

Joseph Frédéric BONNANS
L2S and Fédération de Mathématiques, CentraleSupélec,
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.

Updated Feb. 2023

PRESENT POSITION

Member of the Disco team (L2S, CentraleSupélec and Inria-Saclay).

PAST POSITIONS

2022 End of the Commands team, move to L2S/CentraleSupélec 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. Committee 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. Scilab¹: algorithms for bound constrained minimization (contribution).
3. Premia²: calibration of volatilities of financial assets (contribution to the calibration tool).
4. Dedicated minimization codes: IRSID (Institut de Recherche de la Sidérurgie Française), EDF, Renault, France Telecom, CNES (French Space Agency), ONERA, Total Gas.

¹The open source platform for numerical computation: <http://www.scilab.org>

²A platform for pricing financial derivatives: <http://www-rocq.inria.fr/mathfi/Premia/index.html>

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

Ongoing Ph.D. theses:

1. Kang LIU (codirection with L. Pfeiffer, Inria): *Mean-field optimal control and applications to flexibilities management*. Polytechnique fellowship, started Oct. 2020.

Finished Ph.D.

27. 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 postdoc at Sissa (Trieste).
26. Pierre Lavigne (codirection with L. Pfeiffer, Inria): *Mean-field games: numerical methods and case of risk-averse agents*. Paris-Saclay fellowship, Inst. Pol. Paris, started Oct. 2018. Defense on Dec. 2021. Now postdoc at Ensae (Palaiseau).
25. 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.
24. 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.
23. 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.
22. Benjamin Heymann (codirection with A. Jofre, U. Chile): *Dynamic optimization with uncertainty; application to energy production*. Polytechnique fellowship, September 2016. Now consultant, Criteo.
21. 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.
20. 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).
19. Xavier Dupuis : *Optimal control with or without memory*. ENS Lyon fellowship, Nov. 2013. Now Maître de Conférence, U. Dijon.
18. 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.
17. 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.
16. 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 Foundation, Rio de Janeiro.
15. Zhihao Cen : *Optimization of a Liquefied Natural Gas portfolio*. Supported by TOTAL (CIFRE fellowship). November 2011. Presently Engineer, Amazon (Seattle).

14. Francisco Silva : *Interior-point algorithms for optimal control problems*. INRIA fellowship. November 2010. Now Maître de Conférence, U. Limoges.
13. 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.
12. 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.
11. 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.
10. 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.
9. Stefania Maroso (codirection with H. Zidani) : *Numerical analysis of stochastic control problems*. Université Paris VI, December 2006.
8. Julien Laurent-Varin : *Optimal ascent and reentry of reusable rockets*. Collaboration CNES-ONERA. Ecole Polytechnique, November 2005. Presently Research Engineer, CNES, Toulouse.
7. Hector Ramirez (codirection with R. Correa, Universidad de Chile, Santiago) : *Semidefinite optimization*. Ecole Polytechnique, January 2005. Presently professeur, Universidad de Chile, Santiago.
6. Radhia Bessi (codirection with H. Smaoui, ENIT, Tunis) : *Sensitivity analysis for optimization problems*. Université Al Manar (Tunis), January 2004. Now Professor, U. Monastir (Tunisia).
5. Thérèse Guilbaud (codirection with H. Zidani) : *Numerical methods for optimal control problems*. Université Paris VI, 2002.
4. Raja Rebaï : *Optimization of telecommunication networks with securization*. U. Paris IX Dauphine, 2000. Supported by France-Telecom. Now Senior Consultant, Eurodécision (Versailles).
3. 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.
2. Geneviève Launay : *Identifiability of biological systems*. U. Paris IX Dauphine, 1989. Collaboration Hôpital St Louis. Presently professor in "preparatory schools".
1. 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), since 2014.

Optimization Master (U. Paris-Saclay and Inst. Pol. Paris): Optimal control of partial differential equations (18 h), since 2019.

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 Optimización 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 COMMITTEES, 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 launching of the committee 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.

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 Committee, 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 Committee (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, since 2012), Steering Committee since 2017: <http://www.fondation-hadamard.fr/en/PGMO>.

Steering Committee, 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 software, 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 Committees

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 (COP11). 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 (COP'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 Committees

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), IN-DAM, 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.
International 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

6. J.F. Bonnans : *Convex and Stochastic Optimization*. Universitext Series, Springer-Verlag, Berlin, 300 pages, May 2019.
5. J.F. Bonnans, S. Gaubert : *Recherche Opérationnelle : aspects mathématiques et applications*. Editions de l'Ecole Polytechnique/Ellipses, 392 pages, March 2016.
4. J.F. Bonnans : *Optimisation continue*. Dunod, Paris, 325 pages, 2006.
3. J.F. Bonnans, P. Rouchon : *Commande et optimisation de systèmes dynamiques*. Editions de l'Ecole Polytechnique, 288 pages, 2005.
2. 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.
1. 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

6. 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.
5. J.F. Bonnans: *A propos des tests anti pollution de voitures automobiles*. Matapli 108 (2015), pp. 91-93.
4. J.F. Bonnans: *Commande Optimale*. Article for the Encyclopaedia "Techniques de l'Ingénieur", 2015.
3. 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.
2. 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.
1. 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

118. J.F. Bonnans, M.S. Aronna (2023): *Well-posedness of the shooting algorithm for control-affine problems with a scalar state constraint*. COMPUTATIONAL AND APPLIED MATHEMATICS, submitted.
117. A. Séguet, 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.
116. J.F. Bonnans, L. Pfeiffer, P. Lavigne (2023): *Discrete potential mean field games*. <https://hal.inria.fr/hal-03260057>, June 2021. MATH PROGRAMMING, accepted on Jan. 22, 2023.
115. 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.
114. F. Bonnans, J. Gianatti, L. Pfeiffer (2023): *A Lagrangian approach for aggregative mean field games of controls with mixed and final constraints*. SIAM J. CONTROL OPTIM., accepted under minor modifications.
113. D. Lunz and J.F. Bonnans (2022): *Modelling and optimal control of a two-species bioproducing microbial consortium*. SIAM J. APPLIED MATH, accepted in August 2022.
112. D. Lunz, J.F. Bonnans, and J. Ruess (2022): *Revisiting moment closure methods with population models*. MATHEMATICAL BIOSCIENCES, accepted in June 2022.
111. F. Bonnans, G. Bonnet, J.-M. Mirebeau (2022): *A linear finite-difference scheme for approximating Randers distances on Cartesian grids*. Jan. 2021. ESAIM-COCV, accepted in May 2022.
110. A. Le Rhun, J.F. Bonnans, G. De Nunzio, T. Leroy, P. Martinon (2022): *A bi-level energy management strategy for HEVs under probabilistic traffic conditions*. IEEE TRANSACTIONS ON CONTROL SYSTEMS TECHNOLOGY 30-2, 728–739.
109. D. Lunz, G. Batt, J. Ruess, J.F. Bonnans (2021): *Beyond the chemical master equation: stochastic chemical kinetics coupled with auxiliary processes*. PLOS COMPUTATIONAL BIOLOGY, accepted in July 2021.

108. J.F. Bonnans, G. Bonnet, J.-M. Mirebeau (2021): *Second order monotone finite differences discretization of linear anisotropic differential operators*. MATH. OF COMPUTATIONS 90-332, November 2021, pp. 2671-2703.
107. J.F. Bonnans, L. Pfeiffer, P. Lavigne (2021): *Discrete-time mean field games with risk-averse agents*. ESAIM-COCV 27, published in May 2021.
106. J.F. Bonnans, S. Hadikhanloo, L. Pfeiffer (2021): *Schauder Estimates for a Class of Potential Mean Field Games of Controls*. APPLIED MATHEMATICS AND OPTIMIZATION 83, pp. 1431-1464.
105. M. S. Aronna, J.F. Bonnans, A. Kröner (2021): *State constrained control-affine parabolic problems II: Second order sufficient optimality conditions*. SIAM J. CONTROL OPTIM. 59(2), pp. 1628-1655.
104. C. Rommel, J.F. Bonnans, P. Martinon, B. Gregorutti (2021): *Quantifying the Closeness to a Set of Random Curves via the Mean Marginal Likelihood*. ESAIM PS 25, pp. 1-30.
103. M. S. Aronna, J.F. Bonnans, A. Kröner (2021): *State-constrained control-affine parabolic problems I: First and Second order necessary optimality conditions*. SET-VALUED AND VARIATIONAL ANALYSIS, 29(2), pp. 383-408.
102. J.F. Bonnans, J. Gianatti (2020): *Optimal control techniques based on infection age for the study of the COVID-19 epidemic*. MATHEMATICAL MODELLING OF NATURAL PHENOMENA Vol. 15, published online Oct. 14, 2020.
101. J.F. Bonnans, J. Gianatti (2020): *Optimal control of state constrained age-structured problems*. SIAM J. CONTROL OPTIM. 58-4, pp. 2206-2235.
100. A. Philpott, J.F. Bonnans, F. Wahid (2020): *MIDAS: A Mixed Integer Dynamic Approximation Scheme*. MATHEMATICAL PROGRAMMING SERIES A 181, pp. 19-50.
99. A. Le Rhun, J.F. Bonnans, G. De Nunzio, T. Leroy, P. Martinon (2020): *A stochastic data-based traffic model applied to vehicles energy consumption estimation*. IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS 21-7, pp. 3025-3034.
98. C. Rommel, J.F. Bonnans, P. Martinon, B. Gregorutti (2019): *Gaussian Mixture Penalty for Trajectory Optimization Problems*. J. GUIDANCE, CONTROL, AND DYNAMICS 42-8, pp. 1857-1862
97. J.F. Bonnans, J. Gianatti, F.J. Silva (2019): *On the time discretization of stochastic optimal control problems: The dynamic programming approach*. ESAIM:COCV 25, published online, Oct. 2019.
96. M.S. Aronna, J.F. Bonnans, A. Kröner (2019): *Optimal control of PDEs in a complex space setting; application to the Schroedinger equation*. SIAM J. CONTROL OPTIMIZATION 57-2, pp. 1390-1412.
95. J.F. Bonnans, A. Kröner (2018): *Variational analysis for options with stochastic volatility and multiple factors*. SIAM JOURNAL ON FINANCIAL MATHEMATICS 9-2, pp. 465-492.
94. B. Heymann, P. Martinon, F. Silva, F. Lanas, G. Jimenez, J.F. Bonnans (2018): *Continuous Optimal Control Approaches to Microgrid Energy Management*. ENERGY SYSTEMS 9-1, pp. 59-77.
93. M.S. Aronna, J.F. Bonnans, A. Kröner (2018): *Optimal control of infinite dimensional bilinear systems: Application to the heat and wave equations*. MATH. PROGRAMMING 168, ser. B, pp. 717-757.
92. M.S. Aronna, J.F. Bonnans, A. Kröner (2018): *Corrections to: Optimal control of infinite dimensional bilinear systems: Application to the heat and wave equations*. MATH. PROGRAMMING 170-2, ser. B, 569-570.
91. J.F. Bonnans, A. Festa (2017): *Error estimates for the Euler discretization of an optimal control problem with first-order state constraints*. SIAM J. NUMERICAL ANALYSIS 55-2, pp. 445-471.
90. J.F. Bonnans, J. Gianatti, F.J. Silva (2016): *On the convergence of the Sakawa-Shindo algorithm in stochastic control*. MATHEMATICAL CONTROL AND RELATED FIELDS 6-3, 391-406.
89. M.S. Aronna, J.F. Bonnans, B.S. Goh (2016): *Second order analysis of state-constrained control-affine problems*. MATHEMATICAL PROGRAMMING 160-1, 115-147.

88. I. Ben Latifa, J.F. Bonnans, M. Mnif (2016): *Numerical methods for an optimal multiple stopping problem*. STOCHASTICS AND DYNAMICS, 16-5.
87. I. Ben Latifa, J.F. Bonnans, M. Mnif (2015): *A general optimal multiple stopping problem with an application to Swing Options*. STOCHASTIC ANALYSIS AND APPLICATIONS, 33-4, 715–739.
86. A. Aftalion and J.F. Bonnans (2014): *Optimization of running strategies based on anaerobic energy and variations of velocity*. SIAM J. APPLIED MATHEMATICS, 74-5, 1615-1636.
85. J.F. Bonnans, X. Dupuis, L. Pfeiffer (2014): *Second-order necessary conditions in Pontryagin form for optimal control problems*. SIAM J. CONTROL OPTIM., 52-6, 3437–4026.
84. J.F. Bonnans (2014): *Optimal control of a semilinear parabolic equation with singular arcs*. OPTIMIZATION, METHODS AND SOFTWARE 29-5, 964–978.
83. T. Bayen, J.F. Bonnans, F.J. Silva (2014): *Characterization of local quadratic growth for strong minima in the optimal control of semi-linear elliptic equations*. TRANSACTIONS AMERICAN MATHEMATICAL SOCIETY 366-4, 2063–2087.
82. J.F. Bonnans, X. Dupuis, L. Pfeiffer (2014): *Second-order sufficient conditions for strong solutions to optimal control problems*. ESAIM-COCV 20-3, 704-724.
81. K. Barty, J.F. Bonnans, L. Pfeiffer (2014): *Sensitivity analysis for the outages of nuclear power plants*. ENERGY SYSTEMS 5-2, 371-406.
80. J.F. Bonnans, X. Dupuis, C. de la Vega (2013): *First- and Second-Order Optimality Conditions for Optimal Control Problems of State Constrained Integral Equations*. J. OPTIM. THEORY APPLICATIONS 159-1, 1–40.
79. M.S. Aronna, J.F. Bonnans, P. Martinon (2013): *A shooting algorithm for optimal control problems with singular arcs*. J. OPTIM. THEORY APPLICATIONS 158-2, 419-459.
78. J.F. Bonnans, X. Tan (2013): *A model-free no-arbitrage price bound for variance options*. APPLIED MATHEMATICS AND OPTIMIZATION 68-1, 43-73.
77. J.F. Bonnans, L. Pfeiffer, O. Serea (2013): *Sensitivity analysis for relaxed optimal control problems with final state constraints*. NONLINEAR ANALYSIS SERIES A 89, pp. 55-80.
76. F. Alvarez, J. Bolte, J.F. Bonnans, F. Silva (2012): *Asymptotic expansions for interior penalty solutions of control constrained linear-quadratic problems*. MATHEMATICAL PROGRAMMING 135 n. 1-2, 473-507.
75. M.S. Aronna, J.F. Bonnans, A.V. Dmitruk, P.A. Lotito (2012): *Quadratic order conditions for bang-singular extremals*. Rapport de Recherche INRIA 7664, June 2011. NUMERICAL ALGEBRA, CONTROL AND OPTIMIZATION, Numerical Algebra, Control and Optimization, AIMS Journal 2, 3 (2012), 511-546. Special issue in the honor of H. Maurer.
74. J.F. Bonnans, Z. Cen, Th. Christel (2012): *Energy contracts management by stochastic programming techniques*. ANNALS OF OPERATIONS RESEARCH 200-1, pp. 199-222. Special issue on Stochastic Programming in the honor of A. Prekopa.
73. J.F. Bonnans, N. Osmolovskii (2012): *Characterization of a local quadratic growth of the Hamiltonian for control constrained optimal control problems*. DYNAMICS OF CONTINUOUS, DISCRETE AND IMPULSIVE SYSTEMS 19 1-2, pp. 1–16. Special issue dedicated to the memory of Professor Arie Leizarowitz.
72. J.F. Bonnans, F. Silva (2012): *First and second order necessary conditions for stochastic optimal control problems*. APPLIED MATHEMATICS AND OPTIMIZATION 65-3, 403–439.
71. J.F. Bonnans, F. Silva (2012): *Error estimates for the logarithmic barrier method in linear quadratic stochastic optimal control problems*. SYSTEMS AND CONTROL LETTERS, 61 (2012), 143–147.
70. J.F. Bonnans, F. Silva (2011): *Asymptotic Expansion for the Solutions of Control Constrained Semilinear Elliptic Problems with Interior Penalties*. SIAM J. CONTROL OPTIM. 49, pp. 2494-2517.
69. S. Adam, J.F. Bonnans, R. Paraisy, S. Veyrat (2011): *Application of convex lexicographical optimization to the balance of GRTgaz gas grid*. J. GLOBAL OPTIMIZATION 49-3, pp. 415–423.

68. J. André, J.F. Bonnans (2011): *Optimal structure of gas transmission trunklines*. OPTIMIZATION AND ENGINEERING 12-1, pp. 175-198.
67. J.F. Bonnans, C. de la Vega (2010): *Optimal control of state constrained integral equations*. SET-VALUED AND VARIATIONAL ANALYSIS 18-3, pp. 307-326.
66. J.F. Bonnans, N.P. Osmolovskii (2010): *Second-order analysis of optimal control problems with control and initial-final state constraints*. J. CONVEX ANALYSIS 17-3, pp. 885-913.
65. J.F. Bonnans, P. Jaisson (2010): *Optimal Control of a Parabolic Equation with Time-Dependent State Constraints*. SIAM J. CONTROL OPTIM 48-7, pp. 4550-4571.
64. J.F. Bonnans (2010): *Lipschitz solutions of optimal control problems with state constraints of arbitrary order*. MATHEMATICS AND ITS APPLICATIONS / ANNALS OF AOSR 2-1, pp. 78-98.
63. J.F. Bonnans, M. Lebelle (2010): *Explicit polyhedral approximation of the Euclidean ball*. RAIRO-RO 44-1, pp. 45-60.
62. J.F. Bonnans, A. Hermant (2009): *Revisiting the Analysis of Optimal Control Problems with Several State Constraints*. CONTROL AND CYBERNETICS 38-4, pp. 1021-1052.
61. J.F. Bonnans, A. Hermant (2009): *No-gap Second-order Optimality Conditions for Optimal Control Problems with a Single State Constraint and Control*. MATHEMATICAL PROGRAMMING SERIES B, Special issue in the honor of S.M. Robinson. Vol 117, pp. 21-50.
60. J.F. Bonnans, A. Hermant (2009): *Second-order Analysis for Optimal Control Problems with Pure State Constraints and Mixed Control-State Constraints*. ANNALES DE L'I.H.P. - NONLINEAR ANALYSIS 26-2, 561-598.
59. J. André, J.F. Bonnans, L. Cornibert (2009): *Planning reinforcement on gas transportation networks with optimization methods*. EUROPEAN JOURNAL OF OPERATIONAL RESEARCH 197-3, pp. 1019-1027.
58. P. Martinon, J.F. Bonnans, J. Laurent-Varin, E. Trélat (2009): *Numerical study of optimal trajectories with singular arcs for an Ariane 5 launcher*. J. GUIDANCE, CONTROL, AND DYNAMICS 32(1), pp. 51-55.
57. J.F. Bonnans, P. Martinon, E. Trélat (2008): *Singular arcs in the generalized Goddard's Problem*. J. OPTIMIZATION THEORY AND APPLICATIONS 139(2), 439-461.
56. J.F. Bonnans, A. Hermant (2008): *Stability and Sensitivity Analysis for Optimal Control Problems with a First-order State Constraint and application to continuation methods*. ESAIM:COCV 14-4, 825-863.
55. J.F. Bonnans, M. André (2008): *Fast computation of the leastcore and prenucleolus of cooperative games*. RAIRO-RO, 42-3, 299-314.
54. J.F. Bonnans, A. Hermant (2007): *Well-Posedness of the Shooting Algorithm for State Constrained Optimal Control Problems with a Single Constraint and Control*. SIAM J. CONTROL OPTIMIZATION 46-4, p. 1398-1430.
53. N. Bérend, J.F. Bonnans, M. Haddou, J. Laurent-Varin, Ch. Talbot (2007): *An Interior-Point Approach to Trajectory Optimization*. J. GUIDANCE, CONTROL AND DYNAMICS 30-5, 1228-1238.
52. J.F. Bonnans, S. Maroso, H. Zidani (2007): *Error estimates for a stochastic impulse control problem*. APPLIED MATHEMATICS AND OPTIMIZATION 55-3, 327-357.
51. J.F. Bonnans, J. Laurent-Varin (2006). *Computation of order conditions for symplectic partitioned Runge-Kutta schemes with application to optimal control*. NUMERISCHE MATHEMATIK 103-1, 1-10.
50. J.F. Bonnans, S. Maroso, H. Zidani (2006). *Stochastic differential games: the adverse stopping game*. IMA J. NUMERICAL ANALYSIS 26-1, 188-212.
49. J.F. Bonnans, H. Ramirez (2005). *Perturbation analysis of second-order cone programming problems*. MATHEMATICAL PROGRAMMING SERIES B 104, 205-227. Special issue dedicated to R.T. Rockafellar.

48. J.F. Bonnans, Th. Guilbaud, A. Ketfi-Cherif, C. Sagastizábal, D. von Wissel, H. Zidani (2004) *Parametric optimization of hybrid car engines*. OPTIMIZATION AND ENGINEERING 5-4, 395-415.
47. J.F. Bonnans, E. Ottenwaelter, H. Zidani (2004) *A fast algorithm for the 2D HJB equation of stochastic control*. ESAIM:M2AN 38-4, 723-735.
46. R. Bessi Fourati, J.F. Bonnans, H. Smaoui (2003) *The obstacle problem for water tanks*. J. MATHÉMATIQUES PURES ET APPLIQUÉES 82-11, 1527-1553.
45. J.F. Bonnans, H. Zidani (2003) *Consistency of Generalized Finite Difference Schemes for the Stochastic HJB Equation*. SIAM J. NUMERICAL ANALYSIS 41(3), 1008-1021.
44. J.F. Bonnans, Th. Guilbaud (2003) *Using Logarithmic Penalties in the Shooting Algorithm for Optimal Control Problems*. OPTIMAL CONTROL, APPLICATIONS AND METHODS 24(5), 257-278.
43. J.F. Bonnans, Ph. Chartier, H. Zidani (2003) *Discrete approximations of the Hamilton-Jacobi equation for an optimal control problem of a differential-algebraic system*. CONTROL AND CYBERNETICS 32(1), 33-55.
42. J.F. Bonnans, M. Haddou (2000) *Asymptotic analysis of congested communication networks*. MATHEMATICS OF OPERATIONS RESEARCH 25-3, 409-426.
41. J.F. Bonnans (2000). *Mathematical study of very high voltage power networks III: The optimal AC power flow problem*. COMPUTATIONAL OPTIMIZATION AND APPLICATIONS 16, 83-101.
40. J.F. Bonnans, H. Zidani (1999). *Optimal control problems with partially polyhedric constraints*. SIAM J. CONTROL OPTIMIZATION 37-6, 1726-1741
39. J.F. Bonnans, C. Pola, R. Rebaï (1999) *Perturbed path following predictor-corrector interior point algorithms*. OPTIMIZATION, METHODS AND SOFTWARE 11-12, 183-210.
38. J.F. Bonnans, R. Cominetti and A. Shapiro (1999) *Second order optimality conditions based on parabolic second order tangent sets*. SIAM J. OPTIMIZATION 9-2, 466-492.
37. J.F. Bonnans, G. Launay (1998) *Large scale direct optimal control applied to the re-entry problem*. J. OF GUIDANCE, CONTROL, AND DYNAMICS 21-6, 996-1000.
36. J.F. Bonnans, R. Cominetti and A. Shapiro (1998) *Sensitivity analysis of optimization problems under second order regular constraints*. MATHEMATICS OF OPERATIONS RESEARCH 23-4, 806-831.
35. J.F. Bonnans (1998) *Second order analysis for control constrained optimal control problems of semilinear elliptic systems*. APPLIED MATH. OPTIMIZATION 38-3, 303-325.
34. J.F. Bonnans, A. Shapiro (1998) *Nondegeneracy and quantitative stability of parameterized optimization problems with multiple solutions*. SIAM J. OPTIMIZATION 8-4, 940, 946.
33. J.F. Bonnans (1998) *Mathematical study of very high voltage power networks II: The AC power flow problem*. SIAM J. APPLIED MATHEMATICS 58-5, 1547-1567.
32. J.F. Bonnans, A. Shapiro (1998) *Optimization Problems with perturbations, A guided tour*. SIAM REVIEW 40-2, 202, 227.
31. J.F. Bonnans (1997). *Mathematical study of very high voltage power networks I: The optimal DC power flow problem*. SIAM J. OPTIMIZATION 7-4, 979-990.
30. J.F. Bonnans, F.A. Potra (1997) *Infeasible path following algorithms for linear complementarity problems*. MATHEMATICS OF OPERATIONS RESEARCH 22-2, 378-407.
29. J.F. Bonnans, C. Pola (1997). *A trust region interior point algorithm for linearly constrained optimization*. SIAM J. OPTIMIZATION 7-3, 717-731.
28. J.F. Bonnans, R. Cominetti (1996). *Perturbed optimization in Banach spaces III: Semi-infinite programming*. SIAM J. CONTROL OPTIMIZATION 34-5, 1555-1567.
27. J.F. Bonnans, R. Cominetti (1996). *Perturbed optimization in Banach spaces II: a theory based on a strong directional qualification condition*. SIAM J. CONTROL OPTIMIZATION 34-4, 1172-1189.

26. J.F. Bonnans, R. Cominetti (1996). *Perturbed optimization in Banach spaces I: a general theory based on a weak directional constraint qualification*. SIAM J. CONTROL OPTIMIZATION 34-4, 1151–1171.
25. J.F. Bonnans, C.C. Gonzaga (1996). *Convergence of interior point algorithms for the monotone linear complementarity problem*. MATHEMATICS OF OPERATIONS RESEARCH 21-1, 1–25.
24. J.F. Bonnans, C.C. Gonzaga (1996). *Fast convergence of the simplified largest step path following algorithm*. MATHEMATICAL PROGRAMMING SERIES B 76-1, 95–115.
23. J.F. Bonnans, A.D. Ioffe (1995). *Second-order sufficiency and quadratic growth for non isolated minima*. MATHEMATICS OF OPERATIONS RESEARCH 20-4, 801–817.
22. J.F. Bonnans, G. Launay (1995). *Sequential quadratic programming with penalization of the displacement*. SIAM J. OPTIMIZATION 5-4, 792–812.
21. J.F. Bonnans, A.D. Ioffe (1995). *Quadratic growth and stability in convex programming problems with multiple solutions*. J. CONVEX ANALYSIS 2-1/2 (Special issue dedicated to R.T. Rockafellar), 41–57.
20. J.F. Bonnans, A. Sulem (1995). *Pseudopower expansion of solutions of generalized equations and constrained optimization problems*. MATHEMATICAL PROGRAMMING 70-2, 123–148.
19. J.F. Bonnans, M. Bouhtou (1995). *The trust region affine interior point algorithm for convex and nonconvex quadratic programming*. RAIRO, RECHERCHE OPÉRATIONNELLE 29-2, 195–217.
18. J.F. Bonnans, E. Casas (1995). *An extension of Pontryagin’s principle for state-constrained optimal control of semilinear elliptic equations and variational inequalities*. SIAM J. CONTROL OPTIMIZATION 33-1, 274–298.
17. J.F. Bonnans, J.C. Gilbert, C. Lemaréchal, C. Sagastizábal (1995). *A family of variable metric proximal methods*. MATHEMATICAL PROGRAMMING 68, 15–47.
16. J.F. Bonnans (1994). *Local analysis of Newton type methods for variational inequalities and nonlinear programming*. J. APPLIED MATH. OPTIMIZATION 29-2, 161–186.
15. J.F. Bonnans, E.R. Panier, A.L. Tits, J.L. Zhou (1992). *Avoiding the Maratos effect by means of a nonmonotone line search II: Inequality constrained problems; feasible iterates*. SIAM J. NUMERICAL ANALYSIS 29-4, 1187–1202.
14. J.F. Bonnans, A. Shapiro (1992). *Sensitivity analysis of parametrized programs under cone constraints*. SIAM J. CONTROL OPTIMIZATION 30-6, 1409–1422.
13. J.F. Bonnans (1992). *Directional derivatives of optimal solutions in smooth nonlinear programming*. J. OPTIMIZATION THEORY AND APPLICATIONS 73-1, 27–45.
12. J.F. Bonnans, D. Tiba (1991). *Pontryagin’s principle in the control of semilinear elliptic variational inequalities*. APPLIED MATHEMATICS AND OPTIMIZATION 23-3, 299–312.
11. J.F. Bonnans, G. Launay (1991). *On the stability of sets defined by a finite number of equalities and inequalities*. J. OPTIMIZATION THEORY AND APPLICATIONS 70-3, 415–426.
10. J.F. Bonnans, E. Casas (1991). *A principle of Pontryagin for the optimal control of semilinear elliptic systems*. J. DIFFERENTIAL EQUATIONS 90-2, 288–303.
9. J.F. Bonnans (1990). *On the stability of solutions in nonlinear programming*. OPTIMIZATION 21-3, 365–370.
8. J.F. Bonnans (1990). *Théorie de la pénalisation exacte*. M2AN (MODÉLISATION MATHÉMATIQUE ET ANALYSE NUMÉRIQUE) 24-2, 197–210.
7. J.F. Bonnans (1989). *Asymptotic admissibility of the unit stepsize in exact penalty methods*. SIAM J. CONTROL OPTIMIZATION 27-3, 631–641.
6. J.F. Bonnans (1989). *A semi-strong sufficiency condition for optimality in non convex programming and its connection to the perturbation problem*. J. OPTIMIZATION THEORY AND APPLICATIONS 60-1, 7–18.

5. J.F. Bonnans, E. Casas (1989). *Optimal control of semilinear multistate systems with state constraints*. SIAM J. CONTROL OPTIMIZATION 27-2, 446-455.
4. J.F. Bonnans, E. Casas, M. Lobo (1987). *Analytic singular perturbations of elliptic systems*. J. MATHEMATICAL ANALYSIS AND APPLICATIONS 122-2, 422-426.
3. J.F. Bonnans (1986). *On an algorithm for optimal control using Pontryagin's maximum principle*. SIAM J. CONTROL OPTIMIZATION 24-3, 579-588.
2. J.F. Bonnans, E. Casas (1984/1985). *On the choice of the function spaces for some state-constrained control problems*. NUMERICAL FUNCTIONAL ANALYSIS AND OPTIMIZATION 7-4, 333-348.
1. J.F. Bonnans (1984). *Analysis and control of a non-linear parabolic unstable system*. J. OF LARGE SCALE SYSTEMS 6-3, 249-262.

4.2 Notes aux Comptes-Rendus de l'Académie des Sciences de Paris

2. J.F. Bonnans, A. Hermant (2006) *Conditions d'optimalité du second ordre nécessaires ou suffisantes pour les problèmes de commande optimale avec une contrainte sur l'état et une commande scalaire*. NOTES AUX COMPTES-RENDUS DE L'ACADÉMIE DES SCIENCES DE PARIS, Sér. I 343, 473-478.
1. J.F. Bonnans, A.D. Ioffe, A. Shapiro (1992). *Développement de solutions exactes et approchées en programmation non linéaire*. COMPTES RENDUS ACAD. SCI. PARIS, t. 315, Série I, p. 119-123.

4.3 National scientific journals

3. J.F. Bonnans, D. Tiba (2009): *Control problems with mixed constraints and application to an optimal investment problem*. Dedicated to Dr. Constantin Vârsan on the occasion of his 70th Birthday. MATHEMATICAL REPORTS (ROMANIAN ACADEMY OF SCIENCES) Vol. 11 (61), no.4 (2009), 293-306.
2. J.F. Bonnans (1996). *Exact penalization with a small nonsmooth term*. REVISTA DE MATEMÁTICAS APLICADAS 17-2, 37-45.
1. J.F. Bonnans, E. Casas (1986). *Quelques méthodes pour le contrôle optimal de problèmes comportant des contraintes sur l'état*. ANNALES SCIENTIFIQUES DE L'UNIVERSITÉ AL.I. CUZA 32, 57-62.

5 Bulletins, published conferences, book chapters

5.1 Book chapters

6. J.F. Bonnans, Z. Cen, Th. Christel: *Sensitivity analysis of energy contracts by stochastic programming techniques*. In "Numerical Methods in Finance", R. Carmona, P. Del Moral, P. Hu, N. Oudjane editors, Springer Proceedings in Mathematics 12 (2012), 447-471.
5. J.F. Bonnans, N. Osmolovskii: *Quadratic growth conditions in optimal control problems*. In "Nonlinear Analysis and Optimization II: Optimization". A. Leizarowitz and al. ed. Contemporary Mathematics series, Volume 514 (2010), pp. 85-98.
4. J.F. Bonnans, H. Zidani: *Characterization of consistency of some numerical schemes for the stochastic HJB equation*. Optimal Control and PDE - Innovations et Applications (book in the honor of Professor A. Bensoussan), J.L. Menaldi, E. Rofman and A. Sulem editors, IOS Press, Amsterdam, 2000.
3. J.F. Bonnans (1997): *Extended quadratic tangent optimization problems*, in "Mathematical Programming with Data Perturbations", A.V. Fiacco ed., Lecture notes in pure and applied mathematics vol. 195, Marcel Dekker, 31-45.
2. J.F. Bonnans (1989): *An introduction to Newton type algorithms for nonlinearly constrained optimization problems*. in "New methods of optimization and their industrial use", J.P. Penot ed., Birkhauser Verlag, 1-17.
1. J.F. Bonnans, E. Casas (1988): *Contrôle de systèmes elliptiques semilinéaires comportant des contraintes sur l'état*, in "Nonlinear partial differential equations and their applications, Collège de France seminar vol. VIII", H. Brézis & J.L. Lions eds., Pitman Research Notes in Mathematics Series 166, Longman Scientific & Technical, New York, 69-86.

5.2 International conferences with reviewing process

38. J.F. Bonnans, G. Bonnet, J.-M. Mirebeau: *Monotone and second order consistent schemes for the two dimensional Pucci equation*. Numerical Mathematics and Advanced Applications (Proc. ENUMATH 2019, Egmond aan Zee, The Netherlands, Sept. 30-Oct. 4, 2019), F. J. Vermolen and C. Vuik, editors, Springer, 2021. See also the first version discussing the Monge-Ampere equation: J.F. Bonnans, G. Bonnet, J.-M. Mirebeau: *Monotone and second order consistent schemes for the Pucci and Monge-Ampere equations*. <https://hal.archives-ouvertes.fr/hal-02383521v1>, Nov. 2019.
37. A. Le Rhun, J.F. Bonnans, G. De Nunzio, T. Leroy, P. Martinon: *An Eco-routing algorithm for HEVs under traffic conditions*. 21rst IFAC World Congress, Berlin, Germany, 12-17 July 2020.
36. E. Weill, V. Andréani, C. Aditya, P. Martinon, J. Ruess, G. Batt, F. Bonnans: *Optimal control of an artificial microbial differentiation system for protein bioproduction*. Proc. Europ. Control Conf. 2019, Napoli, Italy, June 25-28, pp. 2663–2668, 2019.
35. J.F. Bonnans, B. Gregorutti, P. Martinon, C. Rommel: *Aircraft Dynamics Identification for Optimal Control*. Proc. EUCASS Conf., Milano, July 3-6, 2017.
34. M.S. Aronna, J.F. Bonnans, A. Kröner: *Optimal control of bilinear systems in a complex space setting*. Proc. IFAC 20th World Congress, Toulouse (France), July 9-14, 2017.
33. B. Heymann, J.-F. Bonnans, G. Jiménez, F. Silva: *Stochastic Continuous Time Model for Microgrid Energy Management*. European Control Conference (ECC), Aalborg, Denmark, June 29 - July 1, 2016. Preprint: <https://hal.archives-ouvertes.fr/hal-01314078>.
32. J.F. Bonnans: *The shooting approach to optimal control problems*. Proc. 11th IFAC International Workshop on Adaptation and Learning in Control and Signal Processing, Caen, July 3-5 2013 (Plenary talk), pp. 281-292. DOI 10.3182/20130703-3-FR-4038.00158.
31. J.F. Bonnans: *Singular arcs in the optimal control of a parabolic equation*. Proc. 13 European Control Conference, Zurich, July 17-19 2013, pp. 69-74.
30. K. Aouiche, J.F. Bonnans, G. Granato, H. Zidani: *A Stochastic Dynamic Principle for Hybrid Systems with Execution Delay and Decision Lags*. IEEE Conf. on Decision and Control, Orlando, Dec. 12-15, 2011.
29. J.F. Bonnans, N. Osmolovskii: *Quadratic growth conditions in optimal control problems*. In “Non-linear Analysis and Optimization II: Optimization”. A. Leizarowitz and al. editors. Contemporary Mathematics series, Vol. 514 (2010), pp. 85–98.
28. F. Alvarez, J. Bolte, J.F. Bonnans and F. J. Silva: *Error estimates for the solution of a control constrained optimal control problem with interior penalties*. Proc. IFAC Workshop on Control Applications of Optimization, May 6-8, 2009, University of Jyväskylä, Finland. DOI 10.3182/20090506-3-SF-4003.00022.
27. P. Martinon, F. Bonnans, E. Trélat: *A less problem dependent approach for optimal trajectories with singular arcs: Application to space launchers* Proc. IFAC Workshop on Control Applications of Optimization, May 6-8, 2009, University of Jyväskylä, Finland. DOI 10.3182/20090506-3-SF-4003.00024.
26. J. André, J.F. Bonnans: *Optimal features of gas transmission networks*. Proc. EngOpt 2008 (International Conference on Engineering Optimization), Rio de Janeiro, June 1-5, 2008.
25. M. Aronna, J.F. Bonnans, P. Lotito: *Continuous time optimal hydrothermal scheduling*. Proc. EngOpt 2008 (International Conference on Engineering Optimization), Rio de Janeiro, June 1-5, 2008.
24. J. Laurent-Varin, J.F. Bonnans, P. Martinon, E. Trélat: *Generalized Goddard approach for trajectory optimization*. Proc. (CD) Second European Conference for Aerospace Sciences (EUCASS), Brussels, July 1-6, 2007.
23. S. Adam, J.F. Bonnans, R. Paraisy, S. Veyrat: *Application of convex lexicographical optimization to the balance of GRTgaz gas grid*. Proc. Operation Research Models and Methods in the Energy Sector Conference (ORMMES 2006), Sept. 6-8, Coimbra, Portugal.

22. N. Bérend, J.F. Bonnans, M. Haddou, J. Laurent-Varin, C. Talbot *Fast Linear Algebra for Multiarc Trajectory Optimization*. In "Large Scale Nonlinear Optimization", Proc. Erice Workshop, Non convex optimization and its applications series, G. Di Pillo and M. Roma eds, Springer Verlag, 2006, pp. 1–14.
21. J. Laurent-Varin, N. Bérend, J.F. Bonnans, C. Talbot *An efficient optimization method dealing with global RLV (ascent and branching) trajectories*. Proc. 56th IAF (International Astronautical Congress), Fukuoka, 17-21 Oct 2005. Doi: 10.2514/6.IAC-05-C1.P.18.
20. N. Bérend, J.F. Bonnans, M. Haddou, J. Laurent-Varin, C. Talbot *On the refinement of discretization for optimal control problems*. Proc. 16th IFAC Symposium on Automatic Control in Aerospace, 14-18 June 2004, St. Petersburg, Russia.
19. N. Bérend, J.F. Bonnans, M. Haddou, J. Laurent-Varin, C. Talbot *A preliminary interior point algorithm for solving optimal control problems*. Proc. Fifth Int. Conf. on Launcher Technology, Madrid, November 25-27, 2003. Aussi Rapport ONERA TP 2003-163.
18. J.F. Bonnans Th. Guilbaud, Ch. Jeanbrun, A. Ketfi-Cherif, C. Sagastizábal, D. von Wissel, H. Zidani (2002). *Two applications of optimal control methods to the design of car engines*. PICOOF Proceedings, Carthage (Tunisia), April 10-12, 2002.
17. K. Blin, J.F. Bonnans, E. Hoffman, K. Zeghal *Conflict resolution in presence of uncertainty: A case study of decision making with dynamic programming*. Proc. AIAA Guidance, Navigation and Control Conference, Montreal, August 2001.
16. K. Blin, M. Akian, J.F. Bonnans, E. Hoffman, C. Martini, K. Zeghal *A stochastic conflict detection model revisited*. Paper AIAA-2000-4270, AIAA Guidance, Navigation, and Control Conference, Denver, CO, Aug. 14-17, 2000.
15. K. Blin, M. Akian, J.F. Bonnans, E. Hoffman, K. Zeghal *A stochastic conflict detection method integrating planned heading and velocity changes*. Proc. IEEE Conference on Decision and Control, 12-15 décembre 2000, Sydney, Vol. 5, 4717 - 4722.
14. J.F. Bonnans (1992) *A review of some recent results in the perturbation theory of nonlinear programs*. Actas XII C.E.D.Y.A. / II Congreso Mat. Aplic., (Sept. 23-27, 1991), Servicio de Publicaciones, Universidad de Oviedo, 3-19.
13. J.F. Bonnans, E. Casas (1992). *A boundary Pontryagin's principle for the optimal control of state constrained elliptic systems*. In "Proc. French-Romanian Conference on Optimization, Optimal Control and Partial Differential Equations", Int. Ser. Num. Math. 107, V. Barbu, J.F. Bonnans and D. Tiba eds., Birkhäuser, 241-249.
12. J.F. Bonnans, A.D. Ioffe, A. Shapiro (1992). *Expansion of exact and approximate solutions in nonlinear programming*. In "Advances in Optimization", Lecture Notes in Economics and Mathematical Systems, n° 382, W. Oettli and D. Pallaschke eds., Springer Verlag, 103-117.
11. J.F. Bonnans (1991). *Pontryagin's principle for the optimal control of semilinear elliptic systems with state constraints*. 30th IEEE Conference on Decision and Control, Vol. 2, 1976-1979, Brighton, England.
10. J.F. Bonnans, D. Tiba (1991). *Optimality conditions in the control of semilinear elliptic variational inequalities*. In Differential equations and control theory, V. Barbu ed., Pitman research notes in mathematics series 250, Longman, Harlow.
9. G. Blanchon, J.C. Dodu, J.F. Bonnans (1990). *Optimisation des réseaux électriques de grande taille*. In Lecture Notes in Information and Control Sciences n° 144, A. Bensoussan & J.L. Lions ed., Springer-Verlag, 423-431.
8. J.F. Bonnans, E. Casas (1989). *Maximum principles in the optimal control of semilinear elliptic systems*. in "5th IFAC Conference on Distributed Parameter Systems", A. El Jai ed., 26-29 Juin (Perpignan), Pergamon Press.
7. J.F. Bonnans (1989). *Local study of Newton type algorithms for constrained problems*. in Lecture Notes in Mathematics 1405, S. Dolecki ed., Springer-Verlag, 13-24.

6. J.F. Bonnans, E. Casas (1989). *Optimal control of state constrained unstable systems of elliptic type*, in "Optimal Control of Systems governed by Partial Differential Equation", Proc. IFIP WG 7.2 Conference, A. Bermudez ed., Lecture Notes in Control and Information Sciences n° 114, Springer-Verlag, 84-91.
5. J.F. Bonnans, V. Gaudrat, C. Saguez (1988). *A domain control approach to state constrained control problems*. in Lecture Notes in Control and Information Sciences n° 100, J.P. Zolesio ed., Springer-Verlag, Berlin, 72-90.
4. J.F. Bonnans, D. Tiba (1986). *Equivalent control problems and applications*, in Lecture Notes in Control and Information Sciences n° 97, I. Lasiecka & R. Triggiani eds., Springer-Verlag.
3. J.F. Bonnans, D. Gabay (1985). *Generalization of methods of quadratic programming* (in Russian), in "Methods of numerical mathematics and mathematical modelling", Mater. Int. Symp., Moskva, 60-75.
2. J.F. Bonnans, D. Gabay (1984). *Une extension de la programmation quadratique successive*. Lecture Notes in Control and Information Sciences n° 63, A. Bensoussan & J.L. Lions eds., 16-31, Springer Verlag.
1. J.F. Bonnans (1982). *Application d'une nouvelle classe de lagrangiens augmentés au contrôle optimal de systèmes distribués*. 3ème IFAC Symposium "Control of distributed parameter systems", p IX 6-10, Pergamon Press.

5.3 National conferences with reviewing process

3. J.F. Bonnans (1991). *El principio de Pontryagin para el control de sistemas elipticos con restricciones sobre el estado*. XII Congress on Differential Equations and Applications/II Congress on Applied Mathematics, Oviedo (Spain), 297-300, Univ. Oviedo.
2. J.F. Bonnans, E. Casas (1985). *Control frontera de un sistema eliptico no lineal con restricciones puntuales sobre el estado*. Proc. C.E.D.Y.A., Santander, Universidad de Cantabria.
1. J.F. Bonnans, E. Casas, M. Lobo (1985). *Un problema de perturbaciones singulares en control optimo*. Proceedings of the seventh congress on differential equations and applications (Granada, 1984), 43-48, Univ. Granada.

5.4 Other publications

1. G. Blanchon, J.F. Bonnans, J.C. Dodu (1991). *Application d'une méthode de programmation quadratique successive à l'optimisation des puissances dans les réseaux électriques de grande taille*. Bulletin Etudes et Recherches EDF, série C (Mathématiques et informatique) n° 2, 67-101.

6 Research reports

6.1 Recent reports

4. 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>, Dec. 2022.
3. J.F. Bonnans, K. Liu, N. Oudjane, L. Pfeiffer, C. Wan: *Large-scale nonconvex optimization: randomization, gap estimation, and numerical resolution*. <https://hal.archives-ouvertes.fr/hal-03631702>, April 2022.
2. 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>, 16 Nov. 2022.
1. F. Bonnans, P. Lavigne, L. Pfeiffer (2021): *Generalized conditional gradient and learning in potential mean field games*. HAL <https://hal.archives-ouvertes.fr/hal-03341776>, Sept. 2021.

6.2 Selection of older unpublished reports

15. C. Rommel, J.F. Bonnans, P. Martinon, B. Gregorutti: *Structured Feature Selection of Continuous Dynamical Systems for Aircraft Dynamics Identification*. Hal Inria, 2018.
14. C. Rommel, J.F. Bonnans, P. Martinon, B. Gregorutti: *Block sparse linear models for learning structured dynamical systems in aeronautics*. Hal Inria, 2018.
13. J.F. Bonnans: *Second order Pontryagin's principle for stochastic control problems*. Hal-Inria report, Sept. 2015, hal.inria.fr/hal-01205854.
12. J.F. Bonnans, G. Spiers, J.-L. Vie: *Global optimization of pipe networks by the interval analysis approach: the Belgium network case*, Rapport de Recherche INRIA RR-7796, Nov. 2011.
11. J.F. Bonnans, X. Tan: *A Monotonicity condition for the θ -scheme for diffusion equations*. Rapport de Recherche INRIA 7778, Oct. 2011.
10. F. Alvarez, J.F. Bonnans, J. Laurent-Varin (2007). *Asymptotic expansion of the optimal control under logarithmic penalty: worked example and open problems*. Rapport de Recherche INRIA RR-6170.
9. J.F. Bonnans, J.-M. Cagnet, S. Volle (2002). *Estimation de la volatilité locale d'actifs financiers par une méthode d'inversion numérique*. Rapport de Recherche INRIA RR-4648.
8. J.F. Bonnans, M. Haddou, A. Lisser, R. Rebaï (2000). *Interior Point Methods With Decomposition For Multicommodity Flow Problems*. Rapport de Recherche INRIA RR-3852.
7. J.F. Bonnans, M Haddou, A. Lisser, R. Rébaï (2000). *Proximal Decomposition Method for solving Global Survivability in Telecommunication Network*. Rapport de Recherche INRIA RR-4055.
6. J.F. Bonnans, E. Casas (1992). *Some stability concepts and their applications in optimal control problems*. IMA Preprint 1081.
URL: www.ima.umn.edu/preprints/scanned-preprint/preprints4/1081.pdf.
5. J.F. Bonnans (1986). *Deux études en programmation non linéaire*. Rapport de Recherche INRIA RR-0548.
4. J.F. Bonnans, E. Casas (1984). *Contrôle des systèmes non linéaires comportant des contraintes distribuées sur l'état*. Rapport de Recherche INRIA RR-0300.
3. J.F. Bonnans, C. Moreno, C. Saguez (1984). *Contrôle de domaines temporels*. Rapport de Recherche INRIA RR-0308.
2. J.F. Bonnans (1983). *A variant of a projected variable metric method for bound constrained optimization problems*. Rapport de Recherche INRIA RR-0242.
1. J.F. Bonnans (1981). *Application d'une nouvelle classe de lagrangiens augmentés en contrôle optimal de systèmes distribués*. Rapport de Recherche INRIA RR-0102.

7 Lecture notes and tutorials

Available on the web page

<http://www.cmap.polytechnique.fr/~bonnans/notes.html>