Partly funded by the Microsoft OSD Chair (*currently director of the AI program at Bouygues Telecom*).
 15. **2010-2013:** Co-supervision (with R. Wolfler Calvo) of the Ph.D. thesis of D. Kirchler. Topic: multiobjective multimodal shortest paths on road networks. CIFRE Ph.D. sponsored by Mediamobile (*currently at the European Patent Office, Germany*).
 16. **2009-2012:** Supervision of the Ph.D. thesis of A. Costa. Topic: reformulations in mathematical programming. Funded by the Digiteo ARM project (*currently researcher at NUS, Singapore*).
 17. **2009-2013:** Supervision of the Ph.D. thesis of F. Roda. Topic: multiobjective optimization. Partly funded by the Microsoft OSD Chair (*currently at Ecole Polytechnique’s industry relations office*).
 18. **2008:** Co-supervision (with E. Amaldi) of K. Dhyani’s PhD thesis (internship at LIX, École Polytechnique). Topic: Hyperplane Clustering Problem (*currently senior data scientist at ENGIE, Italy*).
 19. **2006-2009:** Supervision of the Ph.D. thesis of G. Nannicini. Topic: Shortest paths on large stochastic networks. CIFRE Ph.D. sponsored by Mediamobile (*currently research staff member at IBM Research, USA*).
 20. **Decembre 2005:** Co-supervision (with P. Baptiste) of the Ph.D. thesis of C. Gwiggner. Topic: Air traffic management (*currently at CapGemini*).
 21. **Septembre 2005:** Co-supervision (with E. Amaldi) of the Ph.D. minor (similar to a summer internship during a Ph.D.) of M. Sykora. Topic: Cycle bases in graphs.
- Postdoctoral fellows
 1. **2020-:** Supervision of the postdoctoral fellowship of Sammy Khalife. Topic: data science techniques in protein structure. Funded by ANR 4.
 2. **2019-:** Co-supervision (with M. Kowalski) of the postdoctoral fellowship of Diego Delle Donne. Topic: Sparse wars. Funded by DigiCosme 6.
 3. **2019-:** Co-supervision (with C. D’Ambrosio and S. Vanier) of the postdoctoral fellowship of Mauro Escobar. Topic: Catching credit card frauds in the banking industry. Funded by Crédit Agricole.
 4. **2014-2016:** Postdoctoral supervision of P.-L. Poirion. Topic: Optimal observability of the state of a smart-grid. Funded by ADEME (*currently researcher at RIKEN Institute, Japan*).
 5. **2014-2016:** Postdoctoral supervision of S. Toubaline. Topic: Optimal observability of the state of a smart-grid. Funded by ADEME (*currently MCF at LAMSADE, Univ. Paris-Dauphine*).
 6. **2012-2014:** Postdoctoral supervision of A. Cassioli. Topic: Distance geometry techniques in molecular conformation. Funded by the Bip:Bip ANR project (*currently optimization specialist at Maersk*).
 7. **2010-2012:** Postdoctoral supervision of H. Hijazi. Topic: Global optimization and mathematical programming in software verification. Funded by the Digiteo PASO project (*currently scientist at Los Alamos National Labs*).
 8. **2010-2011:** Postdoctoral co-supervision (with Y. Hamadi) of D. Brockhoff. Topic: preferences in multiobjective optimization. Funded by the Microsoft OSD Chair (*currently CR at INRIA*).

9. **2010-2011:** Postdoctoral co-supervision (with Y. Hamadi) of A. Fialho. Topic: automatic configuration of complex algorithms. Funded by the Microsoft OSD Chair (*currently CEO of COMAK Agricultural Machines, Brazil*).
 10. **2010-2012:** Postdoctoral supervision of N. Touati. Topic: multiobjective optimization and routing of hazardous materials. Funded by the Microsoft OSD Chair (*currently research engineer at Horizontal Software, France*).
 11. **2008-2010:** Post-doctoral supervision of A. Mucherino. Topic: Clustering. Funded by the EDONA project (*currently MCF HDR at IRISA, Rennes*).
 12. **2008-2009:** Post-doctoral supervision of S. Cafieri. Topic: Reformulation techniques in mathematical programming. Funded by the ANR ARS project (*currently full professor at ENAC Toulouse*).
 13. **2007-2008:** Post-doctoral supervision of L. Di Giacomo. Topics: Platforming, An LCP-based IP heuristic. Funded by an Ile-de-France postdoctoral fellowship.
 14. **2007-2009:** Post-doctoral supervision of F. Tarissan. Topic: Optimization techniques for bioinformatics problems, Reformulation techniques. Funded by the FP7 Morphex project (*currently CR at CNRS*).
 15. **2007:** Post-doctoral supervision of F. Marinelli. Topic: Platforming, Optimization techniques in static analysis of code. Funded by an Ile-de-France postdoctoral fellowship (*currently full professor at Università Politecnica delle Marche*).
 16. **October 2006:** Post-doctoral supervision of P. Belotti (*currently senior engineer at FICO*).
- M.Sc. dissertations and internships.
 1. **2020:** Co-supervision (with C. D'Ambrosio) of the M.Sc. dissertation of Antoine Oustry. Topic: Relaxations of large-scale polynomial programming problems. Funded by Corps de Ponts et Chaussées (*ROADEF20 M.Sc. dissertation prize*).
 2. **2018:** Supervision of the M.Sc. dissertation of Nhat-Thien Pham. Topic: Quantile regression problems in the energy industry. Funded by RTE.
 3. **2017:** Co-supervision (with C. D'Ambrosio and A. Frangioni) of the M.Sc. dissertation of Gabriele Iommazzo. Topic: Machine Learning to solve Hydro Unit Commitment problems. Funded by Ecole Polytechnique.
 4. **2017:** Supervision of the M.Sc. dissertation of Esteban Salgado. Topic: Diagonally Dominant Programming for the AC Optimal Power Flow problem. Funded by a PGM0 project (a program sponsored by EDF) (*led to 2 conf. papers*).
 5. **2008:** Supervision of M.Sc. internship of J. Leconte. Topic: Optimization techniques for static code analysis (*led to 2 conf. papers*).
 6. **2007:** Co-supervision (with Ph. Baptiste) of M.Sc. internships (year 1) of L. Rosero et A. Perciu. Topic: Modelling techniques in system architecture.
 7. **2005:** Co-supervision (with E. Amaldi) of the M.Sc. dissertation of A. Chiapparini. Topic: Cycle bases in graphs.
 8. **2005:** Co-supervision (with F. Malucelli) of the M.Sc. dissertation of A. Pastino. Topic: Localization of wireless hubs for gas-meter networks.
 - B.Sc. internships/projects (2-4 months long, at Politecnico di Milano)
 1. **2005:** R. Villa. Topic: Scheduling with communication delays.
 2. **2005:** C. Brescia. Topic: Scheduling with communication delays.
 3. **2004:** S. Coniglio, F. Italiano, A. Tagliasacchi. Topic: Cycle bases in graphs (*S. Coniglio is currently assistant professor at Univ. Southampton, UK*).
 4. **2004:** F. Cerretti, D. Vanoni. Topic: Tree enumeration.
 5. **2004:** S. Galli. Topic: An AMPL interface for global optimization software.
 6. **2004:** A. Omassi. Topic: Computational evaluation of the the linear programming solver CLP.
 - Ph.D. thesis committee memberships
 1. **Apr. 2020:** Referee for Simon Boulmier's Ph.D. thesis (LJK, Univ. Grenobles-Alpes).

2. **Oct. 2018:** Referee (external examiner) for Georgia Kouyialis' Ph.D. thesis (Dept. of Comp., Imperial College London).
3. **Mar. 2018:** Referee for Caio Corro's Ph.D. thesis (LIPN, Univ. Paris 13).
4. **Dec. 2016:** Referee for Guanglei Wang's Ph.D. thesis (Telecom Sud Paris).
5. **Dec. 2014:** Referee for Seppo Pulkkinen's Ph.D. thesis (University of Turku, Finland).
6. **Jul. 2012:** Referee for Pete Janes' Ph.D. thesis (Australian National University).
7. **Jun. 2012:** Referee for Mohammed Alfaki's Ph.D. thesis (Bergen University, Norway).
8. **Nov. 2009:** Referee for Andreas Lundell's Ph.D. thesis (Åbo University, Finland).
9. **Sept. 2009:** Member of the Ph.D. awarding committee for Makhlof Hadji (Telecom SudParis and Paris 6).
10. **Oct. 2008:** Member of the Ph.D. awarding committee for Ronald Zumkeller (École Polytechnique).
11. **Oct. 2008:** Member of the Ph.D. awarding committee for Cheikh Brahim Ould El Mounir (Amiens University).
12. **Sept. 2006:** Member of the Ph.D. awarding committee for Lydia Gastal (LRI, Orsay).
13. **Nov. 2006:** Member of the Ph.D. awarding committee for Marie-Christine Plateau (CNAM, Paris).

Computer-related skills

- Excellent mastering of Python programming, both for research and teaching purposes
- Occasional use of Java for teaching purposes
- Excellent mastering of Optimization Systems and Software: CPLEX, XPRESSMP, AMPL, SNOPT, MINOS, GLPK and many others, both commercial and free.
- Excellent mastering of C/C++/Fortran programming in large-scale software projects; integration of different software modules, written in different programming languages, under a unified software framework; rational API design and implementation.
- Excellent mastering of Unix systems (Linux, Solaris, IRIX, Tru64), good knowledge of Windows operating systems.

Languages

- Italian: mother tongue.
- English: excellent spoken and written.
- French: excellent spoken and written.
- Portuguese: basic.

List of publications

This list is partitioned into section (by publication type). Special issues / edited books, technical reports, divulgation articles are not refereed. The rest of the papers are refereed (short conference papers are “lightly refereed”). Around half of my conference papers gave rise to full journal papers; this is rather customary in operations research, since the focus is on journal rather than conference publications. Post-conference journal publications are not invited, but contributed to the corresponding special issues: as such, they are fully refereed, exactly as if they had been submitted to normal issues.

- **INTERNATIONAL JOURNALS:**
The articles marked “invited survey” [8,10,21,42,73] correspond to an invitation, extended to me by the corresponding journal, to write a survey on a topic of my choosing. All of these articles have been formally refereed by anonymous reviewers, aside from [10], whose invited survey format is similar to what happens in humanities: known referees write critical reports and the author writes a rebuttal, which are all printed in the same issue as the survey.

1. D. Gonçalves, C. Lavor, **L. Liberti**, M. Souza, *A new algorithm for the DMDGP subclass of Distance Geometry problems*, Algorithmica, accepted.
2. M. Cerulli, **L. Liberti**, *Polynomial programming prevents aircraft (and other) conflicts*, Operations Research Letters, accepted.
3. P. Duxbury, C. Lavor, **L. Liberti**, L. de Salles-Neto, *Unassigned distance geometry and molecular conformation problems*, Journal of Global Optimization, accepted.
4. R. Shen, B. Tang, **L. Liberti**, C. D’Ambrosio, S. Canu, *Learning Discontinuous Piecewise Affine Fitting Functions using Mixed Integer Programming over Lattice*, Journal of Global Optimization, accepted.
5. M. Bruglieri, R. Cordone, **L. Liberti**, *Maximum feasible subsystems of distance geometry constraints*, Journal of Global Optimization, accepted.
6. M. Cerulli, C. D’Ambrosio, **L. Liberti**, M. Pelegrin, *Detecting and solving aircraft conflicts using bilevel programming*, Journal of Global Optimization, accepted.
7. G. Dias, **L. Liberti**, *Exploiting symmetries in mathematical programming via orbital independence*, Annals of Operations Research, **298**:149-182, 2021.
8. D. Bienstock, M. Escobar, C. Gentile, **L. Liberti**, *Mathematical Programming formulations for the Alternating Current Optimal Power Flow problem*, 4OR, **18**:249-292, 2020 (invited survey).
9. C. D’Ambrosio, **L. Liberti**, P.-L. Poirion, K. Vu, *Random projections for quadratic programs*, Mathematical Programming B, **183**:619-647, 2020.
10. **L. Liberti**, *Distance Geometry and Data Science*, TOP, **28**:271-339, 2020 (invited survey, open criticisms and rebuttals).
11. G. Abud, J. Alencar, C. Lavor, **L. Liberti**, A. Mucherino, *The K -discretization and K -incident graphs for discretizable Distance Geometry*, Optimization Letters, **14**:469-482, 2020.
12. P.-L. Poirion, S. Toubaline, C. D’Ambrosio, **L. Liberti**, *Algorithms and applications for a class of bilevel MILPs*, Discrete Applied Mathematics, **272**:75-89, 2020.
13. J. Lee, **L. Liberti**, *On an SDP relaxation for kissing number*, Optimization Letters, **14**:417-422, 2020.
14. T. Malliavin, A. Mucherino, C. Lavor, **L. Liberti**, *Systematic exploration of protein conformational space using a Distance Geometry approach*, Journal of Chemical Information and Modeling, **59**(10):4486-4503, 2019.
15. C. Lavor, M. Souza, L. Carvalho, **L. Liberti**, *On the polynomiality of finding K DMDGP re-orders*, Discrete Applied Mathematics, **267**:190-194, 2019.
16. J. Alencar, C. Lavor, **L. Liberti**, *Realizing Euclidean distance matrices by sphere intersection*, Discrete Applied Mathematics, **256**:5-10, 2019.
17. F. Furini, E. Traversi, P. Belotti, A. Frangioni, A. Gleixner, N. Gould, **L. Liberti**, A. Lodi, R. Misener, H. Mittelmann, N. Sahinidis, S. Vigerske, A. Wiegele, *QPLIB: A library of quadratic programming instances*, Mathematical Programming Computation, **11**(2):237-265, 2019.
18. C. Lavor, **L. Liberti**, B. Donald, B. Worley, B. Bardiaux, T. Malliavin, M. Nilges, *Minimal NMR distance information for rigidity of protein graphs*, Discrete Applied Mathematics, **256**:91-104, 2019.
19. C. D’Ambrosio, J. Lee, **L. Liberti**, M. Ovsjanikov, *Extrapolating curvature lines in rough concept sketches using mixed-integer nonlinear optimization*, Optimization and Engineering, **20**(2):337-347, 2019.
20. **L. Liberti**, C. Lavor, N. Maculan, *A mathematical programming formulation for the Hartree-Fock problem on open-shell systems*, Optimization Letters, **13**:429-437, 2019.
21. **L. Liberti**, *Undecidability and hardness in mixed-integer nonlinear programming*, RAIRO-Operations Research, **53**:81-109, 2019 (invited survey).
22. K. Vu, P.-L. Poirion, **L. Liberti**, *Gaussian random projections for Euclidean membership problems*, Discrete Applied Mathematics, **253**:93-102, 2019.
23. K. Vu, P.-L. Poirion, **L. Liberti**, *Random projections for linear programming*, Mathematics of Operations Research, **43**(4):1051-1071, 2018.
24. **L. Liberti**, K. Vu, *Barvinok’s naive algorithm in distance geometry*, Operations Research Letters, **46**(5):476-481, 2018.
25. F. Fidalgo, D. Gonçalves, C. Lavor, **L. Liberti**, A. Mucherino, *A symmetry-based splitting strategy for discretizable distance geometry problems*, Journal of Global Optimization, **71**:717-733, 2018.
26. B. Worley, F. Delhommel, F. Cordier, T. Malliavin, B. Bardiaux, N. Wolff, M. Nilges, C. Lavor, **L. Liberti**, *Tuning interval Branch-and-Prune for protein structure determination*, Journal of Global Optimization, **72**:109-127, 2018.

27. O. Wang, C. de Sainte Marie, C. Ke, **L. Liberti**, *Universality and prediction in business rules*, Computational Intelligence, **34**:763-785, 2018.
28. S. Toubaline, C. D'Ambrosio, **L. Liberti**, P.-L. Poirion, B. Schieber, H. Schachnai, *Complexity and inapproximability results for the power edge set problem*, Journal of Combinatorial Optimization, **35**(3):895-905, 2018
29. M. Fischetti, **L. Liberti**, D. Salvagnin, T. Walsh, *Orbital Shrinking: Theory and Applications*, Discrete Applied Mathematics, **222**:109-123, 2017.
30. D. Gonçalves, A. Mucherino, C. Lavor, **L. Liberti**, *Recent advances on the interval distance geometry problem*, Journal of Global Optimization, **69**:525-545, 2017.
31. L. Mencarelli, Y. Sahraoui, **L. Liberti**, *A multiplicative weights update algorithm for MINLP*, EURO Journal on Computational Optimization, **5**:31-86, 2017.
32. K. Vu, C. D'Ambrosio, Y. Hamadi, **L. Liberti**, *Surrogate-based methods for black-box optimization*, International Transactions in Operational Research, **24**(3):393-424, 2017.
33. C. D'Ambrosio, K. Vu, C. Lavor, **L. Liberti**, N. Maculan, *New error measures and methods for realizing protein graphs from distance data*, Discrete and Computational Geometry, **57**(2):371-418, 2017.
34. P.-L. Poirion, S. Toubaline, C. D'Ambrosio, **L. Liberti**, *The Power Edge Set problem*, Networks, **68**(2):104-120, 2016.
35. H. Hijazi, **L. Liberti**, *Constraint Qualification Failure in Action*, Operations Research Letters, **44**(4):503-506, 2016.
36. **L. Liberti**, C. Lavor, *Six mathematical gems from the history of Distance Geometry*, International Transactions in Operational Research, **23**:897-920, 2016.
37. A. Costa, S. Kushnarev, **L. Liberti**, S. Zeyu, *Divisive Heuristic for modularity density maximization*, Computers and Operations Research, **71**:100-109, 2016.
38. A. Cassioli, O. Günlük, C. Lavor, **L. Liberti**, *Discretization vertex orders in distance geometry*, Discrete Applied Mathematics, **197**:27-41, 2015.
39. D. Kirchler, **L. Liberti**, R. Wolfler Calvo, *Efficient Computation of Shortest Paths in Time-Dependent Multi-Modal Networks*, ACM Journal of Experimental Algorithmics, **19**:1-29, 2015.
40. A. Bettinelli, Pierre Hansen, **L. Liberti**, *Community detection with the weighted parsimony criterion*, Journal of Systems Science and Complexity, **28**(3):517-545, 2015.
41. A. Cassioli, B. Bardiaux, G. Bouvier, A. Mucherino, R. Alves, **L. Liberti**, M. Nilges, C. Lavor, T. Malliavin, *An algorithm to enumerate all possible protein conformations verifying a set of distance constraints*, BMC Bioinformatics, **16**:23-38, 2015.
42. **L. Liberti**, *Optimization and Sustainable Development*, Computational Management Science, **12**(3):371-395, 2015 (invited survey).
43. **L. Liberti**, J. Ostrowski, *Stabilizer-based symmetry breaking constraints for mathematical programs*, Journal of Global Optimization, **60**:183-194, 2014.
44. **L. Liberti**, F. Marinelli, *Mathematical Programming: Turing completeness and applications to software analysis*, Journal of Combinatorial Optimization, **28**:82-104, 2014.
45. **L. Liberti**, C. Lavor, N. Maculan, A. Mucherino, *Euclidean distance geometry and applications*, SIAM Review, **56**(1):3-69, 2014.
46. **L. Liberti**, B. Masson, J. Lee, C. Lavor, A. Mucherino, *On the number of realizations of certain Henneberg graphs arising in protein conformation*, Discrete Applied Mathematics, **165**:213-232, 2014.
47. I. Fernandes, D. Aloise, D.J. Aloise, P. Hansen, **L. Liberti**, *On the Weber facility location problem with limited distances and side constraints*, Optimization Letters, **8**(2):407-424, 2014.
48. S. Cafieri, P. Hansen, **L. Liberti**, *Improving heuristics for network modularity maximization using an exact algorithm*, Discrete Applied Mathematics, **163**:65-72, 2014.
49. A. Bettinelli, **L. Liberti**, F. Raimondi, D. Savourey, *The anonymous subgraph problem*, Computers & Operations Research, **40**:973-979, 2013.
50. E. Amaldi, K. Dhyani, **L. Liberti**, *A two-phase heuristic for the bottleneck k-hyperplane clustering problem*, Computational Optimization and Applications, **56**:619-633, 2013.
51. C. Lavor, **L. Liberti**, A. Mucherino, *The interval Branch-and-Prune algorithm for the Discretizable Molecular Distance Geometry Problem with inexact distances*, Journal of Global Optimization, **56**:855-871, 2013.
52. S. Sallaume, S. Martins, L. Satoru Ochi, W. Gramacho, C. Lavor, **L. Liberti**, *A discrete search algorithm for finding the structure of protein backbones and side chains*, International Journal of Bioinformatics Research and Applications, **9**:261-270, 2013.

53. S. Cafieri, **L. Liberti**, F. Messine, B. Nogarede, *Optimal Design of Electrical Machines: Mathematical Programming Formulations*, COMPEL: The International Journal for Computation and Mathematics in Electrical and Electronic Engineering, **32**(3):977-996, 2013.
54. A. Costa, P. Hansen, **L. Liberti**, *On the impact of symmetry-breaking constraints on spatial Branch-and-Bound for circle packing in a square*, Discrete Applied Mathematics, **161**:96-106, 2013.
55. A. Bettinelli, P. Hansen, **L. Liberti**, *Algorithm for parametric communities detection in networks*, Physical Review E, **86**:016107, 2012.
56. V. Giakoumakis, D. Krob, **L. Liberti**, F. Roda, *Technological architecture evolutions of information systems: trade-off and optimization*, Concurrent Engineering Research and Applications, **20**(2):127-147, 2012.
57. J. Lee, **L. Liberti**, *A matroid view of key theorems for edge-swapping algorithms*, Mathematical Methods of Operations Research, **76**:125-127, 2012.
58. C. D'Ambrosio, A. Frangioni, **L. Liberti**, A. Lodi, *A storm of Feasibility Pumps for Nonconvex MINLP*, Mathematical Programming B, **136**:229-231, 2012.
59. A. Mucherino, C. Lavor, **L. Liberti**, *The discretizable distance geometry problem*, Optimization Letters, **6**(8):1671-1686, 2012.
60. A. Mucherino, C. Lavor, **L. Liberti**, *Exploiting symmetry properties of the Discretizable Molecular Distance Geometry Problem*, Journal of Bioinformatics and Computational Biology, **10**(3):1242009(15), 2012.
61. H. Sherali, E. Dalkiran, **L. Liberti**, *Reduced RLT representations for nonconvex polynomial programming problems*, Journal of Global Optimization, **52**:447-469, 2012.
62. C. Lavor, **L. Liberti**, N. Maculan, A. Mucherino, *The discretizable molecular distance geometry problem*, Computational Optimization and Applications, **52**:115-146, 2012.
63. C. Lavor, J. Lee, A. Lee-St. John, **L. Liberti**, A. Mucherino, M. Sviridenko, *Discretization orders for distance geometry problems*, Optimization Letters, **6**:783-796, 2012.
64. G. Nannicini, D. Delling, D. Schultes, **L. Liberti**, *Bidirectional A* search on time-dependent road networks*, Networks, **59**(2):240-251, 2012.
65. C. Lavor, **L. Liberti**, N. Maculan, A. Mucherino, *Recent advances on the discretizable molecular distance geometry problem*, European Journal of Operational Research, **219**:698-706, 2012.
66. **L. Liberti**, *Reformulations in Mathematical Programming: Automatic symmetry detection and exploitation*, Mathematical Programming A, **131**:273-304, 2012.
67. D. Aloise, P. Hansen, **L. Liberti**, *An improved column generation algorithm for minimum sum-of-squares clustering*, Mathematical Programming A, **131**:195-220, 2012.
68. **L. Liberti**, N. Mladenović, G. Nannicini, *A recipe for finding good solutions to MINLPs*, Mathematical Programming Computation, **3**:349-390, 2011.
69. G. Cornuéjols, **L. Liberti**, G. Nannicini, *Improved strategies for branching on general disjunctions*, Mathematical Programming A, **130**:225-247, 2011.
70. **L. Liberti**, L. Alfandari, M.-C. Plateau, *Edge cover by connected bipartite subgraphs*, Annals of Operations Research, **188**(1):307-329, 2011.
71. S. Cafieri, P. Hansen, **L. Liberti**, *Locally optimal heuristic for modularity maximization of networks*, Physical Review E, **83**:056105(1-8), 2011.
72. C. Lavor, A. Mucherino, **L. Liberti**, N. Maculan, *On the computation of protein backbones by using artificial backbones of hydrogens*, Journal of Global Optimization, **50**:329-344, 2011.
73. **L. Liberti**, C. Lavor, A. Mucherino, N. Maculan, *Molecular distance geometry methods: from continuous to discrete*, International Transactions in Operational Research, **18**:33-51, 2010 (invited survey).
74. C. Lavor, A. Mucherino, **L. Liberti**, N. Maculan, *Discrete approaches for solving molecular distance geometry problems using NMR data*, International Journal of Computational Bioscience, **2010**:88-94, 2010.
75. D. Aloise, S. Cafieri, G. Caporossi, P. Hansen, S. Perron, **L. Liberti**, *Column generation algorithms for exact modularity maximization in networks*, Physical Review E, **82**(4):046112, 2010.
76. C. D'Ambrosio, A. Frangioni, **L. Liberti**, A. Lodi, *On interval subgradient and no-good cuts*, Operations Research Letters, **38**:341-345, 2010.
77. S. Cafieri, J. Lee, **L. Liberti**, *On convex relaxations of quadrilinear terms*, Journal of Global Optimization, **47**:661-685, 2010.
78. S. Cafieri, P. Hansen, **L. Liberti**, *Loops and multiple edges in modularity maximization of networks*, Physical Review E, **81**(4):046102, 2010.

79. G. Nannicini, Ph. Baptiste, G. Barbier, D. Krob, **L. Liberti**, *Fast paths in large-scale dynamic road networks*, Computational Optimization and Applications, **45**:143-158, 2010.
 80. S. Cafieri, P. Hansen, **L. Liberti**, *Edge ratio and community structure in networks*, Physical Review E, **81**(2):0261051-14, 2010.
 81. P. Belotti, J. Lee, **L. Liberti**, F. Margot, A. Wächter, *Branching and bounds tightening techniques for non-convex MINLP*, Optimization Methods and Software, **24**(4):597-634, 2009.
 82. E. Amaldi, **L. Liberti**, F. Maffioli, N. Maculan, *Edge-swapping algorithms for the minimum fundamental cycle basis problem*, Mathematical Methods of Operations Research, **69**:205-233, 2009.
 83. **L. Liberti**, C. Lavor, N. Maculan, M. Chaer Nascimento, *Reformulation in mathematical programming: an application to quantum chemistry*, Discrete Applied Mathematics, **157**(6):1309-1318, 2009.
 84. **L. Liberti**, *Reformulations in Mathematical Programming: Definitions and Systematics*, RAIRO-RO, **43**(1):55-86, 2009.
 85. **L. Liberti**, C. Lavor, N. Maculan, F. Marinelli, *Double Variable Neighbourhood Search with smoothing for the Molecular Distance Geometry Problem*, Journal of Global Optimization, **43**:207-218, 2009.
 86. **L. Liberti**, N. Maculan, Y. Zhang, *Optimal configuration of gamma ray machine radiosurgery units: the sphere covering subproblem*, Optimization Letters, **3**:109-121, 2009.
 87. M. Bruglieri, **L. Liberti**, *Optimal running and planning of a biomass-based energy production process*, Energy Policy, **36**:2430-2438, 2008.
 88. G. Nannicini, **L. Liberti**, *Shortest paths on dynamic graphs*, International Transactions in Operations Research, **15**:551-563, 2008.
 89. **L. Liberti**, *Spherical cuts for Integer Programming problems*, International Transactions in Operational Research, **15**:283-294, 2008.
 90. **L. Liberti**, C. Lavor, N. Maculan, *A Branch-and-Prune algorithm for the Molecular Distance Geometry Problem*, International Transactions in Operational Research, **15**(1):1-17, 2008.
 91. **L. Liberti**, *Compact linearization for binary quadratic problems*, 4OR, **5**(3):231-245, 2007.
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- THESES:

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250. **L. Liberti**, *Reformulation and convex relaxation techniques for global optimization*, Ph.D. Thesis, Imperial College, 2004.

251. **L. Liberti**, *Fondamenti algebrici degli automi cellulari invertibili* (in Italian), Tesi di Laurea, Università di Torino, 1997.

252. **L. Liberti**, *Ottaviano Fabrizio Mossotti: the youth years (1791-1823)*, B.Sc. Thesis, Imperial College, 1995.
 - PATENTS:

As far as I know, none of my patents have generated revenue.

253. H. Avron, L. Horesh, **L. Liberti**, D. Nahamoo, *Globally convergent system and method for automated model discovery*, YOR920150270US1, US Patent App. 14/755,942, 30th June 2015.
254. R. Horesh, Y.M. Lee, **L. Liberti**, *HVAC System Control Integrated with Demand Response, On-Site Energy Storage System and On-Site Generation System*, YOR920140297US1, US Patent Office, 29th Sept. 2014.
255. **L. Liberti**, G. Barbier, Ph. Baptiste, D. Krob, *Estimation de trafic dans un réseau routier* (in French), Patent n. 08104579.1-2215, European Patent Office, 19th Aug. 2008.
- TEACHING (unrefereed):

256. **L. Liberti**, *Mathematical Programming*, Lecture notes for courses given at Ecole Polytechnique, 2015 (www.lix.polytechnique.fr/liberti/teaching/dix/inf580-15/mathprog.pdf). This book received some (unexpected and unsolicited) positive attention on a LinkedIn message trend in early 2020 (411 “likes” and 20 comments).

257. **L. Liberti**, *Data Structures and Algorithms*, Lecture notes for courses given at Ecole Polytechnique, 2012 (github.com/open-optimization/open-optimization-data-structures-and-algorithms). I chose to publish this book with its L^AT_EX source at an online repository of free university-level teaching books.

258. **L. Liberti**, *C++ Notes*, Notes and exercises for courses given at Ecole Polytechnique, 2011 (www.lix.polytechnique.fr/liberti/teaching/dix/inf585-12/c++.pdf).

259. **L. Liberti**, *Problems and exercises in Operations Research*, for courses given at Ecole Polytechnique, 2010 (www.lix.polytechnique.fr/liberti/teaching/dix/inf572-10/exercices-sol.pdf).

260. **L. Liberti**, *Software modelling and architecture: Exercises*, for courses given at Ecole Polytechnique, 2009 (www.lix.polytechnique.fr/liberti/teaching/dix/inf556-09/exercices.pdf).
 - CO-AUTHORED SOFTWARE (unrefereed):

261. *ooOPS*: object-oriented OPTimization System. Implementation of a spatial Branch-and-Bound (sBB) algorithm for MINLP in C++, C and Fortran: written during my Ph.D. at Imperial College London. Rights owned by Imperial College. Code licensed to PSE Enterprise (<https://www.psenderprise.com/>) as my Ph.D. thesis advisor was one of the co-founders. I do not have the right to distribute this code. See [250] above.

262. *minfcb*: Minimum fundamental cycle bases. Research code in C++ implementing many algorithms related to finding minimum cycle bases in graphs, written in 2003-2004 (www.lix.polytechnique.fr/~liberti/minfcb.tar.gz). Unlicensed. See [82] above.

263. *Ev3*: Expressions, version 3. C++ library for symbolic manipulation of mathematical expressions, written in 2005-2006 github.com/leoliberti/Ev3. Code covered by the LGPL. Used in ROSE (see below) since 2007; licensed to Caterpillar Inc. (caterpillar.com) in 2009; used by EDF engineers within the OpenTURNS⁶ project (openturns.github.io/www/) in 2020.

264. *ROSE*: Reformulation-Optimization Software Engine. Code for automatically reformulating mathematical programs. Written in 2007-2010 as part of the ANR JCJC07 project “ARS”. Distributed within the COIN-OR operations research public library (github.com/coin-or/ROSE/). See [136] above.

265. *RECIPE*: Relaxed-Exact Continuous-Integer Problem Exploration. Implementation of a heuristic algorithm for solving MINLP, based on a Variable Neighbourhood Search approach (www.lix.polytechnique.fr/~liberti/recipe.tar.gz). See [68] above.

266. *branchprune*: C++ implementation of the Branch-and-Prune algorithm for solving distance geometry problems arising in protein structure determination; developed in 2005-2006. Distributed on demand. See [90] above.

267. *DistanceGeometry*: collection of research codes in distance geometry in various languages, developed since 2012 (github.com/leoliberti/DistanceGeometry).

268. *ACOPF*: collection of AMPL and Python coded formulation variants of the alternating current optimal power flow problem, developed since 2019 (github.com/leoliberti/acopf). See [8] above.

269. Almost every paper I wrote contains computational results, which were obtained through software. In general, I believe I am the principal author of the software written for at least one third of my papers (conservative lower bound).
 - SOFTWARE DEVELOPED UNDER MY SUPERVISION/ADVICE (unrefereed):

⁶See github.com/openturns/openturns#acknowledgements.

261. COUENNE: Convex Over and Under ENvelopes for Nonlinear Estimation. Implementation of a sBB algorithm for MINLP in C++, authored by Pietro Belotti. Now scarcely maintained, it was one of the best codes for its purpose for many years. I am a co-author of the paper which provides the academic citation corresponding to the code (see [81] above). In 2006 I was offered the postdoctoral fellowship at CMU whose associated task was to write this code, in collaboration with IBM Research. I turned the offer down because I had been recruited as a MCF at X. I recommended Dr. Belotti for the position (which he obtained). Before he left Europe I funded a visit of one month for him at X, during which I explained to him many of the ideas about sBB I had developed during my Ph.D. thesis (see *ooOPS* above).
262. MD-jeep: Implementation of a Branch-and-Prune algorithm variant for finding all isomers of protein structures from nuclear magnetic resonance data, authored by Antonio Mucherino. Work on MD-jeep was started while the author was a postdoctoral fellow under my supervision. I am a co-author of two papers dedicated to MD-jeep (see [194,146] above).
- OTHER (unrefereed):
 261. Y. Hamadi, **L. Liberti**, *Microsoft-CNRS "Optimization and Sustainable Development" Polytechnique Chair: activity report for 2009-2011*, MSR-TR-2011-42 (320 pages), 2011.
 262. G. Nannicini, Ph. Baptiste, G. Barbier, D. Kroh, **L. Liberti**, *Fast paths in large-scale dynamic road networks*, arXiv:cs.NI/0704.1068, 2006.
 263. C. Lavor, **L. Liberti**, N. Maculan, *A Branch-and-Prune algorithm for the Molecular Distance Geometry Problem*, arXiv:q-bio/0608012, 2006.
 264. T. Davidović, **L. Liberti**, N. Maculan, N. Mladenović, *Mathematical Programming-Based approach to Scheduling of Communicating Tasks*, Les Cahiers du GERAD, G-2004-99, 2004.
 265. C. Pantelides, **L. Liberti**, P. Tsiakis, T. Crombie, *Global CAPE-OPEN Working Package 2.3: Mixed-Integer Linear/Nonlinear Programming Interface Specification*, Global CAPE-OPEN Industry Standard v.1.5.2, 2002.
 266. **L. Liberti**, P. Tsiakis, B. Keeping, C. Pantelides, *ooOPS: Reference Manual*, CPSE, Imperial College London, UK, 2001.
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 268. Pantelides, C.C. and **Liberti, L.** and Tsiakis, P. and Crombie, T., *MINLP Interface Specification*, CAPE-OPEN Update, **2**:10-13, 2002.
 269. **L. Liberti**, F. Raimondi, *An Economical Scheme for quasi Real-Time Backup*, SysAdmin Magazine, **11**(7), 2002.
 270. **L. Liberti**, *Web-enabled Filesystem-based Databases*, SysAdmin Magazine, **11**(3), 2002.
 271. **L. Liberti**, F. Raimondi, *La mia prima pagina dinamica* (in Italian), Inter.net Magazine, **70**, July/August 2001.
 272. **L. Liberti**, *Automating Firewall Log Scanning*, Linux Journal, **87**:104-107, 2001.
 273. **L. Liberti**, *Quick Network Redundancy Schemes*, SysAdmin Magazine, **10**(4):8-16, 2001.