
CURRICULUM VITÆ

Jérôme Bolte

Born in Perpignan (France), February 5th 1971.
Married; a child.

Current position

Full Professor, University Toulouse Capitole

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31000 Toulouse

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Academic positions

2004-2010 Maître de Conférences at Sorbonne University (U. Paris 6).

2007-2008 Researcher at INRIA & CMAP, École Polytechnique (Palaiseau).

2010-2019 Professor at University Toulouse Capitole & TSE.

2019-2020 Délégation CNRS, visiting professor at UCLA (cancelled: COVID 19 pandemic).

2020-present Professor, Toulouse Capitole, TSE & ANITI

Research grants

Grant Air Force, PI, (2022-2025) FA8655-22-1-7012, "Nonsmooth differential calculus for robustness in Machine Learning"

Grant ANITI, Chair on "Large scale optimization for AI" (2019-2022)

Grant ANR, MasDol, (2019-2022) "Mathematics of stochastic and deterministic optimization for deep learning"

Grant "Air Force" PI, (2019-2021) FA9550-19-1-7026, Landscapes of large scale problems with applications to machine learning

Grant "Air Force" PI, (2018-2020) Towards a theory of long-step algorithms for large scale Optimization

Grant ANR, OMS, (2017-2021) "Optimisation on measure spaces"

Grant “Air Force” PI, (2016-2018) “Majorization-minimization processes for optimization”

Grant “Air Force” PI, (2014-2017) “Forward-backward splitting for nonconvex optimization problems” and “Majorization-minimization processes for optimization”

Grant ANR (2014-2018) “Aspects géométriques de la théorie des jeux” / “Geometric Aspects of Game Theory”

Grant PEPS Humains (2014), EMC², “Étude Morphométrique de la Céramique celtique”

Grant PGM0, PI, “Programme Gaspard Monge pour l’Optimisation” (2012-2014, Fondation Hadamard), “Semi-algebraic approaches to doubly sparse problems.”

Grant MEC (2012-2015, Spain), “Variational optimization: structure and duality and variational analysis: fundamentals and applications”, in collaboration with A. Daniilidis and J. Martinez-Legas (Universitat autonoma Barcelona).

Grant ANR (2009-2013), “Optimization, Strategy, Selection : Dynamics, Approximations, and Applications”.

Grant MEC (2009-2011, Spain), “Advances in convex optimization and variational analysis: fundamentals and applications”, in collaboration with A. Daniilidis and J. Martinez-Legas (Universitat autonoma Barcelona).

Grant CNRS/PEPS (2009-2010), Exploratory project, Math & ST2I, “Nonconvex optimization methods for semi-algebraic problems in signal processing”, in collaboration with P.L. Combettes et J.-C. Pesquet.

Grant ANR (2005-2008), “Optimization, game and dynamical systems in decision science: costs-to-move, models and algorithms”.

Distinctions

ERC interview, October, 2015 (Mathematics)

PES/PEDR since 2005

SIAM Optimization prize, 2017 with S. Sabach and M. Teboulle for the article *Proximal alternating linearized method for nonconvex and nonsmooth problems*, in Math. Programming, 2014

U. Rothblum award by Operations Research Society of Israel , 2019, for *First Order Methods Beyond Convexity and Lipschitz Gradient Continuity with Applications to Quadratic Inverse Problems*, by J. Bolte, S. Sabach, M. Teboulle, and Y. Vaisbourd

Artificial Intelligence Chair within ANITI, 2019-2022

Professeur classe exceptionnelle CNU, Sept. 2020

Research Visits

2002 & 2003 Universidad de Chile, Santiago, Chile, (Alvarez)

2003 Simon Fraser University, C.E.C.M., Vancouver, Canada (Lewis)

2004-2011 Universitat Autònoma de Barcelona, Barcelona, Spain (Daniilidis)

2006 Nagoya University, Japan (Shiota)

2007 & 2008 Tel Aviv University, Israel (Teboulle)

2012 EPFL, Switzerland (Cehver)

2013 Göttingen University, Germany, (Luke)

2014 Vérone University, Italy
Rome, NY, USA (Suter)

2015 Chambéry University, France (Kurdyka)
Rome, NY, USA (Suter)

2016 CIRM, Marseille, Research in pair,
Yamaguchi University, Institute of Time Studies, Japan
Sevilla University, Spain

2018 Tel Aviv University, Israel

2020 UCLA, Cancelled (COVID pandemic)

Education

2000-03 PhD in Applied Mathematics, U. Montpellier II
Dissertation title : “*Sur des systèmes dynamiques dissipatifs de type gradient / On dissipative dynamical systems of gradient type*”
Committee: H. Attouch, A. Auslender, F. Clarke, J.-N. Corvellec, B. Lemaire, A. Seeger
Referees: A. Auslender, F. Clarke, A. Haraux

2003-2004 Post-doctoral fellow at Simon Fraser University (Vancouver, 3 months) and Santiago de Chile (grant ECOS, Paris V), Universidad de Chile.

2008-2009 Habilitation à diriger des recherches defended in November 2008, at U. Paris 6, “*Sur quelques principes de convergence en Optimisation / Some convergence principles in optimization*” .
Committee: H. Attouch, F. Bonnans, A. Ioffe, K. Kurdyka, M. Quincampoix, S. Sorin
Referees : R. Cominetti, A. Ioffe, K. Kurdyka

Organization of conferences & Academic activities

Creation and organization of seminars

- Co-founder and co-organizer of the online seminar “Séminaire Français d’optimisation”, (2020-)
<https://gdrmoa.math.cnrs.fr/seminaire-francais-optimisation/>
- Co-founder and co-organizer of the Optimization Seminar of Toulouse (2012-)
<http://projects.laas.fr/spot/>
- Co-organizer of the decision mathematics seminar in Toulouse (2011-2012 / 2013-2014)

Organization of conferences

ANR workshop, Optimization-Games-Economics, Montpellier 2006.

<http://www.ecp6.jussieu.fr/ANR06/>

CODE 2007.

<http://www.ann.jussieu.fr/~plc/code2007/index.html>

ANR workshop, Dynamics and Optimization, Paris 6.

<http://www.ecp6.jussieu.fr/dynamiques-et-optimisations/index.html>

“Conference on Variational Analysis and Optimization”, Montpellier, September 2009.

<http://anavar09.math.univ-montp2.fr/>

“Games and Strategy in Paris”, Paris (IHP), June 11-13th 2012.

<https://sites.google.com/site/sorin60th/>

Cluster chair of the cluster “Nonsmooth Optimization” at the “International Symposium of Mathematical Programming (ISMP 2012)”, Berlin, August 19–23th 2012.

<http://ismp2012.mathopt.org/>

Session chair of the cluster “Optimization/minimization for problems with complex geometries” at the “International Symposium of Mathematical Programming (ISMP 2018)”, Bordeaux.

Franco-Chilean days, July 5th-7th, Toulouse, 2017 <https://www.irit.fr/JFC0/>

Lectures on Large scale optimization by Sabach and Teboulle, Toulouse, 05-09-2019.

Matinée Optimisation et statistiques: Toulouse 12-09-2019

Stampacchia conference in Erice, Italy, 2021 (Cancelled, Covid Pandemic)

Students & Thesis

Post-doctoral fellow, Antoine Hochart 2016-2017

Post-doctoral fellow, Zheng Chen 2016-2017

Post-doctoral fellow, Axel Flinth, 2018-2019

Post-doctoral fellow, Lilian Glaudin, 2019-2020

Post-doctoral fellow, Rodolfo Rios-Zertuche, 2019-2021

Post-doctoral fellow, Tony Silvetti-Falls, 2021-

Post-doctoral fellow, Cyrille Combettes, 2021-

PhD Advisor of Phong Trong Nguyen, 2013-2017

PhD Advisor of Walter Ngambou, 2015-2018

PhD Advisor of Camille Castera with C. Févotte, E. Pauwels, 2018-2021

PhD Advisor of Radu Dragomir with A. d’Aspremont, 2018-2021

PhD Advisor of Tâm Ngoc Le with E. Pauwels, 2020-2023

PhD Advisor of Ryan Boustany with E. Pauwels, 2021-2024

Advisor of M2 master internships, A. Idimova “A tutorial for multistage stochastic problems” 2014, J. Behyum 2015 “Deep learning”, Radu Dragomir, “Non-Euclidean gradient methods”, Walter Ngambou 2015, “Minimisation numérique et descente par coordonnée”, G. Gex, “The Basics of Deep Learning and Some Applications to Economics”, 2018, R. Dragomir, “Non-Euclidean gradient methods with application to Nonnegative Matrix Factorization”, 2018.

Reviewer of the PhD thesis, “Quelques contributions à des systèmes dynamiques et algorithmes issus de la mécanique non régulière et de l’optimisation”, B. Baji, U. Montpellier 2, February 6, 2009.

Reviewer of the HDR, “Algorithmes en optimisation et analyse variationnelle dans les espaces de Hilbert”, Juan Peypouquet, U. Paris 6, June 5th, 2014

Reviewer of the PhD thesis, “Nonconvex s-lower regular functions”, Kecis Ilyas, U. Montpellier 2, June, 2014.

Member of the PhD thesis committee of H.Y. Le, “A variational look at the rank function”, U. Toulouse 3, May 22th, 2013.

Member of the PhD thesis committee of V. Leclère, “Contributions to Decomposition Methods in Stochastic Optimization”, École des Ponts et Chaussées et Université Paris-Est, June 25th, 2014

President of the PhD thesis committee of P. Benchimol, “Tropical aspects of linear programming”, École Polytechnique, Palaiseau, December 2th, 2014

Reviewer of the PhD thesis, “Algorithmes d’optimisation en grande dimension : applications à la résolution de problèmes inverses”, Audrey Repetti, U. Paris Est, June, 2015.

Member of the PhD thesis committee of B. Ziliotto “Stratégies et paiements de long terme dans les jeux répétés à deux joueurs”, September 18th, 2015

Reviewer of the PhD thesis, “Decomposition Strategies for Nonconvex Problems, a Parametric Approach”, EPFL, Jean-Hubert Hours, 2015.

Member of the HDR committee, “Variational-analysis look at combinatorial optimization and other selected topics in optimization”, Université Grenoble Alpes, Jérôme Malick, 2017.

Reviewer of the PhD thesis committee, “Approximation stochastique et régression par moindres carrés : applications en apprentissage automatique”, ENS Paris, Nicolas Flammarion, 2017.

Member of the PhD thesis committee, “Some approximation schemes in polynomial optimization”, LAAS, Toulouse, Roxanna Hess, 2017.

Member of the PhD thesis committee, “On the geometry of optimization problems and their structure”, ENS Paris, Vincent Roulet, 2017.

Reviewer of the PhD thesis committee, “Learning without smoothness and strong convexity”, EPFL, Lausanne, Switzerland, Yen-Huan Li, 2018.

Reviewer of the PhD thesis committee, “Opérateurs monotones aléatoires et application à l’optimisation stochastique”, Telecom ParisTech, 2018.

Member of the HDR committee, “Contributions en mathématiques de l’imagerie.”, Université Toulouse 3, Pierre Weiss, 2019.

Reviewer of the PhD thesis committee, “Inertial Gradient-Descent algorithms for convex minimization”, U. Bordeaux, V. Adidopoulos, 2019

Member of the PhD thesis committee, “Projection au sens de Wasserstein 2 sur des espaces structurés de mesures”, Université Toulouse 3, Léo Lebrat, 2019.

Reviewer of the HDR committee, “Online optimization and learning in games: theory and applications”, Université de Grenoble, Panayotis Mertikopoulos, 2019.

Member of the HDR committee, “Contributions to optimal control theory with fractional and time scale calculi, and to variational analysis in view of shape optimization problems in contact mechanics”, Université de Limoges, Loïc Bourdin, 2020.

Member of the PhD thesis committee, “First-Order Non-Euclidean Splitting Methods for Large-Scale Optimization: Deterministic and Stochastic Algorithms”, ENSICAEN, Tony Silvetti-Falls, 2021.

Member of the PhD thesis committee, “Optimisation en présence d’incertitudes de la répartition de la charge dans les problèmes elliptiques: application à la mécanique des structures ”, Université Montpellier II, Radia Bouabdallah, 2021.

Reviewer of the PhD thesis committee, “Convergence analysis of some algorithms for convex optimization from variational analysis perspectives, Shangzhi Zeng, Hong Kong University, China, 2021.

Reviewer of the HDR committee, “Harnessing the Structure of some Optimization Problems”, Frank Iutzeler, Université Grenoble Alpes, 2021.

Reviewer of the PhD thesis committee, “Quelques problèmes en optimisation non convexe et stochastique”, Sholom Schechtman, Université Gustave Eiffel, Paris, 2021.

Member of the PhD thesis committee, “Contributions à la dynamique linéaire, au processus de rafle, et à la régularité des applications lipschitziennes”, Sebastián Tapia, Université de Bordeaux et Université du Chili, 2021.

Chair of the PhD thesis committee, “Non-Convex Methods for Compressed Sensing and Low-Rank Matrix Problems”, Daniele Gerosa, Lund University, 2022.

Administrative duties

Head of the Math. Department (2022-)

UT1 representative at Graduate ANITI School (2021-)

Member of TSE Recruitment Committee (2017-present).

Member of the bureau of the Mathematics Department, 2019-2020

Head of the Mathematics group at TSE (MADS group), 2015-2017.

Member “conseil de laboratoire” 2013-2015

Member of the Department council of TSE (CODEP), 2015-2017.

Member of the recruitment committee of Paris 6 (MCF 2005-2009 & PR 2015-16/2016-17),
Toulouse I Capitole (MCF 2013-2014), Telecom ParisTech (MCF 2014-2015),

Treasurer of MODE-SMAI group (2008-2009), and member of MODE-SMAI council 2005-2009.

Editorial and other Scientific Activities

Associate editor of “Foundations of Computational Mathematics”, 2021-

Associate editor of “SIAM Journal on Optimization”, 2021-

Associate editor of “Open Journal of Mathematical Optimization”, 2019-

Associate editor of “Mathematical Programming”, 2018-

Associate editor of “Mathematics of Operations Research”, 2013-

Former associate editor of “Journal of Optimization Theory and Applications”, 2014-2021

Former associate editor of “Asia-Pacific Journal of Operational Research”, APJOR 2012-2013

Member of the Fermat’s prize committee, 2017

Expert for ANR, ASF, DFG, ERC, FONDECYT, GIF, ISF, RCG, SNSF, NWO, and various universities Cornell, HKU, The Technion, UC San Diego, U Tel Aviv, U Washington, Oslo University...

Expert for SIAM journals, MPA, MOR, FOCM, PAMS, JDE, TAMS, JFA, Duke, JMPA...

Cluster chair of the cluster “Nonsmooth Optimization” at ISMP 2012, Berlin.

Member of the Scientific Committee of the conference “Optimization: theory, algorithms and applications in economics”, 2011, Barcelona.

<http://mat.uab.cat/~opt2011/index.html>

Member of the Scientific Committee ICORES 2012, Portugal.

<http://www.icores.org/>

Member of the Scientific Committee of the French-German-Polish Optimization Congress 2013, Poland.

<http://www.fgp13.agh.edu.pl/>

Chair of the Scientific Committee of SMAI-MODE at École Polytechnique, 2020.

Member of the Scientific Committee, Toulouse, EUROPT 2020.

Member of the Scientific Com. “A special session dedicated to the memory of S. Łojasiewicz”, 12-16 dec 22, Institute of Mathematics of the Polish Academy of Sciences, Warsaw.

<https://www.impan.pl/en/activities/banach-center/conferences/22-lojasiewicz>

Teaching

Master M2, Universidad de Chile, Optimization and Dynamical Systems, 2003

Master M2, Paris 6, École Polytechnique & ENSAE:

- Convex Analysis 2004-2009
- Tame Optimization 2009-2011

Master M2 Verona (2014)

- An introduction to first-order methods

Master M2 Eco-Math TSE:

- Optimization

Research Activities

Nonconvex and large scale optimization, Tame Optimization

Gradient dynamical systems

Algorithm: Subgradient methods, Gradient Inequalities, Nonsmooth Analysis, Newton's Method

Deep Learning: theoretical aspects

I have also participated to research articles related to Machine Learning, Optimal Control, Game Theory, Economics and Environmental Sciences.

Articles

1. F. Alvarez, H. Attouch, J. Bolte, P. Redont, *A second-order gradient-like dissipative dynamical system with Hessian-driven damping. Application to optimization and mechanics*, J. Math. Pures Appl., Vol. 81, no. 8, pp. 747–779, 2002
2. H. Attouch, J. Bolte, P. Redont, *Optimizing properties of an inertial Dynamical system with Geometric Damping. Link with Proximal Methods*, Control and Cybernetics, Vol. 31, no. 3, Well-posedness in optimization and related topics (Warsaw, 2001), pp. 643–657, 2002.
3. J. Bolte, *Continuous gradient projection method in Hilbert Spaces*, Journal of Optimization Theory and Applications, Vol. 119, no. 2, pp. 235–259, 2003.
4. J. Bolte, M. Teboulle, *Barrier operators and associated gradient-like dynamical systems for constrained minimization problems*, SIAM Control and Optimization, Vol. 42, no 4, pp. 1266–1292, 2003.
5. F. Alvarez, J. Bolte, O. Brahic, *Hessian Riemannian gradient flows in convex programming*, SIAM Control and Optimization, Vol. 43, no. 2, pp. 477–501, 2004.
6. H. Attouch, J. Bolte, P. Redont, M. Teboulle, *A singular Riemannian barrier method for constrained minimization*, Optimization, Vol. 53, no. 5-6, pp. 435–454, 2004.

7. R.M. Sendlali, J.B. Dessogne, F. Monna, J. Bolte, J., S. Azimi, N. Navarro, L. Denaix, M. Loubet, C. Chateau, C. and F. van Oort, *Modeling Lead Input and Output in Soils Using Lead Isotopic Geochemistry*, Environmental Science & Technology, Vol. 38, no 5, pp. 1513–1521, 2004.
8. J. Bolte, A. Daniilidis, A.S. Lewis, M. Shiota, *Clarke critical values of subanalytic Lipschitz continuous functions*, Annales Polonici Mathematici, Vol. 87, pp. 13–25, 2005.
9. J. Bolte, A. Daniilidis, A.S. Lewis, *A Morse-Sard theorem for non-differentiable subanalytic functions*, J. Math. Analysis Applications, Vol. 321, no. 2, pp. 729–740, 2006.
10. J. Bolte, A. Daniilidis, A.S. Lewis, *The Lojasiewicz inequality for nonsmooth subanalytic functions with applications to subgradient dynamical systems*, SIAM Optimization, Vol. 17, no. 4, pp. 1205–1223, 2007.
11. J. Bolte, A. Daniilidis, A.S. Lewis, M. Shiota, *Clarke subgradients of stratifiable functions*, SIAM Optimization, Vol. 18, no. 2, pp. 556–572, 2007.
12. F. Alvarez, J. Bolte, J. Munier, *A unifying local convergence result for Newton’s method in Riemannian manifolds*, Foundations of Computational Mathematics, Vol. 8, no. 2, pp. 197–226, 2008.
13. H. Attouch, J. Bolte, P. Redont, A. Soubeyran, *Alternating proximal algorithms for weakly coupled minimization problems. Applications to dynamical games and PDE’s*, J. of Convex Analysis, Vol. 15, no. 3, pp. 485–506, 2008.
14. H. Attouch, J. Bolte, *On the convergence of the proximal algorithm for nonsmooth functions involving analytic features*, Mathematical Programming Ser. B, Vol. 116, pp. 5–16, 2009.
15. J. Bolte, A. Daniilidis, A.S. Lewis, *Tame mappings are semismooth*, Mathematical Programming Ser. B., Vol. 117, pp. 5–19, 2009.
16. F. Monna, F. van Oort, P. Hubert, J. Dominik, J. Bolte, J.-L. Loizeau, J. Labanowski, J. Lamri, C. Petit, G. Le Roux, C. Chateau, *Modeling of ^{137}Cs migration in soils using an 80-year soil archive: role of fertilizers and agricultural amendments*, Journal of Environmental Radioactivity, Vol. 100, no 1, pp. 9–16, 2009.
17. J. Bolte, A. Daniilidis, O. Ley, L. Mazet, *Characterizations of Lojasiewicz inequalities and applications*, Trans. Amer. Math. Soc., Vol. 362, no. 6, pp. 3319–3363, 2010.
18. H. Attouch, J. Bolte, P. Redont, A. Soubeyran, *Proximal alternating minimization and projection methods for nonconvex problems: an approach based on the Kurdyka-Lojasiewicz inequality*, Mathematics of Operations Research, Vol. 35, no. 2, pp. 438–457, 2010.
19. J. Bolte, A. Daniilidis, A. Lewis, *Generic optimality conditions for semialgebraic convex programs*, Mathematics of Operations Research, Vol. 36, no. 1, pp. 55–70, 2011.
20. F. Alvarez, J. Bolte, F. Bonnans, F. Silva, *Asymptotic expansions for interior penalty solutions of control constrained linear-quadratic problems*, Mathematical Programming, Vol. 135, no 1-2, pp. 473–507, 2012.
21. H. Attouch, J. Bolte, B. Svaiter, *Convergence of descent methods for semi-algebraic and tame problems: proximal algorithms, forward-backward splitting, and regularized Gauss-Seidel methods*, Mathematical Programming, Vol. 137, no 1-2, pp. 91–129, 2013.

22. J. Bolte, S. Sabach and M. Teboulle, *Proximal alternating linearized method for nonconvex and nonsmooth problems*, *Mathematical Programming*, Vol. 146, no 1-2, pp. 459–494, 2014.
23. J. Bolte, S. Gaubert, and G. Vigerel, *Definable zero-sum stochastic games*, *Mathematics of Operations Research*, Vol. 40, Issue 1, pp. 171–191, 2015
24. J. Bolte, P. Bégout, M.-A. Jendoubi, *On damped second-order gradient systems*, *Journal of Differential Equations*, Vol. 259, Issue 7, pp. 3115–3143, 2015.
25. J. Bolte, E. Pauwels, *Majorization-minimization procedures and convergence of SQP methods for semi-algebraic and tame programs*, *Mathematics of Operations Research*, Vol 41, Issue 1, pp. 442–465, 2016.
26. C. Bobtcheff, J. Bolte, T. Mariotti, *Researcher’s dilemma*, “The Review of Economic Studies”, Volume 84, Issue 3, 1 July 2017, pp. 969–1014, 2017.
27. H.H. Bauschke, J. Bolte, M. Teboulle, *A descent Lemma beyond Lipschitz gradient continuity: first-order methods revisited and applications*, *Mathematics of Operations Research*, 42 (2), pp. 330–348, 2017
28. J. Bolte, T.-P. Nguyen, J. Peypouquet, B. Suter, *From error bounds to the complexity of first-order descent methods for convex functions*, *Mathematical Programming*, 17, Volume 165, Issue 2, pp. 471–507, 2017 (preprint October 2015).
29. J. Bolte, S. Sabach, M. Teboulle, *Nonconvex Lagrangian-based optimization: Monitoring schemes and global convergence*, *Mathematics of Operations Research*, 43(4), pp. 1210–1232, 2018.
30. J. Bolte, S. Sabach, M. Teboulle, Y. Vaisbourd, *First order methods beyond convexity and Lipschitz gradient continuity with applications to quadratic inverse problems*, *SIAM Journal on Optimization* 28(3), pp. 2131–2151, 2018.
31. J. Bolte, A. Hochart, E. Pauwels, *Qualification conditions in semi-algebraic programming*, *SIAM Journal on Optimization*. Volume 28, Issue 2, pp. 1867–1891, 2018.
32. J. Bolte, A. Blanchet, *A family of functional inequalities: Lojasiewicz inequalities and displacement convex functions*, Volume 275, Issue 7, pp. 1650–1673 *Journal of Functional Analysis*, 2018.
33. H.H. Bauschke, J. Bolte, J. Chen, M. Teboulle, X. Wang, *On linear convergence of non-Euclidean gradient methods without strong convexity and Lipschitz gradient continuity*, *Journal of Optimization Theory and Applications*, 182(3), pp. 1068–1087, 2019
34. J. Bolte, Z. Chen, E. Pauwels, *The multiproximal linearization method for convex composite problems*, *Mathematical Programming*, pp. 1–36, 2019.
35. J. Bolte, E. Pauwels, *Conservative set valued fields, automatic differentiation, stochastic gradient method and deep learning*. *Mathematical Programming*, pp 1–33, 2020.
36. R. Dragomir, A. Taylor, A. d’Aspremont, J. Bolte, *Optimal Complexity and Certification of Bregman First-Order Methods* to appear in *Mathematical Programming*, 2021
37. R. Dragomir, A. d’Aspremont, J. Bolte, *Quartic first-Order methods for low rank minimization* accepted in *Journal of Optimization Theory and Applications*, 2021.

38. C. Castera, J. Bolte, E. Pauwels, C. Févotte, *An Inertial Newton Algorithm for Deep Learning*, accepted in Journal of Machine Learning Research, 2021
39. J. Bolte, E. Pauwels, *Curiosities and counterexamples in smooth convex optimization*. Mathematical Programming, 2021
40. C. Castera, J. Bolte, E. Pauwels, C. Févotte, *Second-order step-size tuning of SGD for non-convex optimization*, accepted Neural Processing Letters
41. J. Bolte, E. Pauwels, Rodolfo Rios-Zertuche, *Long term dynamics of the subgradient method for Lipschitz path differentiable functions*, accepted Journal of European Mathematical Society

Proceedings

1. F. Alvarez, J. Bolte, F. Bonnans, F. Silva, *Error estimates for the solution of a control constrained optimal control problem with interior penalties*, Control Applications of Optimization, Vol. 7, University of Jyvaskyla, Finland, IFAC Workshop on Control Applications of Optimization, 2009.
2. J. Bolte, P. L. Combettes, and J.-C. Pesquet, *Alternating proximal algorithm for blind image recovery*, Proceedings of the IEEE International Conference on Image Processing. Hong-Kong, September 26-29, 2010.
3. J. Bolte, E. Pauwels, *A mathematical model for automatic differentiation in machine learning*, Advances in Neural Information Processing Systems 33, NeurIPS 2020, Spot-Light Prize.
4. J. Bolte, T. N. Le, E. Pauwels, T. Silveti-Falls *Nonsmooth Implicit Differentiation for Machine Learning and Optimization* accepted in NeurIPS 2021.
5. D. Bertoin, J. Bolte, E. Pauwels, S. Gershinovitz, *Numerical influence of $\text{ReLU}'(0)$ on backpropagation* accepted in NeurIPS 2021.
6. J. Bolte, E. Pauwels, S. Vaiter *Automatic differentiation of nonsmooth iterative algorithms* accepted in NeurIPS 2022.

Submitted papers

- J Bolte, CW Combettes, E Pauwels, *The iterates of the Frank-Wolfe algorithm may not converge*
- J Bolte, L Miclo, S Villeneuve, *Swarm gradient dynamics for global optimization: the density case*
- J Bolte, T Le, E Pauwels, *Subgradient sampling for nonsmooth nonconvex minimization*

Conferences & Seminars

Conferences

- Universitat Autònoma de Barcelona, December 2002 : LEA Workshop on “Optimization, Games and Economic Applications” (Spain).

- “CECM Summer-meeting” Simon Fraser University, Vancouver (Canada).
- “SoMaChi meeting”, 2004, La Serena (Chile).
- MODOPT 2004, Temuco (Chile).
- FLACAM 2005, Santiago (Chile).
- ANR workshop, Optimization-Games-Economics Montpellier (2006) (France).
- Conference EURO XXI 2006, Reykjavik (Iceland), Session Organizer & Chairman.
- ANR workshop, “Numerical problems on Riemannian manifolds”, Toulouse, February 2007.
- Conference SMAI 2007, Praz-sur-Arly.
- Conference Nonconvex Programming: local and global approaches; Theory, Algorithms and Applications, Rouen, December 2007.
- MODE 2008, February 2008, Clermont-Ferrand.
- ANR workshop, “Optimization, Games and Decision dynamics with costs-to-move” Avignon (2007) (France).
- ANR workshop, “Dynamics and Optimization” Paris (2008) (France).
- Franco-Chilean Conference 2008, Université du Var, Toulon (France).
- Conference “Nonlinear Analysis and Optimization” at the occasion of the 60th birthday of A. Ioffe et S. Reich, Technion, Haifa (Israel) 2008.
- Conference at the occasion of the 60th birthday of Alain Haraux, march 2009, Hammamet, Tunisia.
- International Symposium of Mathematical Programming, Chicago, USA, August 2009.
- Workshop ANR, Banyuls, 1-2 avril 2010.
- Journées dynamiques et optimisation, November 28–29th 2011, Institut Henri Poincaré, Paris.
- SIAM Imaging meeting, 20-22th may, Philadelphia, 2012.
- International Symposium of Mathematical Programming (ISMP 2012), Berlin, August 19–23th 2012.
- 16th French-German-Polish Optimization Congress, Krakow, September 23-27th, 2013, Poland.
- Méthodes numériques et calcul effectif, en l’honneur de J.-P. Dedeu, Marseille (CIRM), October 28-31th, 2013
- SIAM Conference on Imaging Science, Hong Kong Baptist University, May 12th-14th, 2014
- Ottimizzazione e processi dinamici in apprendimento statistico e problemi inversi, Sestri-Levante, September 8th-12th, 2014.
- Optimisation non convexe, GDR Information Signal Image Vision, 16 septembre, 2014, Telecom ParisTech, Paris.
- Structured low rank approximation, Grenoble GIPSA, June 1–2nd 2015
- Real analytic geometry and trajectory of vector fields, CIRM Marseille, June 8–12th, 2015
- Nesterov 60th Birthday, Les Houches, January 2016
- Ben Tal 70th Birthday, Haifa, September 2016.
- International workshop on Mathematics and its applications, Yamaguchi University, Japan, November 2016
- Workshop Optimization: Fundamentals and Algorithms for Structured Problems, Toulouse, June 2018.
- ISMP July 2018, Bordeaux.
- Journée Probabilités-Statistiques Bordeaux-Toulouse-Montpellier, Toulouse, TSE, Novembre, 2018.
- Variational Analysis for Ioffe’s 80th birthday Erice August 2018.
- Numerical Algorithms in Nonsmooth Optimization, Schrödinger Institute, Vienna, February 2019.
- Optimization and Statistical Learning, Les Houches, Chamonix, March 2019
- Optimal transport, 80 ans du CNRS, Toulouse UPS, March 2019
- Games, Dynamics and Optimization, University Babes-Bolyai, Cluj, Romania, April 2019

- NeurIPS 2020, Spotlight Prize
- Nesterov 65th Birthday, Sochi/Online (Russia), July 2021
- Forum France-Chili, Paris, September 2021
- Prairie Workshop, Paris, November 2021
- SIAM Imaging, 2022
- JFCO, Perpignan, 2022
- Learning and Optimization in Luminy, 2022
- PGM Days, Ecole Polytechnique, 2022

Seminars

U. Montpellier II 2001, 2002, 2003; Universidad de Chile (Santiago, Chile) 2002; U. Perpignan 2002, 2003; U. Limoges, 2001; U. Bordeaux I, 2002; U. Avignon, 2003; CECM, Simon Fraser University (Canada), 2003; U. Lyon I, Institut Girard Desargues, 2004; U. P. Sabatier, Toulouse, 2004; INRIA Rocquencourt, Paris, 2005; Séminaire Parisien d'Optimisation, (Paris I, VI, IX) 2005; Séminaire "Dynamiques globales", Jacques Louis Lions, Paris 6, 2007; Séminaire de Géométrie, Université de Savoie / Chambéry, 2008; Séminaire d'Analyse de Brest, janvier 2009; Séminaire d'Analyse de l'Université d'Avignon, avril 2009; Séminaire de l'IMT, Toulouse III, avril 2009, MAD Seminar U. Toulouse I, 2010; Machine learning seminar, École Polytechnique Fédérale de Lausanne 2012; Séminaire Parisien de Théorie des Jeux, IHP, (Paris 6/7, Dauphine, X, HEC) 2013; Kolloquium, Göttingen University, Germany 2013; Griffiss Center, Rome, NY, AFRL, 2014; Syracuse University, NY, 2014; Mathematics seminar, EPFL 2015; Analysis Seminar, Sevilla, 2016; Machine Learning, IIT, Genoa, 2017; Mokameeting, INRIA, 2017, Paris; One World Optimization Seminar, July 2020; NCSU, Raleigh, Nonlinear Analysis/Differential Equation Seminar, 2021; Hong-Kong University Colloquium, May 2021; Double seminar Lund, Sweden, 2022.