

Alain BENSOUSSAN

Curriculum Vitae

Birth date : 5/12/40

Birth Place : Tunis, Tunisia

Citizenship : French

DISTINCTIONS

- Member of the French Academy of Sciences - 2003 (Correspondant Member since 1986)
- Member of the French Academy of Technology, 2000
- Member of the International Academy of Astronautics -1999
- Member of Academia Europae
- Fellow IEEE - 1985
- Von Humboldt Price - 1984
- Légion d'Honneur (Chevalier) - 1991, (Officier) -2003
- Ordre National du Mérite (Commandeur) - 2000
- BundesVerdienstKreuz (Officier) - 2003

TRAINING

- Ecole Polytechnique, graduated in 1962.
- Ecole Nationale de la Statistique et de l'Administration Economique, graduated in 1965.
- PhD in Mathematics, 1969, Paris.

PROFESSIONAL CAREER

- Full Professor at the University Paris-Dauphine, since 1972
- Part time Professor at the Ecole Polytechnique from 1970 to 1986
- Part time Professor at the Ecole Normale Supérieure from 1980 to 1985
- On Leave at the European Institute for advanced Studies in Management, Brussels, as Professor from 1971 to 1973, then as Director from 1975 to 1977.
- Chairman of the Mathematics Department of the University Paris Dauphine, from 1975 to 1977.
- President of INRIA, Institut National de Recherche en Informatique et Automatique, from 1984 to 1996.
- President of CNES (Centre National d'Etudes Spatiales) from January 1996 to February 2003.
- Chairman of ESA Council (European Space Agency) from July 1999 to July 2002

SCIENTIFIC RESPONSABILITIES

- Vice Chairman of the IFAC "Mathematics of control" Committee from 1978 to 1981.
- Member of the organizing Committee of the IFAC World Congress (1981).
- Member of the selection Committee for the session Control Theory and Optimization, International Congress of Mathematics, Helsinki 1978 and Chairman for the same session, Warsaw 1982.
- Chairman of AFIRST, Franco-Israeli Association for Science and Technology from 1992 to March 1999.
- Member of the Advisory Council of the Institute for Systems Research, University of Maryland.
- Member of the Board of the Pitman Advanced Publishing Program in Mathematics.
- Member of the Advisory Board of Mathematical Finance.
- Editor in Chief of Asymptotic Analysis Journal (IOS Press).
- Member of the Editorial Board of the following journals
 - Journal of Applied Mathematics and Optimization
 - Journal of Nonlinear Analysis
 - Numerical Functional Analysis and Applications
 - Policy Analysis and Information Systems
 - Sciences de Gestion
 - Systems and Control Letters
 - Acta Applicandae Mathematicae
 - Stochastic Analysis and Applications
 - Control Theory and Advanced Technology (C-TAT)
 - International Journal on Stochastic Hydrology and Hydraulics
 - Kybernetes
 - Optimal Control - Applications and Methods
 - Applied Mathematics Letters
 - Progress in Systems and Control Theory
 - Mathematical Models and Methods in Applied Sciences (M3AS)
 - Nonlinear Functional Analysis and Control Theory
 - Applied Mathematical Finance

Description of the Research Works

1 INTRODUCTION

Trained in Control Theory, my main field of expertise consists in connecting methods from Analysis and Stochastic Processes in view of solving concrete problems of applied mathematics, not necessarily arising from Control.

In the course of my scientific career I have supervised around 20 PhD students.

2 DESCRIPTION OF RESULTS

2.1 STOCHASTIC PARTIAL DIFFERENTIAL EQUATIONS

I was among the early initiators of the theory of stochastic PDE in the sense of Ito. I worked in particular, alone or in cooperation, on stochastic monotone equations, stochastic Navier-Stokes equations, stochastic variational inequalities, and more recently on stochastic inertial manifolds.

This theory has found some of its most interesting applications in the study of nonlinear filtering theory, where the work of my former student PARDOUX is a reference.

Note that numerical resolution is now within reach, which makes this field of research quite active and quite useful for applications.

2.2 FILTERING AND CONTROL OF STOCHASTIC DISTRIBUTED SYSTEMS

These problems have been at the origin of my research. In particular my thesis (under the supervision of J.L. LIONS) was devoted to Kalman filtering for linear systems with white noise inputs on both time and space. My main contribution was to make use of the theory of cylindrical measures of Gelfand Vilenkin and L. Schwartz. This permits a rigorous approach to a large variety of problems, provided the model is linear.

I was in particular able to apply these techniques to a bidimensional model playing a role in image processing, or to the problem of optimal location of sensors.

In the problem of control, I contributed strongly to the theory of necessary conditions, and to a rigorous approach of Dynamic Programming via nonlinear semi-groups.

The main field of application concerns the stochastic control of systems with partial information, which naturally has a huge domain of applications.

2.3 OPTIMAL STOPPING, IMPULSE CONTROL, VARIATIONAL AND QUASI VARIATIONAL INEQUALITIES

I discovered, which is now standardly used, that variational inequalities corresponded to the dynamic programming treatment of optimal stopping, and then solved, with J. L. LIONS, the impulse control problem, via a new theory, called the theory of quasi variational inequalities. This has initiated a long and fruitful cooperation on this topic with J.L. LIONS and many colleagues and students. Many applications of this theory concern old and new problems of Operations Research and Management, as well as Physics and Mechanics.

2.4 REGULARITY of NONLINEAR SYSTEMS of ELLIPTIC and PARABOLIC PDE and APPLICATIONS

Stochastic Nash differential games lead to systems of elliptic and parabolic PDE. The regularity of solutions is extremely important for obtaining a Nash point. This has motivated a longstanding cooperation with J. FREHSE, one of the worldwide specialists of the regularity of elliptic systems. I have also solved with him the ergodic case, which even in the case of one equation was open in its full generality.

2.5 ROBUST CONTROL and RISK-SENSITIVE CONTROL

My interest for this domain stems from its connection with the field of Risk sensitive stochastic control. In fact, I first solved with J. VAN SCHUPPEN the problem of finding a sufficient statistics (of the same size as the state, which was an open problem) for the LEG (Linear Exponential Gaussian) control. More recently, in cooperation with J. BARAS and R. ELLIOTT, for the partial information case, and H. NAGAI and J. FREHSE for the full information case, I have contributed several results to justify some earlier formal treatment. The connection between robust control and risk sensitive control can be best seen through small noise introduction and singular perturbations. This is a field of very active research worldwide, by the broadness of the applications and the use of many mathematical techniques. It is one of my current research areas.

2.6 EXACT CONTROLLABILITY

After the introduction of the HUM method by J. L. LIONS, and its use by many authors, I got interested in developing a general theory of exact controllability for infinite dimensional systems, where the dynamics is driven by a skew-symmetric operator. In this way, one can unify most of the existing results concerning wave equations, Maxwell equations, ...

2.7 HOMOGENIZATION

Initiated by the probabilistic interpretation of homogenization, my interest in this domain has widened into an important cooperation with J.L. LIONS and G. PAPANICOLAOU, where we have developed many general approaches to this very fruitful theory. More recently with L. BOCCARDO and F. MURAT I have considered the homogenization of Bellman equations, and with G. BLANKENSHIP the case of random homogenization.

2.8 REGULAR and SINGULAR PERTURBATIONS

Homogenization can be viewed as a particular situation of singular perturbations. But of course many other situations can be considered. It was natural for me to be interested in their application to Control theory, both deterministic and stochastic, and in the latter case with full or partial information. Many particularly useful results can be obtained in the case of partial information, where one can derive approximate but accurate finite dimensional feedback laws, where the optimal one is infinite dimensional.

2.9 SPECIFIC PROBLEMS in OPERATIONS MANAGEMENT and in FINANCE

Since Control Theory has a lot of applications in many areas of Quantitative Management, I have cooperated with several specialists of the field to obtain the solution of concrete problems. My current interest lies in Finance, where I have been working in the design of complex options with

M. CROUHY and D. GALAI. More recently, with my student H. Julien, I have investigated models of options for incomplete markets, where the incompleteness arises from "frictions" in the management of portfolios.

Description of managerial and scientific responsibilities

3 BEFORE MY RESPONSIBILITY as PRESIDENT of INRIA

At the University I have been chairman of the mathematics department for 2 years (1975-1977) and chairman of the CEREMADE (applied mathematics research laboratory of the University Paris Dauphine) for another 2 years (1973-1975).

This has involved supervising teaching and research programs, looking for new teaching and research staff, and managing corresponding budgets. From 1977 to 1979, I have been Director of EIASM, the European Institute for Advanced Studies in Management in Brussels. I had previously, in 1971-1973 been one of the first two French faculty of this newly created institute. This institute had been created with the help of the Ford Foundation, at the initiative of several european organizations, to strengthen research and advanced training in Management in Europe, at a time where very little existed. My presence was justified by the fact, that I was one of the few european applied mathematicians interested in quantitative management and by the active role of my university in the creation of this institute.

As Director, I had to implement a new strategy, due to the scarcity of resources which unfortunately but inevitably hits this kind of international organization, born at a period of prosperity and in a specific context of justification, which is less present after several years. In fact, from a full staff faculty, which is very costly, I turned to the concept of scientific network. This is a concept which is widely used now, especially since the European Community has initiated a European Research Program (in 1983) and is now at the core of the European research area, proposed for the 6th framework program, but was rather original in those days. Keeping this concept operational till now has permitted EIASM to survive and to play an active role in unifying the european scientific community in Management.

Needless to say, I got there experience in an international scientific environment, had to bridge some cultural gaps, had to discuss budget issues with several organizations of different countries. At the same time, I was not, being a mathematician, among the most representative of the field. I tried, with success, to use this drawback as an asset, since I could be considered as neutral by all the active (in those days not so many) members of the community, and I brought the spirit of a research oriented director, in a domain which had not so much cultivated this flavor in the past, (again in those days in Europe).

4 RESPONSIBILITY as PRESIDENT of INRIA

I have been appointed President of INRIA on December 18, 1984 . This appointment is made by two Ministers, the Minister of Science and the Minister of Industry. The term is for 3 years, renewable. I have acomplished 4 mandates.

When I left INRIA it had around 1500 staff, in which half are full time civil servants. It had a budget of more than 100 M\$, including 20% of owned resources (not governmental subsidy). It is located in 5 campuses: Rocquencourt, Sophia-Antipolis, Rennes, Nancy and Grenoble, plus a few people scattered elsewhere, in particular in Toulouse.

Its main responsibility is to bridge the gap between Fundamental Research in Computer Science, Control, Scientific Computing and the real needs of industry, both information technology industry and economic sectors using information technology. Although not a university, INRIA has a fundamental role in training, and it contains 500 student members among its staff. Since 1984, INRIA has almost doubled its size, has grown from 3 to 5 campuses, has put forward an active strategy of transfer, not only by getting contracts with industry, but also being quite active in encouraging spin off companies (around 20 in 10 years, representing the creation of 800 high tech jobs). INRIA has been very present on the international scene, not only by the reputation and visibility of its

staff, but also by many important international agreements, including an agreement with NSF, and the opening of a center in Moscow, the Lyapunov Institute in cooperation with Moscow State University. The most recent and spectacular illustration of this presence is the creation under the sponsorship of MIT and INRIA, of the International World Wide Web Consortium, which will gathers around a hundred of organizations (mainly industries) from America, Europe and Asia. Being President of INRIA means being both Chairman of the Board and Director of the Institute. It involves supervising the scientific orientations and the strategy of transfer and international cooperation. The President has to deal constantly with ministries and local authorities, with industry representatives and with academic institutions. He has a wide range of action, provided he can be convincing internally about the objectives and externally about the achievements of the institute. Due to the role of INRIA, I have been appointed, as member or chairman, in many committees, boards or scientific councils, of other organizations, or playing a national or an international role. Of course, this has increased my knowledge and experience of the scientific and industrial environment, as well has allowed me to promote the realizations of the institute. In addition, I had to become a generalist in the field of information technology and to understand the main scientific and industrial issues. I had to write several synthesis reports, in particular to present lectures to an audience of non specialists (scientists of other disciplines, or decision makers from industry or government), or to define the position of INRIA on main issues of concern.

5 RESPONSIBILITY as PRESIDENT of CNES

I have been appointed President of CNES on January 31, 1996, and elected Chairman of the Council of the European Space Agency, for a three years term starting July 1st, 1999. I have been renewed in my position of President of CNES for a three year term ending in February 2003. CNES is the French space Agency, as well as a centre of excellence for technology. It represents 2500 persons, including the space port of Europe, in Kourou, French Guyana.

The responsibility of the President concerns the definition of the strategy and the orientations of the Center, in particular the reinforcement of the European cooperation and international programs. Space is a strategic issue of the construction of Europe, and in this position I have had to deal a lot with industry. One of the important tasks concerns the European space programs and the restructuring issues, both in industry and in the public sector.

LIST of PUBLICATIONS

BOOKS

- Filtrage Optimal des Systèmes Linéaires (Dunod, 1971).
- Management Application of Modern Control Theory, (North Holland, 1974), with G. HURST & B. NASLUND.
- Applications des Inéquations Variationnelles en contrôle Stochastique, (Dunod, 1978), with J.L. LIONS (english translation: Application of Variational Inequalities in Stochastic Control, North Holland, 1982).
- Asymptotic Methods in Periodic Media, (North Holland, 1978), with J.L. LIONS & G. PAPANICOLAOU.
- Stochastic Control by Functional Analysis Methods, (North Holland, 1982).
- Impulsive Control and Quasi-Variational Inequalities, (Dunod, 1982), with J.L. LIONS, traduction russe 1987.
- Mathematical Theory of Production Planning, (North Holland, 1983), with M. CROUHY & J. M. PROTH.
- Perturbations Methods in Optimal control, (Dunod-Gauthier Villars, 1988).
- Stochastic Control with Partial Information (Cambridge University Press), 1992.
- Representation and Control of Infinite Dimensional Systems, with G. Da Prato, M. Delfour et S.K. Mitter, (Birkhauser) vol.1, 1992.
- Representation and Control of Infinite Dimensional Systems, with G. Da Prato, M. Delfour et S.K. Mitter, (Birkhauser) vol.2, 1993.
- Regularity results for nonlinear Elliptic systems and applications, with J. FREHSE, (Springer), Applied Mathematical Sciences, vol. 151, 2002.

EDITED BOOKS

- 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th International Conference on Analysis and optimization of Systems, (Springer Verlag, Lecture Notes, 1974, 1976, 1978, 1980, 1982, 1984, 1986, 1988, 1990), with J.L. LIONS.
- Applied Optimal Control (North Holland, 1978), with P. KLEINDORFER & C. S. TAPIERO.
- Stochastic Optimal Control and Applications, (North Holland, 1980), with P. KLEINDORFER & C. S. TAPIERO.
- Mathematical Techniques of Optimization, Control and Decision, (Annals of the CEREMADE), (Birkhäuser, 1981), with J. P. AUBIN & I. EKELAND.

ARTICLES

More than 300 articles & communications in International Journals and proceedings.

1967

- Une méthode d'Identification de Valeur Initiale, C.R.A.S. Paris, t. 265, pp. 724-727, A. Nov. 1967.

1968

- Sur l'Identification des Systèmes Aléatoires, C.R.A.S. Paris, t. 266, pp. 1229-1232, Série A, Juin 1968.
- Sur l'Analogie entre les Méthodes de Régularisation et de Pénalisation, (with P. KENNETH) R.I.R.O., 2e année, N° 13, pp. 13-26, 1968.

1969

- Equations Intégrales Opérationnelles Stochastiques, C.R.A.S. Paris, t. 269, pp. 423-425, Sept. 1969.
- Sur les propriétés de la Solution d'une Equation Intégrale Opérationnelle stochastique, C.R.A.S. Paris, t. 269, pp. 457-459, Sept. 1969.
- Identification de Systèmes Gouvernés par des Equations aux Dérivées Partielles, dans Computing Methods in Optimisation Problems, Academic Press, N. Y. 1969. pp. 25-34.
- Contrôle Optimal Stochastique de Systèmes Gouvernés par des Equations aux Dérivées Partielles de Type Parabolique, Rendiconti di Matematica, (1. 2) Vol. 2 série Vi, pp. 135-173, Rome 1969.
- Game Theory for Systems Governed by Partial Differential Equations, in Proceedings of the First International Conference on Differential Games, pp. V5-V8, Amherst, Mass., 1969.
- Identification et Filtrage, Cahiers de l'IRIA N° 1, pp. 1-253, Fév. 1969.

1970

- Approximation des problèmes de contrôle optimal, with A. BOSSAVIT & J. C. NEDELEC, Cahiers de l'IRIA N° 2, pp. 104-172, 1970.
- Statistical problems in Hilbert spaces, application to filtering theory in, Kybernetika, pp. 270-279, Prague 1970.
- On the best linear feedback for systems governed by differential operational equations, dans Symposium on Optimization, Springer Verlag, Lecture Notes in Mathematics, pp. 53-57, Berlin 1970.
- Optimization, dans Encyclopédie des Sciences et des techniques, (Déc. 1970).

1971

- Saddle points of convex functionals with applications to linear quadratic differential games, dans Differential Games and Related Topics, North Holland, pp. 177-19..., 1971
- On the approximate Kalman-Bucy filter, Proceedings of the Hawaiï Conference on System Science, pp. 462-46, Hawaiï 1971.
- Filtering theory : a comparison between lumped and distributed systems, Memoria de la Conferencia Internacional sobre sistemas, Redes y Computadoras, pp. 160-163, Mexico 1971.
- Evaluation of multi level approach in large scale optimization, dans Proceedings of the Joint Automatic Control Conference, pp. 294a-6294b, St Louis, 1971.
- On the separation principle for distributed parameter systems, Proceedings of the IFAC symposium on Control of Distributed Parameter Systems, pp. 1-7, Banff, Canada, 1971.
- Statistical estimation in Hilbert spaces : Application to Bucy's Representation theorem, dans Information Theory, Statistical Decision Functions, Random Processes, Transactions of the Sixth Prague Conference, pp. 107-124, Sept. 19-25, 1971.
- Points de Nash en boucle fermée pour les systèmes paraboliques linéaires with critère quadratique, Note C.R.A.S. (20 Sept. 1971), t. 273, pp. 499-501.

1972

- Optimal filtering for linear stochastic hereditary differential systems, with M. C. DELFOUR & S. K. MITTER, IEEE Conference on Decision and Control, pp. 1-3, New Orleans, 1972.
- Optimization of sensors location in a distributed filtering problem, dans *Stability of Stochastic Dynamical Systems*, Springer Verlag, Lecture Notes in Mathematics, N° 294, pp. 62-84, Berlin 1972.
- Equations aux dérivées partielles stochastiques non linéaires, with R. TEMAM, *Israël Journal of Mathematics*, Vol. 11, N° 1, pp. 95-129, 1972.
- Price decentralization in the case of interrelated payoffs, dans *Techniques of Optimization*, Academic Press., 1972.
- On the filtering theory for some stochastic distributed parameter systems, with J.L. LIONS, Nov. 1972.

1973

- Problèmes de temps d'arrêt optimal et inéquations variationnelles paraboliques, with J.L. LIONS, *Applicable Analysis*, Vol. 3, pp. 267-294, 1973.
- Inspection decisions in a multistage production process, with E. G. HURST Jr., G. NISSEN, J. P. QUADRAT, *Proceedings of XX International Meeting - The Institute of Management Sciences E. Shlifer (ed) Vol. 1*, pp. 223-227, Tel Aviv, June 24-29, 1973.
- Equations stochastiques du type Navier-Stokes, with R. TEMAM, *J. of Functional Anal.* Vol N° 2, pp. 195-222, Juin 1973.
- Impulse controls and dynamic inventories problems with non constant demand rate, *Proceedings of XX International Meeting - The Institute of Management Sciences E. Shliefer (ed) Vol. 1*, pp. 223-227, Tel Aviv, June 24-29, 1973. with E. G. HURST Jr.
- Méthodes de décomposition appliquées au contrôle optimal de systèmes distribués, Springer Verlag, *Lecture Notes on Computer Science N° 3*, Rome, May 7-11, 1973.
- Nouvelle formulation de problèmes de contrôle impulsif et applications, with J.L. LIONS, *C.R.A.S. Paris*, t. 276, série A, pp. 1189-1192, 1973.
- Contrôle impulsif et inéquations quasi variationnelles stationnaires, with M. GOURSAT & J.L. LIONS, *C.R.A.S. Paris*, t. 276, série A, pp. 1279-1284, 1973.
- Contrôle impulsif et inéquations quasi variationnelles d'évolution, with J.L. LIONS, *C.R.A.S. Paris*, t. 276, série A, pp. 1333-1338, 1973.
- Inéquations variationnelles non linéaires du premier et du second ordre, with J.L. LIONS, *C.R.A.S. Paris*, t. 276, série A, pp. 1411-1415, 1973.
- Généralisation du théorème de Girsanov, *Mathematicae Notae*, Université Nationale de Rosario, Ano XXIII 72/73, pp. 39-63.
- Approximation numérique d'inéquations quasi variationnelles stationnaires, with J.L. LIONS, *Colloque IRIA Déc. 1973 17-21/12/73*, *Lecture Notes in Computer Sciences*, Vol. 11, pp. 325-338, Springer Verlag Heidelberg (1974).

1974

- Points de Nash dans le cas de fonctionnelles quadratiques et jeux différentiels linéaires à N personnes, *SIAM J. of Control*, Vol. 12, N° 3, Août 1974.
- Utilisation du filtre de Kalman pour la prédiction des séries économiques, *Publ. Economie Appliquée*, Tome 27, N° 2-3, Paris 1974.

- Contrôle impulsionnel et contrôle continu. Méthode des inéquations quasi variationnelles non linéaires, with J.L. LIONS, C.R.A.S. Paris, t. 278, série A, pp. 675-679, 4 Mars 1974.
- Contrôle impulsionnel et systèmes d'inéquations quasi variationnelles, with J.L. LIONS, C.R.A.S. Paris, t. 278, série A, pp. 747-751, 11 Mars 1974.
- Sur de nouveaux problèmes aux limites pour des opérateurs hyperboliques, with J.L. LIONS, C.R.A.S. Paris, t. 278, série A, pp. 1345-1349, 20 Mai 1974.
- Differential games with stopping times and non linear variational inequalities, with A. FRIEDMAN, J. of Functional Analysis, Vol. 16, N° 3, pp. 305-352, Juillet 1974.
- Quelques remarques sur les inéquations quasi variationnelles décroissantes, Congrès Analyse convexe, Proceedings du Colloque de Saint Pierre de Chartreuse with J.L. LIONS, Springer Verlag, 1974.
- Contrôle impulsionnel et inéquations quasi variationnelles, Conférence au Congrès UMI Vancouver, Août 1974.
- Introduction to the theory of impulse control, Trieste 1974, IREA SMR 17/39.
- Differential games with impulse times, with J.L. LIONS, Proceedings de la Conference IEEE on Decision and Control Phoenix (Ariz), Nov. 20-22, 1974.
- Stochastic differential equations in bounded domains and singular perturbation for variational inequalities with Neumann boundary conditions, Springer Verlag, Lecture Notes Proceedings of the 1974 Vict. Conference on Stochastic differential equations edited by M. Pinsky, N° 451, pp. 8-25, 1974.
- Sur quelques questions liées au contrôle optimal, with J.L. LIONS, Article dédié au Professeur PETROWSKI, Mars Avril 1974, Uspeki XXIX 2 (77-85).
- Sur des nouveaux problèmes aux limites pour des opérateurs hyperboliques, C.R.A.S. Paris, t. 278, 20 Mai 1974, with J.L. LIONS.

1975

- Optimum inventory control with deterministic and stochastic deterioration. An application of distributed parameter control problems, IEEE Transactions on Automatic Control. Juin 1975, with G. NISSEN et C. S. TAPIERO.
- Optimal control of stochastic linear distributed parameter systems, SIAM J. of Control, Vol. 13, N° 4, pp. 904-926, Juillet 1975, with M. VIOT.
- Nouvelles méthodes en contrôle impulsionnel, J. of Applied Math. and Optimization, Vol. 1, N° 4, pp. 289-312, ed. Springer Verlag, New York, with J.L. LIONS.
- Problèmes de temps d'arrêt optimaux et perturbations singulières dans les inéquations variationnelles, Colloque IRIA, Juin 1975, Lecture Notes in Economics and Mathematical System, Vol. 107, pp. 567-584, Springer Verlag, Heidelberg.
- Sur le contrôle impulsionnel et les inéquations quasi-variationnelles d'évolution, Note C.R.A.S., t. 280, pp. 1049-1453, 28 Avril 1975, with J.L. LIONS.
- Sur quelques phénomènes asymptotiques stationnaires, Note C.R.A.S. Paris, t. 281, pp. 89-94, 21 Juillet 1975, with J.L. LIONS et G. PAPANICOLAOU.
- Sur quelques phénomènes d'évolution, Note C.R.A.S., t. 281, pp. 317-322, 8 Septembre 1975, with J.L. LIONS et G. PAPANICOLAOU.
- Control of stochastic Partial Differential Equations, in Identification, Estimation and Control of Distributed Parameter System, ed. par W. H. Ray et D. G. Lainotis.
- Sur les temps d'arrêt optimaux et les inéquations variationnelles d'évolution, Note C.R.A.S. Paris, t. 280, Série A, pp. 989-992, 21 Avril 1975, with J.L. LIONS.

- Sur les méthodes de décomposition, de décentralisation et de coordination et applications, dans Méthodes de Décomposition, édité par J.L. Lions et G. Marchuk, Dunod, Paris 1975, Tome 2, with J.L. LIONS et R. TEMAM.
- Optimal impulse and continuous control : method of non linear quasi-variational inequalities, dédié au Prof. Nikolski, Proceedings of Steklov Institute of Mathematics, N° 134, 1975, Moscou, URSS, with J.L. LIONS.

1976

- Variational inequalities and optimal stopping time problems, Academic Press, dans Calculus of Variations and Control Theory, 1976.
- Sur de nouveaux problèmes asymptotiques, Note C.R.A.S. Paris, t. 282, série A, pp. 143-147, 19 Janvier 1976, with J.L. LIONS et G. PAPANICOLAOU.
- Boundary layers and Homogenization of transport processes, RIAS, Kyoto University, with J.L. LIONS et G. PAPANICOLAOU.
- Homogénéisation et perturbations singulières, in honor to Professeur SOBOLEV, Séminaire de Math. de l'Académie des Sciences de Novosibirsk. with J.L. LIONS.
- On the support of the solution of some variational inequalities of evolution, Journal of Mathematical Society of Japan, Vol. 28, N° 1, pp. 1-17, Janvier 1976. with J.L. LIONS.
- Boundary layer analysis in homogenization of diffusion equations with Dirichlet conditions in a half space, Conference on Stochastic Differential Equations, Proc. of International Symposium SDE, pp. 21-40, Kyoto, 1976.
- Homogénéisation, correcteurs et problèmes non linéaires, Note C.R.A.S. Paris, t. 282, série A, pp. 1277-1282, 14 Juin 1976. with J.L. LIONS et G. PAPANICOLAOU.
- The linear quadratic optimal control problem for infinite dimensional systems over an infinite horizon, Survey and examples, Proc. 1976, IEEE CDC, pp. 746-751, New York, 1976, with M. C. DELFOUR et S.K. MITTER.
- Stochastic differential games with stopping times, Proceedings of the Kingston Conference on "Differential Games", pp. 377-399, 1976. with J.L. LIONS.

1977

- Sur la convergence d'opérateurs différentiels with potentiel fortement oscillant, Note C.R.A.S. Paris, t. 284, série A, pp. 587- 592, 14 Mars 1977. with J.L. LIONS et G. PAPANICOLAOU.
- Homogenization of operators not in divergence form, International Journal of Applied Analysis, Vol. 1, N° 1, 1977, with J.L. LIONS et G. PAPANICOLAOU.
- Estimates of the free boundary for quasi-variational inequalities, Comm. in Partial Differential Equations 2(3), pp. 297-321, 1977, with H. BREZIS et A. FRIEDMAN.
- Nonzero sum stochastic differential games with stopping time and free boundary problems, in "Transactions of the American Mathematical Society", Vol. 231, N° 2, 1977. with A. FRIEDMAN.
- Asymptotics for branching transport processes, Congrès International IRIA, Déc. 1977, "Computing Methods in Applied Science Engineering", Lecture Notes in Mathematics, Springer Verlag, eds. R.Glowinski & J.L. Lions, 1, pp. 317-329, 1977. with J.L. LIONS et G. PAPANICOLAOU.

1978

- On the Hamilton-Jacobi approach for the optimal control of diffusion processes with jumps, in Stochastic Analysis, Academic Press, ed. M. Pinsky & A. Friedman, 1978.
- Problèmes de temps d'arrêt optimal pour les systèmes distribués stochastiques, in honor to J. Leray, Annali della scuola Normale Superiore, Pisa, Classe di Scienze, pp. 776-808, Vol. II, 1978, with J.L. LIONS.
- Inéquations quasi-variationnelles dépendant d'un paramètre, in honor to Professeur Lewy, Annali della Scuola Normale Superiore, Pisa, Classe di Scienze, Vol. I, pp. 347-371, 1978, with J.L. LIONS.
- On the Asymptotic behaviour of the solution of variational inequalities, with J.L. LIONS, N° 2, 6, pp. 25-40, Theory of Non Linear Operators, Akadmic Velay, Berlin, 1978.
- Optimal Stopping time problems for reflected diffusion processes, Proceedings of IMA Conference "Analysis and Optimization of stochastic systems", Oxford, September 6-8 1978, England, Springer, Lecture Notes Series, with J.L. LIONS.
- Remarques sur le comportement asymptotique de systèmes d'évolution, Functional Analysis and Numerical Analysis, Séminaire franco japonais, Tokyo et Kyoto, H. Fujita (ed.), Japan Society for the Promotion of Sciences, pp. 247-265, 1978.
- Leader's dynamic marketing behaviour in Oligology, TIMS Studies in the Management Sciences 9 (1978), North Holland Publishing Co., with A. BULTEZ et P. NAERT.
- Quelques exemples d'application du contrôle stochastique et du contrôle impulsif dans les problèmes de gestion, Conférence Rome, Italie, May 8-12 1978, Proceedings of the International Meeting on Recent Methods in Non Linear Analysis, Eds, E. De Giorgio, E. Magenes, U. Mosco, pp. 339-359.
- On the support of the solution of a system of quasi-variational inequalities, Journal of Mathematical Analysis and Applications, Vol. 65, N° 3, pp. 660-674, Octobre 1978, with A. FRIEDMAN.

1979

- Optimal Impulsive Control Theory. Proceedings of the Workshop on Stochastic Control Theory, Lecture Notes in Control and System Sciences, Springer Verlag, Bonn, Jan. 1979.
- On the semi-group formulation of variational inequalities and quasi-variational inequalities, Proceedings of the First Franco-Southeast Asian Mathematical Conference, MC(P), 36/4/79, Bulletin of Mathematics, pp. 4-26, May 1979.
- Optimization in Hilbert Spaces, Singapour Lectures, Mai 1979.
- Some remarks on the representation of non autonomous dynamic systems in infinite dimensions, 4th International Symposium on the Mathematical Theory of Networks and Systems, July 3-6, 1979, Delft, Hollande, with J. P. AUBIN.
- Impulsive control in Management Science : Prospect and Survey, 24e Congrès du TIMS, Hawaï, Juin 1979, with C. S. TAPIERO.
- La théorie du contrôle et ses applications, Revue "Sciences de Gestion", Tome XIII, N° 4-5-6, pp. 777-802, Juin 1979.
- Homogenization theory, in "A Survey of Theoretical and Numerical Trends in Non Linear Analysis, I", Conferenze del Seminario di Matematica della Universita di Bari, Sept. 27-Oct. 5, 1978, M. Manarini ed, S.A.F.A. III, 1979.

- Homogenization and Ergodic theory, Banach Center Publications, Vol. 5, PWN, Polish Scientific Publishers, Warsaw, 1979, pp. 15-25 (presented to the semester probability Theory, Feb. 11, June 11, 1976), with J.L. LIONS et G. PAPANICOLAOU.
- Quelques remarques sur la représentation des systèmes dynamiques non autonomes en dimension infinie, Cahier "Mathématiques de la Décision", Univ. Paris-Dauphine, N° 7832, with J. P. AUBIN.

1980

- Optimal stopping time problems for reflected diffusion processes, in Analysis and Optimization of Stochastic Systems, Proc. of the Intern. Conf. on Analysis and Optimization of Stochastic Systems, pp. 87-98, Academic Press, 1980.
- Sur le contrôle des grands systèmes, présenté à Arles, Journées de l'ADI, 20-21 Novembre 1980.
- Multi-level control systems for inventory management, with M. CROUHY, in "Applications of Information and Control Systems", eds. D. G. Laïnotis & N. S. Tzannès, D. Reidel Publishing Co., 1980.
- Filtering Theory for Stochastic Processes with two dimensional time parameter, in Math. and Comp. in Simulation XXII, North Holland Publ. Co., pp. 213-221, 1980. with P. L. CHOW & J.L. LIONS.
- Optimal growth of a self-financing firm in an uncertain environment, in Applied Stochastic Control in Econometrics and Management Science, North Holland, pp. 235-269, 1980, with J. LESOURNE.

1981

- Inequations quasi-variationnelles with données non bornées et interprétation probabiliste, Note C.R.A.S. Paris, t. 292, Série I, pp. 751-754, 4 Mai 1981.
- Gestion de stocks with coûts concaves, Série Jaune, RAIRO, N° 3, Vol. 15, pp. 201-220, Septembre 1981, with J. M. PROTH.
- Jeux différentiels stochastiques et systèmes d'équations aux dérivées partielles non linéaires, Note C.R.A.S. Paris, t. 293, Série I, pp. 187-190, 21 Septembre 1981, with J. FREHSE.
- A remark on an Equation of Dynamic Programming, IEEE Transactions on Automatic Control, Vol. AC26, N° 5, pp. 988-993, Octobre 1981, with J.L. LIONS.
- Singular perturbation results for a Class of Stochastic Control problems, IEEE Transactions on Automatic Control, eds. P.V. Kokotovic, H.K. Khalil, Vol. AC26, N° 5, pp. 1071-1080, Octobre 1981.
- Growth of Firms : A stochastic Control Theory approach, Unternehmung, Springer Verlag, eds. K. Brockhoff & W. Krelle, pp. 101-116, 1981, with J. LESOURNE.
- Filtering of distributed parameter systems with pointwise disturbances, dans "Journal of Applied Mathematics and Optimization, Vol. 7, N° 3, pp. 191-224, Août 1981, with J.L. LIONS.
- Optimal Control of Random Evolutions, Stochastics, pp. 1-31, Gordon and Breach Science Publishers Inc., 1981, with P. L. LIONS.
- Optimal Growth of a Firm Facing a Risk of Bankruptcy, INFOR, Vol. 19, N° 4, pp. 292-310, November 1981, with J. LESOURNE.
- Singular Perturbations in Optimal Control, "Méthodes Asymptotiques et Topologiques dans les Problèmes Différentiels Non Linéaires", eds. L. Boccardo, A. M. Michelletti, Pittagora Editrice, pp. 27-76, Bologne, 27 Mai-4 Juin 1981.

- Systems of Partial differential equations and stochastic control, 5e SAFA, Catania Univ., Italie, 17-23 Sept. 1981, Le Matematiche, CNR, Vol. XXXVI, pp. 13-32, 1981.

1982

- A stochastic impulse control problem with quadratic growth Hamiltonian and the corresponding quasi-variational inequality, dans Journal für die Reine und Angewandte Mathematik 331, pp. 124-145, 1982, with J. FREHSE & U. MOSCO.
- Impulsive Control in Management : Prospects and Applications, dans J.O.T.A., Vol.37, N° 4, pp. 420-442, Août 1982, with C. S. TAPIERO.
- On the convergence of the discrete time dynamic programming equation for general semi-groups, in SIAM Journal on Control and Optimization, Vol. 20, N° 5, pp. 722-746, September 1982, with M. ROBIN.
- Optimal stochastic control of diffusion processes with jumps stopped at the exit of a domain, in Stochastics Differential Equations, Vol. 7 of Advances in Probability, Ed. M. Pinsky, Marcel Dekker Inc, New York 1982, with J.L. MENALDI.
- Inventory planning in a deterministic environment concave cost set up in discrete and continuous time, First Viennese Workshop on Optimal Control Theory and Economic Analysis, North Holland, ed. G. Feichtinger, pp. 1-19, 1982, with J. M. PROTH.
- Stochastic Control in discrete time and applications to the theory of production, Congress on Numerical Techniques in Systems Engineering, Lexington, Kentucky, Juin 1980, in Mathematical programming, Algorithms and Theory in Filtering and Control, ed. R. Wets.
- A partial differential equation arising in the separation principle of stochastic control, in Mathematical Techniques of Optimization, Control and Decision, Birkhäuser, pp. 111-128, eds. J. P. Aubin. A. Bensoussan, I. Ekeland.
- Optimal control of Partially Observed Diffusions, Proc. of IFIP Working Conference on Recent Advances in Filtering and Optimization, Springer Verlag, Lecture Notes in Control and Information Sciences, eds. W. H. Fleming and L. G. Gorostiza, Vol. 42, pp. 38-53, Cocoyoc, Mexique, 1-6 Février 1982.
- An approximation Result for a Variational inequality with Neumann boundary conditions, Proc. of the 2nd Franco-Southeast Asian Mathematical Conference, Mai 1982.
- On Perturbations Methods in Stochastic Control, Proceedings of the 2nd bad Honnef Workshop on Stochastic Differential Systems, Springer Verlag, Lecture Notes 1982.
- Lectures on Stochastic Control, CIME, dans "Nonlinear Filtering and Stochastic Control", S. K. Mitter, A. Moro eds., Springer Verlag, Lecture Notes in Mathematics, 1982, pp. 1-62.

1983

- Un résultat de Perturbations Singulières pour Systèmes distribués instables, Note C. R. Ac Sc. Paris, t. 296, Série I, pp. 469-472, 21 Mars 1983.
- Stochastic Maximum Principle for Distributed Parameter Systems, Journal of the Franklin Institute, Pergamon Press, Special Issue on "Distributed Parameter Systems", S. G. Tzafestas ed., Vol. 315, N° 5-6, pp. 387-406, Juin 1983.
- Regular perturbations in optimal control, in Singular Perturbations in Systems and Control, M. Ardemani ed. Springer Verlag, 1983, pp. 169-183.

- Maximum Principle and Dynamic Programming Approaches of the Optimal Control of Partially observed diffusion, *Stochastics*, Vol. 9, N° 3, pp. 169-222.
- On the Production smoothing Problem, *Lecture Notes in Mathematics, Proceedings Santa Margherita Ligure*, 1981, 970, pp. 71-87, eds. J. P. Cecconi & T. Zolezzi, 1983.
- Nash Point Equilibria for Variational Integrals, Presented at "Nonlinear Analysis and Optimization", Bologne, Italy, Universität Bonn, N° 578, May 1983 with J. FRESHE.
- On the Stochastic Maximum Principle for Infinite Dimensional Equations and Application to the Control of Zakai equation, *Colloque ENST-CNET*, 23-24 Février 1983, Springer Verlag, 1983.

1984

- On the Theory of Option Pricing, *J. Acta Applicandae Mathematicae*, M. Hazewinkel ed., D. Reidel Publishing Co., Vol. 2, N° 2, June 1984, pp. 139-158.
- Stochastic Analysis and applications, *Stochastics*, M. Pinsky ed., Sept. 1984, with J.L. MENALDI.
- On some singular perturbation problems arising in Stochastic Control, *J. Stochastic Analysis and Applications*, 2(1), 13-53, (1984).
- La Productique à l'INRIA, Presentation to the Scientific Board of INRIA June 25 1984.
- Commande optimale de systèmes stochastiques, *RAIRO Automatique, Systems Analysis and Control*, Vol. 18, N° 2, pp. 225-250, 1984, with THEOSYS Team.
- Singular Perturbations for Deterministic Control problems, Preprints IFAC 84, 9th World Congress, Budapest, Hongrie, 2-6 Juil. 1984, Vol. 5, pp. 101-106, 1984.
- Singular Perturbations in Stochastic Control, Preprints IFAC 84, 9th World Congress, Budapest, Hongrie, 2-6 Juil. 1984, Vol. 5, pp. 111-116.
- Production planning in deterministic environment : concave and convex costs : planning horizon, *Advances in Production Management Systems*, G. Doumeingts & W. A. Carter eds, Elsevier Science Publishers B.V. (North Holland, IFIP 84, pp. 433-445).
- Stochastic Production Planning with Production Constraints, *SIAM J. on Control and Optimization*, Vol. 22, N° 6, pp 920-935, November 84, with S. P. SETHI, R. VICKSON et N. DERZKO.
- Inventory Planning in a Deterministic environment : continuous time model with concave costs, *J.O.R. North Holland*, 15, (1984) pp. 335-347, with J. M. PROTH.
- Inventory planning in a deterministic Environment : concave costs set up, *Large Scale Systems 6*, North Holland, 1984, pp. 177-184, with J. M. PROTH.
- Ergodic Control problem for one dimensional diffusions with near monotone cost, *Systems and Control Letters 5*, North Holland, pp. 127-133, 1984 with V. BORKAR.
- Nonlinear Elliptic Systems in Stochastic Game Theory, *Journal für die Reine und Angewandte Mathematik 8*, Band 350, 1984, pp. 24-67, with J. FRESHE.
- Stochastic Control for Partially observed linear stochastic system with an exponential of integral performance index, *Proceedings of IEEE Conference on Decision and Control*, Las Vegas, December 1984, with J. Van SCHUPPEN.

1985

- Stochastic Control, - Rheinisch - Westfälische Akademie der Wissenschaften, Vortage 336, January 1985 (in English). - Zeitschrift für Betriebswirtschaft Verlag, N^o 1, 55, January 85 (in German).
- Optimal Control of Partially Observable stochastic systems with an exponential-of-integral Performance Index, SIAM J. Control Optimization, Vol. 23, N^o 4, 1985, pp. 599-613, with J. Van SCHUPPEN.
- Semi-Group Methods in Stochastic Control, Mathematical Control Theory, Banach Center Publications, Vol. 14, PWN, Polish Scientific Publishers, Warsaw, 1985.
- A probabilistic approach to the limit problem for the Bellman equation with highly oscillatory coefficients, Proceedings of the 24th IEEE CDC, 11-13 Dec. 1985, Fort Lauderdale, Florida, Vol. 2, pp. 1333-1336.
- An impulse Control Problem for a Stochastic PDE arising in nonlinear filtering, Proceedings of the 24th IEEE CDC, 11-13 Dec. 1985, Fort Lauderdale, Florida, Vol. 2, pp. 1184-1187, with J. S. BARAS.
- Current results and Issues in Stochastic Control, Proceedings of the 3rd Bad Honnef Conference, 2-4 Juin 1985.
- Value Concept for Risky Venture, Optimal Control Theory and Economic Analysis 2, G. Feichtinger ed Elsevier Science Publishers B. V. (North Holland), 1985, pp. 121-133.
- Economical ordering quantities for the two products problems with joint production costs, APII Systèmes de production, pp. 509-521, 1985, with J. M. PROTH.
- A method for constructing optimal controls in problems with partial observation of the state, proceedings of 3rd Conference of Bad Honnef, RFA, Juin 85. with W. RUNGGALDIER.

1986

- Nonlinear Filtering with homogenization, Stochastics, Vol. 17, pp. 67-90, 1986. with G. L. BLANKENSHIP.
- Singular Perturbations in Optimal control problems, APII - Commande des Systèmes complexes technologiques, 20, 1986, pp. 359-381. with S. G. PENG.
- Homogenization of Elliptic Equations with Principal Part Not in Divergence Form and Hamiltonian with Quadratic Growth, Communications on Pure and Applied Mathematics, Vol. 34, pp. 769-805 (1986), John Wiley & Sons, New York. with L. BOCCARDO, F. MURAT.
- On Bellman Equations in Duality, Dedicated to the Memory of R. Bellman, JMAA, Academic Press, Vol. 119, Nov. 1986, pp. 234-248.
- On the Stochastic Ramsey Problem, Proceedings of 25th CDC, Athens, Greece, Dec., 1986-Vol. 1 pp. 259-261, with M. AKIAN.
- On some singular Perturbation Methods in nonlinear filtering, Proceedings of 25th CDC, Athens, Greece, Dec. 1986, Vol. 2, pp. 1395-1396.
- Singular Perturbations for Deterministic Control Problems, Springer Verlag, Lecture Notes in Control and Information Sciences, Eds. A. Bensoussan, P. Kokotovic, G. Blankenship, 1986, pp. 9-171.
- Singular Perturbation Problems arising in Stochastic Control, Springer Verlag, Lectures Notes in Control and information Sciences, Eds. A. Bensoussan, P. Kokotovic, G. Blankenship, 1986, pp. 171-263, with G. BLANKENSHIP.

1987

- Equations Elliptiques non linéaires à coefficients aléatoires fortement oscillants, note aux C. R. Académie des Sciences de Paris, t. 304, série I N° 14, 1987, with G. BLANKENSHIP.
- An approximation method for stochastic control problems with partial observation of the state, with W. RUNGGALDIER, Acta Mathematicae Applicandae 10, pp. 145-170, ACAP 267, D. Reidel Publishing Co, 1987.
- On some parabolic equations arising from ergodic control, Proc. Conf. on Nonlinear Parabolic Equations : Qualitative Properties of Solutions, Pitman Research Notes in Mathematics, Longman, 149, A. Tesei eds, pp. 29-40, 1987, with L. BOCCARDO.
- On a General Class of Stochastic Partial Differential Equations, dans "Journal of Hydrology & Hydraulics", ed. T. E. Unny, Vol. 1, N° 4, 1987, pp. 297-303.
- Discretization of the Bellman Equation and the corresponding Stochastic control problem, Proceedings of 26th IEEE-CDC, Los Angeles, 9-11 Dec. 1987, pp. 2251-2254.
- On observers Problems for Systems governed by partial differential equations, in honor to Professor Balakrishnan for his 60th Anniversary, in Stochastic Equations, Springer-Verlag, New-York, pp. 131-154, 1987, with J. BARAS.
- Observateurs et Stabilité, Proceedings on Stability Symposium , Toulouse November 3-5 Novembre 1987, edited by l'Académie Nationale de l'Air et de l'Espace, pp. 73-85.
- Equations paraboliques intervenant en contrôle optimal ergodique, Math. Aplic. Comp, Brésil, Vol. 6, N° 3 (1987), pp. 211-255.
- Homogenization of nonlinear elliptic systems with zero order term coupling, Ricerche di Matematica, Suppl. Vol. XXXVI (1987), pp. 203-232.
- On Bellman equations of ergodic type with quadratic growth Hamiltonian, Contributions to Modern Calculus of Variations, (L. Cesari ed.), Pitman Res. in Math., 148, Longman, (1987), pp. 13-26. with J. FREHSE.
- Some remarks on Ergodic Control Problems, 2e Colloque Franco-Espagnol sur les EDP non Linéaires "Contributions to nonlinear partial differential equations", Vol. II, (J.L. DIAZ, P. L. LIONS Eds), Pitman Res. Notes in Mathematics Series, 155, Longman editions, (1987), pp. 30-38.
- Articles on "Control", in "Encyclopedia of Control and Systems", ed. M. P. Singh, Pergamon Press, 8 volumes, 1987
 - Backward Dynamic Programming pp. 407-409.
 - Certainty Equivalence Principle, pp. 564-565.
 - Differential Equations : An Introduction, pp. 1003-1004.
 - Dynamic Optimization, pp. 1276-1278.
 - Forward Dynamic Programming, pp. 1713-1714.
 - Girsanov transformation, pp. 2007-2008.
 - Impulse control, pp. 2339-2343.
 - Inventory Control, p. 2583.
 - Nonlinear Estimation Theory, pp. 3311-3316.
 - Optimal Control : Perturbation Methods, pp. 3497-3502.
 - Optimal Stopping, pp. 3531-3535.

- Ordinary Differential Equation, pp. 3560-3563.
- Planning Horizon Problems : Fundamentals, pp. 3703-3707.
- Production Smoothing, pp. 3890-3892.
- Separation Principle, pp. 4245-4248.
- Optimal Control : s, S Policy and K convexity, pp. 3509-3510.
- Static Optimization : Introduction, pp. 4554-4556.
- Stochastic Control : Introduction, pp. 4611-4613.
- Stochastic Differential Games, pp. 4613-4617.
- Stochastic Maximum Principle, pp. 4638-4644.

1988

- On some approximation techniques in nonlinear filtering, Proceedings of the Workshop on Stochastic Differential Systems Stochastic Control Theory and Applications, Vol. 10, IMA Volumes in Mathematics and its Applications, 1988, pp. 17-31.
- Controlled diffusion in a random medium, Stochastics, Vol. 24, (1988), pp. 87-120, with G. BLANKENSHIP.
- On a nonlinear partial differential equation having natural growth terms and unbounded solution, Ann. Inst. Henri Poincaré, Analyse Non Linéaire, Vol. 5, N° 4 (1988), pp. 347-364, with L. BOCCARDO et F. MURAT.
- Dynamic Observers as Asymptotic Limits of Recursive Filters : Special Cases, SIAM J. Appl. Math., Vol. 48, N° 5, October 1988. with J-S. BARAS, M-R. JAMES.

1989

- Homogenization for nonlinear elliptic equations with random highly oscillatory coefficients, volume en l'honneur du 60e anniversaire du Professeur de Giorgi "Partial Differential Equations and the Calculus of Variations", Vol. 1, Birkhauser Boston Inc., F. Colombini, A. Marino, L. Modica, S. Spagnolo eds., pp. 93-133, 1989.
- Optimal sensor scheduling in nonlinear filtering of diffusion processes, SIAM J. on Control and Optimization, Vol. 27, n°4, pp. 786-813, Juillet 1989, with J. S. BARAS.
- Some results on Exact Controllability, 5e IFAC Conference on Control of distributed Parameter Systems, Perpignan, A; El Jai, M. Amouroux eds, pp. 23-29, Juin 1989.
- Nonlinear filtering for dynamic systems with singular perturbations, Stochastic Differential Systems, Proc. 4th Bad Honnef Conf. June 20-24, 1988, Lecture Notes in Control and Information Science, Springer Verlag, 126, eds. N. Christopeit, K. Helmès, M. Kollmann, pp. 63-71, 1989.
- Approximation of Zakai equation by the splitting up method, Lecture Notes in Control and Information Sciences, ed. J. Zabczyk "Stochastic Systems and Optimization" 136, Proc. 6th IFIP WG7.1, Working Conference, Warsaw, Poland, Sept. 12-16, 1988, pp. 257-265, 1989 (with R. GLOWINSKI)
- An Ergodic Control Problem on whole Euclidean Space, Lecture Notes in Control and Information Sciences, ed. J. Zabczyk "Stochastic Systems and Optimization" 136, Proc. 6th IFIP WG7.1, Working Conference, Warsaw, Poland, Sept. 12-16, 1988, pp. 266-273, 1989 (with H. NAGAI)
- On Approximation Techniques for Stochastic Control with Partial Information, Proceedings of 28th IEEE-CDC, Dec. 13-15, 1989, Tampa, Florida (USA) Vol.1, pp. 716-718.

- Approximation of some Stochastic Differential Equations by the Splitting up method, Preprints series in Mathematics of "A. Myller", Mathematical Seminary, n°3, 1989, Iasi, Roumanie (with R. GLOWINSKI et A. RASCANU).
- On the integrated formulation of Zakai and Kushner equations, "Proceedings of the 2nd meeting on stochastic Partial differential equations and applications", Trento, Italie, 1-6 Février 1988, Springer Verlag, Lectures notes in Mathematics, A. Dold, B. Eckmann, pp. 13-24, Vol. 1390, eds. G. Da Prato, L. Tubaro, 1989.
- Stochastic Maximum Principle for Systems with Partial Information and Application to the Separation Principle, "Stochastics Monograph Series, Proceedings of the Imperial College Workshop on Applied Stochastic Analysis, April 5-6, 1989., eds. M.H.A. Davis and R.J. Elliot., pp. 157-171, 1989

1990

- C^α regularity results for quasilinear Parabolic systems, Universitat Bonn, n°83, Comment. Math. Univ. Carolinae 31, 3, 1990, pp. 453-474
- Nonlinear semi-group arising in the control of diffusions with partial observations, Stochastics and Stochastics Reports, Vol. 30, pp. 1-45, Gordon and Breach, UK, 1990, with M. NISIO.
- Lectures on Nonlinear Filtering Theory, in Recent Advances in Stochastic Calculus, eds. J.S. Baras, V. Mirelli, Springer Verlag, pp. 27-64, 1990.
- On the General Theory of Exact Controllability for Skew Symmetric Operators, Acta Mathematicae Applicandae, 20 pp. 197-229, Kluwer Academic Publ., 1990.
- Stochastic Nonlinear Partial Differential Equations, 29th IEEE- CDC, 5-7 Dec. 1990, Hawaii.
- Limit Behaviour of the Control of Exact Controllability at Infinite time, 29th IEEE CDC, Hawaii, 5-7 dec. 1990.
- Approximation of Zakai equation by the splitting up method, SIAM J. on Control & Optimization, vol.28, n°6, pp. 1420-1432, Nov. 90, (with R. GLOWINSKI et A. RASCANU).
- On Bellman equations or ergodic control in \mathbb{R}^n , Rutgers Workshop on Applied Stochastic Analysis, eds. I. Karatzas, D. Ocone (with J. FREHSE)
- Sur les équations de Bellman du contrôle ergodique dans \mathbb{R}^n , C.R. Acad. Sc. Paris, t. 311, Série I, pp. 775-779, 1990 (with J. FREHSE).

1991

- An ergodic Control Problem arising from the principal eigenfunction of an elliptic operator, dans Journal of Mathematical Society of Japan, Vol. 43, n°1, 1991, with H. NAGAI.
- Remarks on new Mathematical Problems arising in the context of Information Technology, 4e Proc. ECMI Conference, Strobl, Autriche, 31/5 - 3/6/1989, Teubner-Kluwer, pp. 17-33, H.J. Wacker, W. Zulehner eds., 1991.
- Some remarks on the Exact Controllability of Maxwell's Equations, International Conference on Differential Equations and Control Theory, IASI, Roumanie, 27 aug. 1. Sept. 1990, in Differential equations and control theory, pp.17-29, V. Barbu ed., Pitman research notes in mathematics series, ISSN, 250, 1991.

- Homogenization of a class of stochastic Partial Differential Equations , Proc. Composite Media and Homogenization Theory, Miramare, Trieste Workshop, 17-19 fev. 1990, Progress in Nonlinear differential Equ. and their Applications, ed. H. Brezis, G. Dal Maso, Dell' Antonio, pp. 47-67, vol. 5, 1991.
- A model of stochastic differential equations in Hilbert spaces applicables to Navier Stockes equation in Dimension 2, Conférence en hommage au Professeur M. Zakai, Technion, Israel, Stochastic Anal. Academic Pres, pp. 51-73, eds. MM. Mayer Wolf, E. Merzbach, A. Schwartz, 1991.
- A planning horizon algorithm for deterministic inventory management with piecewise linear concave costs, Naval Res. Logistics, Vol. 38, pp. 729-742 (1991) (with J.M. PROTH, M. QUEYRANNE).
- General exact controllability results for dynamic systems with skew symmetric operators and behaviour at infinite time, Proc. 1st European Control Conference, ECC91, Vol. 1, Hermès, Grenoble, Jul 1991.

1992

- Approximation of some stochastic differential equations by the splitting up method, J. Applied Math. & Optimization, 25, pp. 81-106, 1992 (with R. GLOWINSKI, A. RASCANU)
- H-Convergence for quasilinear elliptic equations with quadratic growth, J. Applied Math. and Optimization, 26, pp. 253-272 (1992) (with L. BOCCARDO, F. MURAT).
- Some existence results for stochastic Partial Differential Equations, Stochastic Partial Differential Equations and Applications III, Pitman Research Notes in Mathematics, Series 268, eds. G. Da Prato, L. Tubaro, pp. 37-53, 1992
- On a quasi linear elliptic PDE with non coercive principal part, Asymptotic Analysis (North Holland), vol. 5, N°6, pp. 473-480, (1992) (with L. BOCCARDO).
- On Bellman equations or ergodic control in \mathbb{R}^n , Rutgers Workshop on Applied Stochastic Analysis (avril-mai 1991), Lecture Notes in Control and Information Sciences 177, Springer-Verlag, eds. I. Karatzas, D. Ocone, pp 21-29, (1992) (with J. FREHSE)
- Splitting up method in the context of stochastic Partial differential equations, Proc. of the International Conf. on SPDE's , Charlotte, NC (USA), 1991, ed. B. Rozovskii, Lecture Notes in Control and Information Sciences 176, Springer Verlag, pp. 22-51, (1992).
- Exact controllability for linear dynamic systems with skew symmetric operators, Proc. Conf on "Boundary control and Boundary variation" Montpellier, Oct. 91, ed. J.P. Zolezzio, Lecture Notes in Control and Information Sciences 178, Springer Verlag, pp. 27-36, (1992).
- Homogenization of a nonlinear partial differential equation with unbounded solution, Proc. of the 1st European Conf. on Elliptic and Parabolic Problems", Pont à Mousson, (Juin 91) in Progress in partial differential equations : calculus of variations, applications, eds. C. Bandle, J. Bemelmaux, M. Chipot, M. Gruter, J. Saint Jean Paulin, Notes in Mathematics, series 267, Pitman Research, pp. 1-12 (1992) (with L. BOCCARDO et F. MURAT).
- An introduction to the Hilbert Uniqueness Method, Proc. 10th International conference, in analysis and Optimization of systems : state and frequency domain approaches for infinite dimensional systems, Lecture Notes in Information Sciences, 185, ed. R.F. Curtain, pp. 184-198 (1992).
- Remarks on the theory of robust control, Intern. Series of Numerical Mathematics, vol.107, Birkhauser Verlag Basel pp. 149-166 (1992) (with P. BERNHARD).
- Stochastic control with partial information, Proc. 31st IEEE Conference on Decision and Control - dec.1992, pp. 2062-2067.

- Diffusion effective dans un flux périodique, C.R. Acad. Sc. Paris, Analyse Mathématique, t. 315, Srie I, pp. 765-768, (1992) (with S. KOZLOV)

1993

- Inéquations variationnelles dans les espaces de Hilbert Book in honor to Jean C ea 60th anniversary, Cepadues ed. Optimisation et contr ole, (1993) pp. 47-63.
- Ergodic Bellman systems for stochastic games, Markus Feestricht Volume "Differential equations, Dynamical systems and control sciences, Lecture Notes in Pure and Appl. Math., vol. 152, eds. K.D. Elworthy, W; Norrie Everitt, E. Bruce Lee, M. Dekker pp. 411-421, 1993 (with J. FREHSE).
- Remarks on the Separation principle, Proc.of the 32nd Conference on Decision and Control, San Antonio, Texas (USA), Dec. 1993, pp. 3520-3522
- Sciences de gestion, sciences de l'ing nieur et sciences de l'information, Revue Fran aise de gestion, n 96, Dec. 1993, pp. 117-123.

1994

- Stochastic equity volatility related to the leverage effect, Applied Mathematical Finance 1, 63-85 (1994) (with M. CROUHY, D. GALAI).
- Stochastic equity volatility and the capital structure of the firm, The Royal Society, Phil.Trans.R. Soc.Lond. A 347 (1994), pp.531-541 (with M. CROUHY, D. GALAI).
- Parabolic variational inequalities with random inputs , les grands syst mes des sciences et de la technologie, ouvrage en hommage   R. Dautray, coord. par J. Horowitz-J.L. Lions, Masson, RMA 28, Paris 1994 (with A. RASCANU) pp77-94.
- Results on Stochastic Navier-Stokes Equations, Control of partial differential equations, eds. G. Da Prato, L. Tubaro (Trento-1993), Lect.Notes in Pure and Appl. Math., vol.165, M. Dekker 1994 pp. 11-22.
- New trends in Applied mathematics in "From Universal Morphisms to Megabytes: A Baayen Space Odyssey", CWI, 1994 and in *Anal. Acad. Nac. Cs Ex.fix Nat*, Buenos Aires, Tomo 47,(1995).
- Evolution de l'informatique et cons quences pour la recherche et le transfert, dans "Hubert Curien, pour une politique internationale de la science, Presses de l'Ecole normale sup rieure, Paris, 1994, pp. 91-110.
- Finite dimensional exponential LQG control, 1994 American Automatic control conference, Baltimore, (accept  Jan .94), 1994 (with L. AGGOUN, R.J. ELLIOT, J.B. MOORE).

1995

- Ergodic Bellman Systems for stochastic games in arbitrary dimension, Proc. Royal Society, Londres, Mathematical and physical sciences, A (1995)449, pp.65-77 (with J.FREHSE).
- Stochastic Navier Stokes equations,Acta Applicandae Mathematicae 38, n 3 Kluwer Acad. Publ. (NL), pp. 267-304, 1995
- Attainable claims in a Markov market, J. Mathematical Finance 5/2 (April 1995), 121-131 (with R.J.ELLIOT)
- Stochastic volatility related to the leverage effect II : Valuation of European equity options and warrants, Applied Mathematical Finance, Vol. 2, n 1, Chapman & Hall, March 1995, pp. 43-60 (with M. CROUHY, D. GALAI)

- Finite dimensional quasilinear Risk sensitive control, Systems and control letters 25 (1995), (with L. AGGOUN, R.J. ELLIOT, J.B. MOORE).
- Stochastic inertial manifold, Stochastics and Stochastics reports, vol. 53, pp 13-39, (1995) OPA, (with F. FLANDOLI)
- Black Scholes approximation of warrant prices, colloque Finance, Janv. 1992, ed. M. Jeanblanc-Piqué (with M. CROUHY, D. GALAI), Ad. Futures and Options Research, Vol. 8, pp.1-14, JAI Press (1995).

1996

- Asymptotic behaviour of the time dependent Norton-Hoff law in Elasticity theory and H^1 regularity (with J. FREHSE), comment.Math, Univ. Carolinae 37,2 (1996), pp. 285-304).
- On the theory of Option Pricing (2nd Parution) in Vasicek and Beyond : Approaches to building and Applying interest rate models, L. Hughston ed., Euro Brookers, Risk Publications, pp. 43-59 (1996)

1997

- Hybrid Control and Dynamic Programming (with J. L. Ménaldi), in Dynamics of Continuous discrete and impulsive systems, Vol. 3, n4, pp. 395-442 (1997).
- Penalization methods applied to nonlinear elliptic unilateral problems (with L. BOCCARDO) dédié au professeur R. Glowinski, in Computational Science for the 21st Century, eds. M.O. Bristeau et al.Wiley, pp; 670-698 (1997).
- Stochastic Variational inequalities in Infinite Dimensional Spaces, (with A. RASCANU) in Numerical Functional Analysis and Optimization, Vol. 18, n1 et 2, pp. 19-55 (1997)
- Min-Max Characterization of a small noise limit on risk sensitive control, SIAM J. Control and Optimization, Vol. 35, N)4, pp. 1093-1115 (1997). (with H. NAGAI).

1998

- Some results on Risk-sensitive control with full observation (with J. FREHSE, H. NAGAI), J. Appl. Math. Optimization, Vol. 37, n1, PP; 1-43 (1998).
- Dual regularity Methods in the Theory of Nonlinear Elliptic Systems (with J. FREHSE) livre dédié au Professeur J.L. Lions, dans Equations aux dérivées partielles et Applications, Gauthier-Villars, pp. 139-149 (1998)

1999

- Option Pricing in a Market with frictions (with H. JULIEN) in Stochastic Analysis, Control, Optimization an Applications, Volume in honor of Professor W. Fleming, Systems and Control Foundations and Applications, W. Mc Eneany and al eds, Birkhauser, pp. 521-540,(1999).

2000

- Quelques remarques sur le prix des options with prises en compte de contraintes, dans Décision Prospective Auto-organisation, Mélanges en l'honneur de J. Lesourne, eds J. Thépot, M. Godet, F. Roubelat, A.E. Saab, Dunod, Paris, 2000.

- Local Solutions for Stochastic Navier Stokes equations (with J. FREHSE), *Dedicated to Roger Temam for his 60th birthday*, in Mathematical Modelling and Numerical Analysis (M2AN), Vol. 34, n2, 2000, pp. 241-273.
- Stochastic hybrid Control, *dedicated to Professor Bellman* (with J.L. Ménaldi) in Special Bellman issue of the Journal of Mathematical Analysis and Applications, eds. W.F. Ames, G. Leitmann, 249, 261-288 (2000).
- On the pricing of contingent claims with frictions (with H. JULIEN) Vol. 10, Issue 2, (Special Issue : informs applied probability Conference, Jul.99, Univ. Ulm), J. Mathematical Finance .pp. 89-108, (2000).
- Conditions for no breakdown and Bellman equations of risk-sensitive control (with H. Nagai) J. Applied Mathematics and Optimization, 42, pp. 91-101 (2000).
- Stochastic Games for N players, (with J. FREHSE) dedicated to Professor D. Luenberger, in JOTA, 105, 03, 2000.
- Stochastic games with risk sensitive pay offs for N-Players (with Jens Frehse), Le Matematiche, Universita di Catania, Vol. LV, suppl.2, 2000

2001

- On Bellman systems without zero order term in the context of risk sensitive differential games (with J. FREHSE) *dedicated to Professor Nečas*, Proc. of Partial Differential equations and Applications - Olomouc 1999, Czech Republik, in Mathematica Bohemica, n2, 126(2001), pp. 275-280.

2002

- Regularity theory for systems of partial differential equations with Neumann boundary conditions (with J. FREHSE) *dedicated to Professor Jacques Louis Lions*, Chinese Annals of Mathematics, 23(B):2(2002), pp. 165-180.
- Ergodic Control Bellman Equation with Neumann boundary conditions (with J. FREHSE) *dedicated to Professor Tyrone Duncan*, LNCIS 280 Springer (B.Pasik-Duncan ed.), (2002), pp. 59-71.
- Some remarks on linear filtering theory for infinite dimensional systems *dedicated to Professor Anders Lindquist*, LNCIS 286 Springer (A. Rantzers, C.I. Byrnes eds.), (2002), pp. 27-39.

2004

- Homogenization of systems of Partial Differential Equations, in *Variational Analysis and Applications*, F. Giannessi and A. Maugeri, Eds, Kluwer Acad. Publ. Dordrecht
- Remarks on the Pricing of Contingent Claims under Constraints, *IEEE Transactions on Automatic Control*, Vol 49, n3, March 2004
- Penalty Approximation and Analytical Characterization of the problem of super-replication under portfolio constraints, *Asymptotic Analysis*

2005

- Difference Equations on Weighted Graphs, *Journal of Convex Analysis*, 12 (Jan), n1