Vitae of Joseph Frédéric BONNANS

Updated September 2024

Affiliation: L2S and Fédération de Mathématiques, CentraleSupelec,
Université Paris-Saclay, and INRIA - Saclay Ile-de-France (since Jan. 2022).
E-mail: Frederic.Bonnans@inria.fr
Web page: https://pages.saclay.inria.fr/frederic.bonnans
Born 1957, in Paris.

PRESENT POSITION
Directeur de Recherche Emeritus, Disco team (L2S, CentraleSupelec and Inria-Saclay).

PAST POSITIONS
2022 End of the Commands team, move to L2S/CentraleSupelec in the Disco team.
2009 Directeur de Recherche INRIA, first class (DR1).
2007 Leader of the new COMMANDS team, devoted to dynamical optimization (INRIA-Saclay, CMAP, ENSTA until end 2014, and INRIA-Saclay, CMAP in 2015-2021).
2006 The SYDOCO team moves to CMAP, Ecole Polytechnique.
2001 Foundation of Projet SYDOCO.
1998 Leader of PROMATH team.
1992 Responsable permanent of PROMATH team.
1988 Directeur de Recherche INRIA.
1987 Research Fellow and founding member of the INRIA Project "PROMATH".
1980 Research Fellow at INRIA in the Project "Optimal Control of Distributed Systems".

DEGREES
1993 Habilitation, Université de Paris IX Dauphine.
Title: Theoretical and numerical aspects of nonlinear optimization.
1982 Docteur Ingénieur (Ph. D. Thesis), Université de Technologie de Compiègne.
Advisor: J.P. Yvon. Commitee chaired by J.L. Lions, professeur in Collège de France, who supervised the second part of the thesis. Title:
Control of unstable systems governed by nonlinear partial differential equations .
1980 DEA (Diplôme d'études avancées) in Numerical Analysis, Université de Paris-Sud.
1979 Ingénieur des Arts et Manufactures (Ecole Centrale de Paris). Specialization in Applied Mathematics.

INDUSTRIAL SUPPORTS
CAR (Caisse Autonome de Refinancement), CNES (Centre National d'Etudes Spatiales), EDF (Electricité de France), Eurocontrol, France Telecom, IRSID (Institut de Recherche en Sidérurgie), Johnson Control, ONERA, Renault, Sagem, Total.

EXPERTIZE AND CONSULTING
Reports on proposals for foreign agencies in the last 5 years: Academy of Finland, EPSRC (UK), FONDECYT (Chile), European Research Council, Germany, Hong-Kong Research Grant Council, MITACS (Canada), NSF (USA).
National commissions: Allistene-Ancre (contribution to the national strategy for research), Numerics and Energy committee (2013). Institut Carnot Inria commission, 2014-2017.

DIFFUSION OF SOFTWARE

1. Bocop, The Optimal Control Solver: www.bocop.org.
2. Scilab[1]: algorithms for bound constrained minimization (contribution).
3. Premia[2]: calibration of volatilities of financial assets (contribution to the calibration tool).

[1]The open source platform for numerical computation: http://www.scilab.org
[2]A platform for pricing financial derivatives: http://www-rocq.inria.fr/mathfi/Premia/index.html

4. Dedicated minimization codes: IRSID (Institut de Recherche de la Sidérurgie Française), EDF, Renault, France Telecom, CNES (French Space Agency), ONERA, Total Gas.

RESEARCH SUBJECTS

1. **Numerical methods for the optimization of uncertain systems**.
   Dynamic programming, stochastic programming, stochastic control.
2. **Numerical methods for the optimization of deterministic dynamical systems**.
   Optimal control of differential equations. Shooting algorithms, direct methods, dynamic programming.

SUPERVISION OF PhD STUDENTS

1. Kang LIU (codirection with L. Pfeiffer, Inria): *Mean-field optimal control and applications to flexibilities management.* Polytechnique fellowship, Oct. 2023. M. de Conférence, Université de Bourgogne, since September 2024.
2. Guillaume Bonnet (codirection with J.-M. Mirebeau, LMO, U. Orsay): *Finite differences discretization of degenerate elliptic partial differential equations.* Paris-Saclay fellowship. Defense on Dec. 2021. Now MC at Paris-Dauphine.
3. Pierre Lavigne (codirection with L. Pfeiffer, Inria): *Mean-field games: numerical methods and case of risk-averse agents.* Paris-Saclay fellowship, Inst. Pol. Paris. Defense on Dec. 2021. Now postdoc at U. Nice.
4. Arthur Le Rhun (codirection with P. Martinon, Inria): *Stochastic optimal control for the energy management of hybrid vehicles under traffic constraints* . IFPEN fellowship, Dec. 2019. Now engineer at DGA.
5. Cédric Rommel (codirection with P. Martinon, Inria): *Data exploration for the optimization of aircraft trajectories.* Cifre fellowship with Safety Line. Oct. 2018. Now with Ava.
6. Faisal Wahid (codirection with A. Philpott, U. Auckland, NZ): *Hydro-electric river valley scheduling under uncertainty.* U. Auckland fellowship, with PGMO support. June 2017. Now with Artelys.
7. Benjamin Heymann (codirection with A. Jofre, U. Chile): *Dynamic optimization with uncertainty; application to energy production.* Polytechnique fellowship, September 2016. Now consultant, Criteo.
8. Imene Ben-Latifa (codirection with M. Mnif, ENIT, Tunis): *Optimal multiple stopping and valuation of swing options in jump models.* Tunisian fellowship, July 2015. Now Assistant Professor, Institut supérieur de gestion (Business School), Gabès, Tunisia.
9. Laurent Pfeiffer: *Sensitivity analysis for optimal control problems; Stochastic optimal control with probability constraints.* Monge fellowship (Ecole Polytechnique), Nov. 2013. Now Assistant Professor, Institute of Mathematics and Scientific Computing, Graz (Austria).
10. Xavier Dupuis : *Optimal control with or without memory.* ENS Lyon fellowship, Nov. 2013. Now Maître de Conférence, U. Dijon.
11. Giovanni Granato (codirection with H. Zidani, ENSTA): *Energy management for an electric vehicle with range extender.* CIFRE Renault, December 2012. Now consultant at A.T. Kearney.
12. Xiaolu Tan (codirection with N. Touzi, CMAP) : *Stochastic control methods for optimal transportation and probabilistic numerical schemes for PDEs.* Polytechnique fellowship. Dec. 2011. Now Maître de Conférence, Ceremade, Dauphine U., Paris.
13. Maria Soledad Aronna (codirection with P. Lotito, CONICET and U. Rosario) : *Second-order analysis of optimal control problems with singular arcs.* Supported by CONICET (Argentina) and INRIA. December 2011. Now Associate Professor, Escola de Matemática Aplicada, Getulio Vargas Fondation, Rio de Janeiro.

14. Zhihao Cen : *Optimization of a Liquefied Natural Gas portfolio.* Supported by TOTAL (CIFRE fellowship). November 2011. Presently Engineer, Amazon (Seattle).
15. Francisco Silva : *Interior-point algorithms for optimal control problems.* INRIA fellowship. November 2010. Now Maître de Conférence, U. Limoges.
16. Grégory Emiel (codirection with C. Sagastizábal, IMPA, Rio de Janeiro) : *Solving large scale problems for mid term management of electricity production.* Supported by EDF. Université Paris I Sorbonne, Nov. 2008. Presently Advisor, Hydro-Quebec, Montréal.
17. Audrey Hermant : *On the shooting algorithm for state-constrained optimal control problems.* Ecole Polytechnique, Sept. 2008. Supported by DGA. Presently Ingénieur de l'Armement, DGA.
18. Romain Apparigliato (codirection with J.Ph. Vial, U. Genève) : *Application of recourse simulation for the weekly and monthly horizon risk management.* Supported by EDF. Ecole Polytechnique, June 2008. Presently research engineer, Research Division, EDF.
19. Nadia Megdich (codirection with H. Zidani et O. Bokanowski) : *Anti diffusive methods for the Hamilton-Jacobi-Bellman equations.* Université Paris VI, January 2008. Presently Associate Professor, Institute of Electronics and Communications, Sfax.
20. Stefania Maroso (codirection with H. Zidani) : *Numerical analysis of stochastic control problems.* Université Paris VI, December 2006.
21. Julien Laurent-Varin : *Optimal ascent and reentry of reusable rockets.* Collaboration CNES-ONERA. Ecole Polytechnique, November 2005. Presently Research Engineer, CNES, Toulouse.
22. Hector Ramirez (codirection with R. Correa, Universidad de Chile, Santiago) : *Semidefinite optimization.* Ecole Polytechnique, January 2005. Presently professeur, Universidad de Chile, Santiago.
23. Radhia Bessi (codirection with H. Smaoui, ENIT, Tunis) : *Sensitivity analysis for optimization problems.* Université Al Manar (Tunis), January 2004. Now Professor, U. Monastir (Tunisia).
24. Thérèse Guilbaud (codirection with H. Zidani) : *Numerical methods for optimal control problems.* Université Paris VI, 2002.
25. Raja Rebaï : *Optimization of telecommunication networks with securization.* U. Paris IX Dauphine, 2000. Supported by France-Telecom. Now Senior Consultant, Eurodécision (Versailles).
26. Mustapha Bouhtou : *Interior point algorithms for quadratic programming*, U. Paris IX Dauphine, 1993. Presently leader of the "Optimization and Operations Research" team, Orange Labs, Paris.
27. Geneviève Launay : *Identifiability of biological systems.* U. Paris IX Dauphine, 1989. Collaboration Hôpital St Louis. Presently professor in "preparatory schools".
28. Véronique Gaudrat : *Optimal control of the continuous casting process.* U. Paris IX Dauphine, 1987. Supported by IRSID (Institut de Recherche de la Sidérurgie).

TEACHING (see the lecture notes on web pages)
Optimization Master (U. Paris-Saclay and Inst. Pol. Paris) and Ensta (third year): Optimal control of ODEs (15 h), 2014-2023.
Optimization Master (U. Paris-Saclay and Inst. Pol. Paris): Optimal control of partial differential equations (18 h), 2019-2023.

Other past teaching positions
Master "Probabilités et finance", Ecole Polytechnique and Université Paris VI (Pierre et Marie Curie) : course on "Numerical analysis of PDEs for financial applications" (24 h), 2012-2018.
Optimization Master (Université Paris-Saclay): Stochastic optimization (15 h), 2014-2018.
Ecole Polytechnique : Maître de conférence (1993-1999), Professeur Chargé de Cours (Jan. 2000 - Aug 2013). Teaching in *Optimal Control*, until 2006. Creation in Sept. 2005 with S. Gaubert of the course of *Operations Research, Mathematical Aspects and Applications.*
Master O.J.M.E. (Optimisation, Jeux et Modélisation en Economie), Ecole Polytechnique and Université

Paris VI (Pierre et Marie Curie) : Compulsory course on continuous optimization (18 h), 1999-2014.
Master of Modelization, stream O.J.M. (Optimisation, Jeux et Modélisation), Ecole Polytechnique and Université Paris VI (Pierre et Marie Curie) : Course on stochastic optimization (18 h), 2015.
Courses in doctoral studies: Paris I Panthéon-Sorbonne (*Interior-point algorithms*, 1993-1996), Paris IX Dauphine (*Nonlinear programming*, 1986-1992).
Engineering schools: *Optimization algorithms.* Centrale Paris (1994), ENSTA (1985-1990, 1994-1995 and 1999-2001).
Business and Economics schools: ESSEC (second French business school) (*Operations Research*, 1994); ENSAE (French school of statistics) *Differential Calculus and Optimization* (1995-2000).
French universities: *Numerical Optimization.* Dijon (2000), Limoges (1998), Toulouse (1995). Lecture notes expanded into the book of the same name written with J.Ch. Gilbert, C. Lemaréchal, C. Sagastizábal.
Foreign universities: Santiago de Compostela, Spain (1986), Santiago de Chile (1996), Tunis (Numerical methods for stochastic control problems, 2004).
Courses in industry: EDF (National Electricity Company), SIMULOG, SAGEM.

Minicourses associated with international conferences or specific schools
Numerical analysis of time discretization of optimal control problems. ITN-SADCO Course on Applied and Numerical Optimal Control, 23-27 April 2012, Paris.
Second order analysis of optimal control problems. Fourth Spring School on Variational Analysis, Paseky (Giant Mountains, Czech Republic), April 19 - 25, 2009.
Introduction to stochastic programming. I Escuela Franco LatinoAmericana de Optimizacion Energetica. Pergamino (Argentina), April 23-28, 2007.
Optimal control of ordinary differential equations. CIMPA School on Optimization and Control, Castro Urdiales (Cantabria, España), Aug 28-Sept 8, 2006.
Numerical methods for stochastic control problems in finance. French-Latin American Congress on Applied Mathematics Santiago, Chile. January 11-18, 2005.
Deterministic and stochastic optimal control. CIMPA School, Lima, Peru, Oct. 2004.
Numerical Schemes for the Optimal Control of Ordinary differential equations. Second Conference on Inverse Problems, control and Shape Optimization (PICOF'02). Carthage, Tunisia, April 10-12, 2002.
Optimal Control. IMCA School, Lima, Peru, 2001.
Optimal Control and the HJB equation. Cortona School (ENS Pisa, Italy, 2001).

EDITORIAL BOARDS, PUBLICATION COMMITEES, REFEREEING

Co-founder and co-editor of the Journal *Series on Mathematics and its Applications'* of the Annals of The Academy of Romanian Scientists (AOSR), 2009-2011. Then Associate Editor: 2012-2021.
Associate Editor, *Applied Mathematics and Optimization*, 2003-2018.
Corresponding Editor, *ESAIM:COCV*, 2004-2016.
Vice President for Publications, SMAI, 2002-2004 (new editorial project for the journal RAIRO-RO, now published under the auspices of SMAI and ROADEF, and lauching of the commitee of a new book series for Master studies).
Associate Editor, *SIAM Journal on Control and Optimization*, 1999-2004.
Associate Editor, *Optimization Methods and Software*, 2007-2017.
Associate Editor, book series *Mathématiques et Applications*, Springer-Verlag, 1995-2002.
Guest coeditor, special issue of the Journal *Series on Mathematics and its Applications*, dedicated to the 70th anniversary of Dan Tiba (2023, in press).

Prize committees
Dimitrie Pompeiu Prize Committee (from the Journal "Series on Mathematics and its Applications" of the Annals of The Academy of Romanian Scientists), 2013-2019.
Broyden Prize Committee (from the Optimization, Methods and Software journal): 2008-2016.
Tucker Prize Committe, Mathematical Programming Society, 2008-2009.

BOARDS AND COMMISSIONS

"Council at Large" (4 members bureau), Mathematical Programming Society (2006-2009).
IFIP (Int. Federation for Information Processing) TC 7: System Modeling and Optimization (2016-2018).
IFAC (International Federation of Automatic Control): Optimal Control Technical Committee 2.4 (2003-2017), Mathematics of Control Committee (1991-1993).

French boards
Scientific Steering Committee for Energy, ANR (French Research Funding Agency), as representative of Allistene (Alliance for sciences and technology in numerics), 2015-2017. See
https://www.allistene.fr/organisation-allistene/groupes/representants-aux-cpsd-de-lanr/
MODE (Math. de l'Optimisation et de la Décision, a branch of SMAI). Chairman (2010-2013). Board member (2007-2010).
EDP Sciences (Scientific publishing house): Conseil d'Administration (2003-2005).
SMAI board (1994-2000, 2001-2004, 2008-2011), Chair of its Education Commitee (1997-2000), Vice President for Publications, 2002-2004.
CREM: Commission de Réflexion sur l'Enseignement des Mathématiques, set by Minister of Education C. Allègre, chaired by J.P. Kahane, 1999-2003.
Recruiting commission in applied mathematics, Université Paul Sabatier, Toulouse, 1998-2001.

Local (Saclay area) commissions
PGMO Board (supports research in optimization, Steering Commitee, since 2012-2021: http://www.fondation-hadamard.fr/en/PGMO.
Steering Commitee, EADS-Ecole Polytechnique-INRIA Chair on "Mathematical modelling and numerical simulation" (2008-2011).
Board of the Centre de Mathématiques Appliquées, Ecole Polytechnique (2007-2011).

(CO-)ORGANISATION OF SCHOOLS AND CONFERENCES

CIMPA course on dynamic optimization, Tandil (Argentina), 30/8/2010-10/9/2010.
Conference of the FIME laboratory, HEC, Jouy-en-Josas, June 28-29, 2010.
Aerospatial dynamics and Optimal Control. ENSTA, Paris, 23 mai 2008.
CEA-EDF-INRIA course *Optimal control: Algorithms and Applications*, Rocquencourt, 30 May-1st June 2007.
CODE 07 Days (Conférence de la SMAI sur l'Optimisation et la Décision), Institut Henri Poincaré, April 18-20, 2007.
Cofounder in 2004 of the *Séminaire Parisien d'Optimisation*: http://www.ann.jussieu.fr/∼plc/spo.html
Thoughts on scientific sofware, on the occasion of the 20th anniversary of SMAI, INRIA-Rocquencourt, October 9, 2003.
Workshop *Numerical methods for the Hamilton-Jacobi-Bellman equations of optimal control and applications.* ENSTA, September 11-12, 2003.
CEA-EDF-INRIA Course on *Stochastic Programming*, Rocquencourt, March 17-20 2003.
Colloque HJB 2000, Institut Henri Poincaré, Paris, 2000.
Franco-Chilean Optimization Days, Institut Henri Poincaré, Paris, 1997.
CEA-EDF-INRIA Course on *Application of interior-point methods,* Rocquencourt, 1996.
French-Romanian Conference on Optimization, Optimal Control and Partial Differential Equation (Iasi, Romania, 1992). (Seven other conferences followed this first conference of the series franco-roumaine de mathématiques appliquées).
IFAC workshop *Application to Optimal Control of Nonlinear Programming and Optimization*, Paris, 1989.
Scientific Secretary of the Conference *Analysis and Optimization of Systems* organized by INRIA (1986-1990).

Member of International Program Commitees
IFIP TC 7 Conference on System Modelling and Optimization. Essen, July 23-27, 2018.
14th EUROPT Workshop on Advances in Continuous Optimization, Pozna, July 3-6, 2016.
XII International Seminar on Optimization and Related Areas (ISORA), Lima, Peru, 5-9 October 2015.
16th IFAC Workshop Control Applications of Optimization (CAO2015) Garmisch-Partenkirchen, Germany, Oct. 6-9, 2015.
EUROPT Workshop on Advances in Continuous Optimization, July 8-10, 2015, Edinburgh.
EUROPT Workshop on Advances in Continuous Optimization, 10-12 July, 2014, Perpignan.
IFAC workshop on "Control Applications of Optimization" - CAO'2012, Rimini, Italy, 13-16 September, 2012,
Conference on Optimization and Practices in the Industry (COPI'11). Paris, November 23-25 2011.

COLIBRI (COLloque d'Informatique: BRésil / INRIA, Coopérations, Avancées et Défis), 22-23 juillet 2009, Brazil.
Conference on Optimization and Practices in the Industry (COPI'08), Paris, November 26-28, 2008.
International Conference on "Nonconvex Programming, Local and Global Approaches. Theory, Algorithms and Applications" (December 17-21, 2007) INSA (National Institute for Applied Sciences), Rouen.
French-German-Czech Conference on Optimization. Heidelberg, 17-21 Sept. 2007.
Première Conf. Int. Calcul des Variations et Recherche Opérationnelle au Bénin. 17-22 Sept. 2007.
XXII Conf. on Oper. Research, Prague, July 8-11, 2007. Co-organizer of the stream on Optimal Control.
Eccomas 2006 Conference, Egmond aan Zee, The Netherlands, Sept. 5-8, 2006.
Co-chair of International Program Committee, 13th IFAC Workshop on Control Applications of Optimisation CAO'06. April 26-28, 2006, ENS Cachan, France.
XIX ISMP (International Symposium on Mathematical Programming). Rio de Janeiro, July 30-August 4, 2006.
IFAC Symposium on Robust Control Design (ROCOND), Toulouse, July 2006.
EURO Mini Conf. "Continuous Optimization in Industry". June 29-July 1, 2005, Pécs, Hungary.
French German Spanish Conference on Optimization, Avignon, September 20-24, 2004.
CIMASI'2002, Ain Chock (Morocco), 2002.
French German Polish Conf. on Optimization, Cottbus (Germany), September 9-13, 2002.
Fifth Franco-Romanian workshop of Applied Mathematics, Constanta, Romania, 2000.
"Analysis and Control of Differential Systems", Constanta, Romania, 1997.
8th IFAC Workshop "Control Applications of Optimization", Munich, Sept. 1992.

Member of National Program Commitees
ROADEF 2013, 13-15 février 2013. ROADEF 2012, 11-13 avril 2012, Angers.
"Journées du groupe SMAI-MODE" (Clermont-Ferrand 1994, Toulouse 2000, Pompadour 2001, Montpellier 2002, Pau 2003).

INVITATIONS IN CONFERENCES (in recent years)
F. Bonnans: "Forecasting and risk management for renewable energy". U. Denis Diderot, Paris, June 7-9, 2017.
"Numerical methods for optimal control problems: algorithms, analysis and applications" (NUMOC), INDAM, Roma, June 19-23, 2017.
"New Horizons on Optimal Control" NHOC2017, Porto July 3-5, 2017.
Optimal Control of Partial Differential Equations, Castro Urdiales, Sept 18-21, 2017.
ICM 2014 Satellite Conf.: Fourth Asian Conf. Nonlinear Analysis Optim. Aug. 5-9, 2014, Taipei, Taiwan.
NetCo: Conf. on New Trends in Optimal Control, June 23-27, Tours.
Smart Energy and Stochastic Optimization, June 23-27, 2014, Ensta.
Stochastic Optimization: Theory and applications to energy management. Limoges, June 12-13, 2014.
Fourth Latin American Workshop on Optimization and Control (LAWOC), July 15-18, 2014, Lima, Peru.
Int. Conf. Analysis & Math. Applic. Eng. Science. Curtin University Sarawak, Jan 19 - 22 2014, Miri, Malaysia.
Second Int. Conf. on Variational Analysis and Optimization, Jan. 7-10 2014, Universidad de Chile, Santiago.
IFAC Int. Workshop on Adaptation and Learning in Control and Signal Processing, Caen, July 3-5 2013.
Austrian French German Conference on Optimization. Sept. 19-23, 2011, Toulouse.
Journée "Statistique et Optimisation", IHP, Paris, Jan. 28, 2011. Décision dynamique dans l'incertain : exemple du négoce de GNL.
JBHU 2010: Analyse Variationnelle, Optimisation et Applications. Bayonne, October 25-27, 2010.
Advanced methods and perspectives in nonlinear optimization and control. Toulouse, STAE Foundation, Feb. 3-5, 2010.
Convex analysis, optimization and applications. Les Houches, Jan. 5-8, 2010.
Int. Conf. on Engineering and Comput. Math. (ECM2009), May 27-29, 2009, Hong Kong Polytechnic Univ.
Scientific days in the honor of Pierre Huard, Nov. 24-25, 2008. Paris.
Total "Mathias" scientific days, Cannes, 23-23 oct. 2008.
Conference "50 years of optimal control". 15-20 Sept 2008, Bedlewo (Poland)

Conférence dynamique et optimisation. 9-11 juin 2008, Université Paris 6, Paris.
Franco-Chilean days on Optimization - Toulon, May 19-21, 2008.
Second Int. Conf. on Nonlinear Programming with Applications (NPA2008). 7-9 April, 2008, Beijing.
Europt-OMS joint meeting: 2nd Conference on Optimization Methods and Software and 6th EUROPT Workshop "Advances in Continuous Optimization", Prague, July 4-7, 2007
The Veszprém Optim. Conf.: Advanced Algorithms (VOCAL). December 13-15, 2006, Veszprém, Hungary.
Shanghai International Workshop on Optimization (IWOS 2005), May 28-30, 2005, Tongji University.
Internation School of Mathematics "G. Stampacchia". Workshop on "Large Scale Nonlinear Optimization". June 22, July 1, 2004 - Erice - Sicile.
Stochastic Control and Statistics MAS Days, Nancy, Sept. 2004.

SUPPORTS FOR INTERNATIONAL COLLABORATIONS
French Government, (Argentina, Brasil, Israel, Romania, Tunisia), CNRS-NSF (USA), European Union (Human Capital and Mobility Program, collaboration with Chile), Chili Government.

PATENTS
Process for energy management for an hybrid vehicle. With G. Granato, K. Aouchiche, G. Rousseau, H. Zidani. Inria-Renault, June 2013, ref. WO2012EP74828 20121207. US patent 14/365430, 2014.

MISCELLANEOUS
Chevalier des Palmes Académiques (au titre de l'Ecole Polytechnique, janvier 2009).
Foreign languages: English and Spanish.

Main publications

Papers of recent years on the page
http://www.cmap.polytechnique.fr/∼bonnans/papers.html

Highlights
- The paper *Optimization of running strategies based on anaerobic energy and variations of velocity* by A. Aftalion and J.F. Bonnans (2014): SIAM J. Applied Math 74-5, 1615-1636 got an article in SIAM Connect (Oct. 2014) and several newspapers: Figaro on May 29, 2014, Huffington Post (France), Usine Nouvelle.
- The paper *Second-order Analysis for Optimal Control Problems with Pure State Constraints and Mixed Control-State Constraints* by J.F. Bonnans and A. Hermant, Ann. l'I.H.P. - Nonlinear Analysis 26-2 (2009), 561-598, got certificate of 20 most cited articles from this journal for 2007-2012.

1 Books

1. J.F. Bonnans : *Convex and Stochastic Optimization.* Universitext Series, Springer-Verlag, Berlin, 300 pages, May 2019.
2. J.F. Bonnans, S. Gaubert : *Recherche Opérationnelle : aspects mathématiques et applications.* Editions de l'Ecole Polytechnique/Ellipses, 392 pages, March 2016.
3. J.F. Bonnans : *Optimisation continue.* Dunod, Paris, 325 pages, 2006.
4. J.F. Bonnans, P. Rouchon : *Commande et optimisation de systèmes dynamiques.* Editions de l'Ecole Polytechnique, 288 pages, 2005.
5. J.F. Bonnans, J.Ch. Gilbert, C. Lemaréchal, C. Sagastizábal : *Numerical Optimization: theoretical and numerical aspects.* Universitext Series, Springer-Verlag, Berlin, 485 pages, second edition, 2006. First English edition: 2003.
   French edition: *Optimisation Numérique : aspects théoriques et pratiques.* Série Mathématiques et Applications 27, Springer-Verlag, Paris, 320 pages, 1997. New print, 2007.
6. J.F. Bonnans, A. Shapiro : *Perturbation analysis of optimization problems.* Springer Series in Operations Research, Springer-Verlag, New York, 601 pages, 2000. Chinese edition: Science Press, 2008.

2 Publication of conference proceedings

1. V. Barbu, J.F. Bonnans, D. Tiba editors (1992) *Optimization, optimal control and partial differential equations*. Proc. French-Romanian Conference, Int. Series Numerical Math. 107, Birkhäuser, Basel (350 pages).

3 Popularization and commission papers

1. J.F. Bonnans: *Comment optimiser la gestion d'un micro-réseau électrique intelligent ?* Cahier de l'Institut Louis Bachelier N. 23 (2016), p. 12-13.
2. J.F. Bonnans: *A propos des tests anti pollution de voitures automobiles*. Matapli 108 (2015), pp. 91-93.
3. J.F. Bonnans: *Commande Optimale*. Article for the Encyclopaedia "Techniques de l'Ingénieur", 2015.
4. P. Arnoux, J.F. Bonnans, R. Coste, Ph. Flajolet, M. Merle : *Informatique et enseignement des mathématiques I, II*. Bulletin de l'APMEP. Num. 445, 177-196 et Num. 446, p. 305-327, 2003.
5. J.F. Bonnans : *Un problème d'optimisation peut en cacher un autre*. Exposé à la journée T.I.P.E. (travaux d'Intérêt Personnel Encadré des classes préparatoires) à l'ENSTA, juin 2002. Bulletin de l'Union des Professeurs de Spéciales 201, Jan. 2003, p. 32-41.
6. J.P. Kahane (sous la direction de) : *L'enseignement des sciences mathématiques*. Rapport au ministre de l'Education Nationale. Odile Jacob, Paris, 2002. Contributions to the chapter on Computer Science.

4 Papers in scientific journals

4.1 International scientific journals

1. F. Bonnans, G. Bonnet, J.-M. Mirebeau (2022): *Monotone discretization of anisotropic differential operators using Voronoi's first reduction*. HAL https://hal.archives-ouvertes.fr/hal-03855267, Constructive Approximation, accepted on Oct. 2023.
2. J.F. Bonnans, K. Liu, L. Pfeiffer: *Error estimates of a theta-scheme for second-order mean field games*. Hal-Inria https://hal.archives-ouvertes.fr/hal-03902416. M2AN, accepted June 25, 2023, online on Aug. 1, 2023.
3. M.S. Aronna, J.F. Bonnans, B.S. Goh (2023): *Well-posedness of the shooting algorithm for control-affine problems with a scalar state constraint*. Computational and Applied Mathematics, accepted on April 19, 2023.
4. J.F. Bonnans, K. Liu, N. Oudjane, L. Pfeiffer, C. Wan: *Large-scale nonconvex optimization: randomization, gap estimation, and numerical resolution*. SIOPT 33-4 (2023), 3083–3113.
5. A. Séguret, C. Alasseur, J.F. Bonnans, A. De Paola, N. Oudjane, V. Trovato (2023): *Decomposition of high dimensional aggregative stochastic control problems*. Applied Mathematics and Optimization, accepted February 4, 2023.
6. J.F. Bonnans, L. Pfeiffer, P. Lavigne (2023): *Discrete potential mean field games: duality and numerical resolution*. Math Programming 202 No. 1-2, 241-278.
7. D. Lunz, J.F. Bonnans, and J. Ruess (2023): *Optimal control of bioproduction in the presence of population heterogeneity*. J. Mathematical Biology, accepted on Jan 18, 2023.
8. D. Lunz and J.F. Bonnans (2023): *Modelling and optimal control of a two-species bioproducing microbial consortium*. SIAM Journal on Applied Mathematics 83-1 (2023), 144-171.
9. F. Bonnans, J. Gianatti, L. Pfeiffer (2022): *A Lagrangian approach for aggregative mean field games of controls with mixed and final constraints*. SIAM J. Control Optim. 61-1, 105–134.
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4.2 Notes aux Comptes-Rendus de l'Académie des Sciences de Paris

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4.3 National scientific journals

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5 Bulletins, published conferences, book chapters

5.1 Book chapters

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5.4 Other publications

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6 Research reports

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7 Lecture notes and tutorials

Available on the web page

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