
CURRICULUM VITÆ

Jérôme Bolte

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

Current position

Full Professor, University Toulouse Capitole

Address, phone, email

TSE,
Manufacture des Tabacs,
21 Allée de Brienne,
31015 Toulouse

Tel : 05-61-12-86-14 (Office)
jerome.bolte@tse-fr.eu

Academic positions

2004-2010 Maître de Conférences at University Paris 6.

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

2010-today Professor at University Toulouse I Capitole / TSE.

Education

1996-1997 Agrégation de Mathématiques

1999-2000 Master in Applied Mathematics, U. Montpellier II

2000-03 PhD in Applied Mathematics, U. Montpellier II

Advisor: Hedy Attouch (U. Montpellier 2).

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

Research grants

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

Grant “ANR Jeunes” (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 “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 blanc (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 blanc (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

Research Visits

2002 & 2003 Universidad de Chile, Santiago, Chile,

2003 Simon Fraser University, C.E.C.M., Vancouver, Canada

2004-2011 Universitat Autònoma de Barcelona, Barcelona, Spain

2006 Nagoya University, Japan

2007 & 2008 Tel Aviv University, Israel

2012 EPFL, Switzerland

2013 Göttingen University, Germany

2014 Vérone University, Italy
Rome, NY, USA

2015 Chambéry University, France
Rome, NY, USA

2016 Yamaguchi University, Institute of Time Studies, Japan
Sevilla University, Spain

Organization of conferences & Academic activities _____

Organization of seminars

- Co-organizer of the decision mathematics seminar in Toulouse (2011-2012 / 2013-2014)
<https://sites.google.com/site/seminairemad/>
- Co-founder and co-organizer of the Optimization seminar of Toulouse (2012-)
<http://projects.laas.fr/spot/>

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/>

Franco-Chilean days, to be held in July 5th-7th at Toulouse 3 University, 2016
<https://www.irit.fr/JFCO/>

Students & Thesis

Post-doctoral fellows, Antoine Hochart and Zheng Chen 2016-2017

PhD Advisor of Walter Ngambou, 2015-2018

PhD Advisor of Phong Trong Nguyen, 2013-2016

Advisor of master internships, “Optimisation et regroupement de données” Brahim Amhirri, 2007; “Asymmetric high bid auctions”, L. Simantudjak, 2013, A. Idimova “A tutorial for multistage stochastic problems”

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

Member of the 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 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 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.

Miscellaneous

Member of the recruitment committee of Paris 6 (2005-2009), Limoges (2006-2008), Nouvelle-Calédonie (2007-2008), Toulouse I Capitole (2013-2014), Telecom ParisTech (2014-2015)

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

M2 Convex Analysis Lecture (OJME) and “Optimization and Dynamical systems” (Master of the Engineering school of the Universidad de Chile). Preparation of Lecture notes on “Tame Optimization” (2010, M2 OJME).

Recipient of PEDR (2005-2009) and PES (2011-2015)

Editorial and other Scientific Activities

Associate editor of “Journal of Optimization Theory and Applications”, 2014-

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

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

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/>

Teaching

Master M2 U. de Chile (2003), Optimization and Dynamical Systems (25h00)

Master M2 Paris 6, École Polytechnique & ENSAE (2004-2010):

- Convex Analysis
- Tame Optimization

Master M2 Verona (2014)

- An introduction to First-order methods

Master M2 Eco-Math TSE (2010-2015):

- Optimization

Research Activities

Optimization, Tame Optimization

Subgradient methods, gradient inequalities, Nonsmooth Analysis, Newton's Method

I have also participated to research articles related to 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*, Math. Prog, Ser. B, Vol. 116, pp. 5–16, 2009.
15. J. Bolte, A. Daniilidis, A.S. Lewis, *Tame mappings are semismooth*, Math. Prog., 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*, Math. Prog., Ser. A, 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*, Math. Prog., Ser. A, 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*, Math. Prog., Ser. A, Vol. 146, no 1-2, pp 459–494, 2014.
23. J. Bolte, S. Gaubert, and G. Vigerl, *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*, to appear in “The Review of Economic Studies”, 2016
27. H.H. Bauschke, J. Bolte, M. Teboulle, *A descent Lemma beyond Lipschitz gradient continuity: first-order methods revisited and applications*, to appear in Mathematics of Operations Research, 2016

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 Jyväskylä, 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.

Working papers & Submitted papers

1. *Qualification conditions in tame programming.*
2. *From error bounds to the complexity of first-order descent methods for convex functions* with Trong Phong Nguyen, Juan Peypouquet, Bruce Suter.

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. Dedieu, 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, June 8–12th, 2015
- Nesterov 60th Birthday, Les Houches, January 2016
- Ben Tal 70th Birthday, Haifa, September 2016.

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, Seville, 2016.