

SCIENTIFIC PUBLICATIONS of
Wolfgang Johann RUNGGALDIER

A) *Scientific papers*

- [1] M.H.Hamza, J.Kohlas, W.Runggaldier, "Time-Optimal Flight Trajectories in the Pursuit Problem" in PROC. IFAC SYMPOSIUM ON AUTOMATIC CONTROL IN SPACE, Vienna 1967, pp.688-698.
- [2] W.Runggaldier "Ganzzahlige, Null-Eins und Gemischt-Ganzzahlige Programmierung im Zusammenhang mit der Branch-and-Bound Technik" in BRANCH-AND-BOUND : EINE EINFUEHRUNG (F.Weinberg,ed.) LN in Economics and Math.Systems Vol.4, Springer 1968 and 1973.
- [3] B.Finkbeiner, W.Runggaldier, "A Value-Iteration Algorithm for Markov Renewal Programming' in COMPUTING METHODS IN OPTIMIZATION PROBLEMS-2 (L.A.Zadeh, L.W.Neustadt, A.V.Balakrishnan, eds.), Academic Press 1969, pp.95-104.
- [4] W.Runggaldier, G.Trainito, "Distributed Parameter Control in Connection with some Markov Process Applications" in PROC.IFAC SYMPOSIUM ON THE CONTROL OF DISTRIBUTED PARAMETER SYSTEMS, Banff (Canada) 1971, Vol.II. pp.43-47.
- [5] W.Runggaldier, G.Romanin Jacur, "An Approach to Identification and Optimization in Quality Control" in 5TH CONF. ON OPTIMIZATION TECHNIQUES,PART I (R.Conti, A.Ruberti,eds.), LN in Computer Sci. Vol.3, Springer 1973, pp.83-91.
- [6] W.Runggaldier, "Bayes Sequential Inference for a Class of Stochastic Control Problems" in PREPRINTS OF THE IFAC STOCHASTIC CONTROL SYMPOSIUM, Budapest 1974, pp.143-151.
- [7] W.Runggaldier, "Bayessche Inspektionsplanung bei fernliegendem Horizont", in OPERATIONS RESEARCH VERFAHREN XXI (1975), pp.181-193.

- [8] G.Romanin Jacur, W.Runggaldier, "A Bayes Sequential Approach to an Adaptive Quality Control Problem", Report CNR-LADSEB 75 / 03 (1975).
- [9] G.Romanin Jacur, W.Runggaldier, "Controllo di qualita' adattativo ed a costo minimo" in MEMORIE DEL IX CONVEGNO NAZIONALE AICQ, Vol.I (1976), pp.85-93.
- [10] W.Runggaldier, "Note sui problemi di decisione su catene di Markov a stati finiti ed applicazioni alle decisioni statistiche" Report CNR-LADSEB 78 / 07 (1978).
- [11] G.M.Kaufman, W.Runggaldier, Z.Livne, "Predicting the Time-Rate of Supply from a Petroleum Play" MIT Energy Laboratory Working Paper No. MIT-EL 79-001WP (Jan.1979), also in : THE ECONOMICS OF EXPLORATION FOR ENERGY RESOURCES (J.B.Ramsey,ed.), JAI-Press 1981, pp.69-102.
- [12] G.Romanin Jacur, W.Runggaldier, "Ottimizzazione stocastica nel Controllo di Qualita' per Attributi" in ATTI DELLE GIORNATE DI LAVORO AIRO, Vol.I (1979). pp.S63-S76.
- [13] G.B.Di Masi, W.J.Runggaldier, "A Continuous-time Approximation to Optimal Nonlinear Filtering" in NUMERICAL TECHNIQUES FOR STOCHASTIC SYSTEMS (F.Archetti,M.Cugiani,eds.) North-Holland 1980, pp.153-160.
- [14] G.B.Di Masi, W.J.Runggaldier, "Continuous-Time Approximations for the Nonlinear Filtering Problem", Applied Math. and Optimiz. 7 (1981), pp.233-245.
- [15] G.B.Di Masi, W.J.Runggaldier, "An Approximation to Optimal Nonlinear Filtering with Discontinuous Observations" in STOCHASTIC SYSTEMS: THE MATHEMATICS OF FILTERING AND IDENTIFICATION AND APPLICATIONS (M.Hazewinkel,J.C.Willems,eds.), NATO-ASI Series, Reidel Publ.Co. 1981, pp. 583-590.

- [16] W.J.Runggaldier, "A Generalized Certainty-Equivalence Result in Stochastic Control", Automatica **17** (1981), pp.393-395.
- [17] G.B.Di Masi, W.J.Runggaldier, "On Approximation Methods for Nonlinear Filtering" in NONLINEAR FILTERING AND STOCHASTIC CONTROL (S.K.Mitter,A.Moro,eds.) LN in Mathematics Vol.972, Springer 1982, pp.249-259.
- [18] G.B.Di Masi, W.J.Runggaldier, "On Robust Approximations for Nonlinear Filtering" in STOCHASTIC DIFFERENTIAL SYSTEMS (M.Kohlmann, N.Christopeit,eds) LN in Control and Info.Sci. Vol.43, Springer 1982, 179-186.
- [19] G.B.Di Masi, W.J.Runggaldier, "Modeling and Computational Aspects of Nonlinear Filtering" in PROC. 10TH IMACS CONGRESS ON SYSTEMS SIMULATION AND SCIENTIFIC COMPUTATION, Montreal 1982, pp.307-309.
- [20] W.J.Runggaldier, F.Spizzichino, "Approximations and Bounds for a Generalized Optimal Stopping Problem" Zeitschrift für OR **26** (1982), pp.143-155.
- [21] G.B.Di Masi, W.J.Runggaldier, "On Measure Transformations for Combined Filtering and Parameter Estimation in Discrete Time" Systems and Control Letters **2** (1982), pp. 57-62.
- [22] G.B.Di Masi, W.J.Runggaldier, "Approximations and Bounds for Discrete-Time Nonlinear Filtering" in ANALYSIS AND OPTIMIZATION OF SYSTEMS (A.Bensoussan,J.L.Lions,eds) LN in Control and Info.Sci. Vol.44, Springer 1982, pp. 191-202.
- [23] W.J.Runggaldier, "Sul metodo di trasformazione di misura nel filtraggio nonlineare" in ATTI DEL CONVEGNO NAZIONALE SU SISTEMI DINAMICI STOCASTICI, Roma 1982.
- [24] G.B.Di Masi, W.J.Runggaldier, B.Barozzi, "Generalized Finite-Dimensional Filters in Discrete Time" in NONLINEAR STOCHASTIC

PROBLEMS (R.S.Bucy, J.M.F.Moura,eds.), NATO-ASI Series, Reidel Publ.Co. 1983, pp.267-277.

- [25] G.B.Di Masi, W.J.Runggaldier, "Nonlinear Filtering with Discontinuous Observations and Applications to Life Sciences", Bull.Math.Biology **44** (1983), pp. 571-577.
- [26] G.B.Di Masi, W.J.Runggaldier, "Approximations for Discrete-Time Partially Observable Stochastic Control Problems" in FILTERING AND C O N T R O L O F R A N D O M P R O C E S S E S (H.Korezlioglu,G.Mazziotto,J.Szpirglas,eds.), LN in Control and Info.Sci. Vol.61, Springer 1984
- [27] G.B.Di Masi, M.Pratelli, W.J.Runggaldier, "An Approximation for the Nonlinear Filtering Problem, with Error Bound", Stochastics **14** (1985), pp.247-271.
- [28] G.B.Di Masi, W.J.Runggaldier, "A Tutorial Introduction to Nonlinear Filtering" in ADAPTIVE METHODS IN UNDERWATER ACOUSTICS (H.G.Urban,ed.), NATO-ASI Series, Reidel Publ.Co. 1985, pp.483-496.
- [29] W.J.Runggaldier, "On Logarithmic Transformations in Discrete-Time Stochastic Control", Report MIT-LIDS-P-1511 (Oct. 1985)
- [30] A.Bensoussan, W.J.Runggaldier, "A Method for Constructing ϵ -Optimal Controls in Problems with Partial Observation of the State" in S T O C H A S T I C D I F F E R E N T I A L S Y S T E M S (N.Christopeit,K.Helmes,M.Kohlmann,eds.), LN in Control and Info.Sci. Vol.78, Springer 1986, pp.89-99.
- [31] G.B.Di Masi, W.J.Runggaldier, B.Armellin, "On Recursive Approximations with Error Bound in Nonlinear Filtering" in STOCHASTIC OPTIMIZATION (V.I.Arkin,A.Shiriaev,R.Wets,eds.), LN in Control and INfo.Sci. Vol.81 (IIASA), Springer 1986, pp. 127-135.
- [32] G.B.Di Masi, W.J.Runggaldier, F.Chiariello, "On Approximations to Discrete-Time Stochastic Control Problems" in STOCHASTIC

OPTIMIZATION (V.I.Arkin,A.Shiriaev,R.Wets,eds.), LN in Control and Info.Sci. Vol.81 (IIASA), Springer 1986, pp. 116-147.

[33] H.J.Kushner, W.J.Runggaldier, "Nearly Optimal State-Feedback Controls for Stochastic Systems with Wide-Band Noise Disturbances" in ANALYSIS AND OPTIMIZATION OF SYSTEMS (A.Bensoussan,J.L.Lions,eds.), LN in Control and Info.Sci. Vol.83, Springer 1986

[34] G.Andreatta, W.J.Runggaldier, "An Approximation Scheme for Stochastic Dynamic Optimization Problems", Math.Programming Study **27** (1986), pp.118-132.

[35] G.B.Di Masi, W.J.Runggaldier, "An Approach to Discrete-Time Stochastic Control Problems under Partial Observation", SIAM J. Control & Optimiz. **25** (1987), pp. 38 - 48.

[36] H.J.Kushner, W.Runggaldier, "Filtering and Control for Wide-Bandwidth Noise Driven Systems" , IEEE - Trans. AC **32** (1987) pp. 123-133.

[37] H.J.Kushner, W.J.Runggaldier, "Nearly Optimal State Feedback Controls for Stochastic Systems with Wideband Noise Disturbances" , SIAM J.Control & Optimiz. **25** (1987), pp.298 - 315.

[38] A.Bensoussan, W.J.Runggaldier, "An Approximation Method for Stochastic Control Problems with Partial Observation of the State : A Method for Constructing ϵ -Optimal Controls", Acta Applicandae Math. **10** (1987) , pp.145-170.

[39] W.J.Runggaldier, F.Spizzichino, "Finite-Dimensionality in Discrete-Time Nonlinear Filtering from a Bayesian Statistics Viewpoint" in STOCHASTIC MODELLING AND FILTERING (A.Germani, ed.) , LN in Control and Info.Sci. Vol.91, Springer 1987, pp.161 - 184.

[40] G.B.Di Masi, W.J.Runggaldier, "Asymptotic Analysis for Piecewise Linear Filtering", IIASA Working Paper WP-87-53, Laxenburg 1987,
also in :

A N A L Y S I S A N D O P T I M I Z A T I O N O F S Y S T E M S
(A.Bensoussan,J.L.Lions, eds.) LN in Control and Info.Sci. Vol.111,
Springer 1988, pp.752-759.

- [41]G.B.Di Masi, W.J.Runggaldier, "Small Noise Analysis for Piecewise Linear Stochastic Control Problems" , IIASA Working Paper WP-87-124, Laxenburg 1987.
- [42] W.J.Runggaldier, C.Visentin, "Combined Filtering and Parameter Estimation for Discrete-Time Systems Driven by Approximately White Gaussian Noise Disturbances", IIASA Working Paper WP-87-70, Laxenburg 1987,
also in :
PREPRINTS OF THE 8TH IFAC/IFORS SYMPOSIUM ON IDENTIFICATION AND SYSTEM PARAMETER ESTIMATION, Beijing, Aug.1988, pp.1195-1198
- [43]F.Albertini, W.J.Runggaldier, "Logarithmic Transformations for Discrete-Time, Finite-Horizon Stochastic Control Problems" , Applied Math. & Optimiz. **18** (1988), pp.143-161.
- [44] H.J.Kushner, W.Runggaldier, "Filtering and Control for Wide Bandwidth Noise and Nearly Linear Systems" , in MODELLING AND ADAPTIVE CONTROL (Ch.Byrnes, A.Kurzhanski eds.) , LN in Control and Info.Sci., Vol.105, Springer 1988, pp.201-213.
- [45]G.B.Di Masi, W.J.Runggaldier, "An Adaptive Linear Approach to Nonlinear Filtering" in APPLICATIONS OF MATHEMATICS IN INDUSTRY AND TECHNOLOGY ; Proc. of the Third German-Italian Symposium (V.Boffi,H.Neunzert, eds.), B.G.Teubner, Stuttgart, 1989 , pp. 308 - 316.
- [46] C.A.Clarotti, G.F.Pugno, W.J.Runggaldier, "Statistical Reliability Practice from Sampling Theory to Stochastic Filtering" , Reliability Engineering and System Safety **26** (1989) , pp.1 -20.
- [47] W.J.Runggaldier, C.A.Clarotti, "On Approximations for Stochastic

Filtering with an Application to Reliability" in QUANTITATIVE
METHODEN IN DEN WIRTSCHAFTSWISSENSCHAFTEN
(P.Kall,J.Kohlas,W.Popp,C.A.Zehnder eds.) , Springer
Verlag,Berlin,Heidelberg 1989, pp. 89 - 97.

- [48] C.A.Clarotti, W.J.Runggaldier, "Stochastic Filtering in a Reliability Frame" in APPLICATIONS OF MATHEMATICS IN INDUSTRY AND TECHNOLOGY ; Proc. of the Third German-Italian Symposium (V.Boffi,H.Neunzert, eds.), B.G.Teubner, Stuttgart, 1989 , pp. 317 - 326.
- [49] M.Ferrante, W.J. Runggaldier, "Sul ruolo delle distribuzioni di classe esponenziale nel filtraggio" , Rendiconti del Seminario Matematico e Fisico di Milano, **LIX** (1989), pp. 91 - 101.
- [50] W.J.Runggaldier, C.Visentin, "Combined Filtering and Parameter Estimation : Approximations and Robustness", Automatica **26** (1990) , pp.401 -404.
- [51] G.B.Di Masi, W.J.Runggaldier, "On Approximations for Dynamic Programs", in METHODS OF OPERATIONS RESEARCH 62, XIV.Symposium on Operations Research, Anton Hain 1990, pp.321 - 326.
- [52] H.Korezlioglu, W.J. Runggaldier, "Computation of Filters by Discrete Approximation" in APPROXIMATION, OPTIMIZATION and COMPUTING : THEORY AND APPLICATIONS (A.G.Law,C.L.Wang eds.) , Elsevier Science Publ.B.V. (North Holland), IMACS, 1990 , pp.109 - 111.
- [53] M.Ferrante, W.J.Runggaldier, "On Necessary Conditions for the Existence of Finite-Dimensional Filters in Discrete-Time", Systems & Control Letters **14** (1990) , pp.63 -69.
- [54] W.J.Runggaldier, "On the Construction of ϵ -Optimal Strategies in Partially Observed MDPs", Annals of Operations Research **28** (1991) Special Volume on Markov Decision Processes (O.Hernandez-Lerma, J.B.Lasserre,eds.), J.C. Baltzer Sci.Publ.Co., pp.81-96.

- [55] G.B.Di Masi, W.J.Runggaldier, "Piecewise Linear Stochastic Control with Partial Observations" in APPLIED STOCHASTIC ANALYSIS (M.H.A.Davis and R.J.Elliott eds.), Stochastic Monographs Vol.5, Gordon and Breach Sc.Publ. New York / London 1991, pp. 215-235.
- [56] W.J.Runggaldier, O.Zane, "Approximations for Discrete-Time Adaptive Control : Construction of ϵ -Optimal Controls" Math.Control Signals Systems. **4** (1991), pp. 269-291.
- [57] R.Sh.Liptser, W.J.Runggaldier, "On Diffusion Approximations for Filtering" Stochastic Proc. and Their Appl. **38** (1991), pp. 205-238.
- [58] W.J.Runggaldier, L.Stettner, "Nearly Optimal Controls for Partially Observable Stochastic Problems with the Average Cost Criterion", in MODELING AND CONTROL OF UNCERTAIN SYSTEMS (G.B.Di Masi, A.Gombani, A.Kurzhanski, eds.), Birkhauser-Boston 1991, pp.374-390.
- [59] P.Kind, R.Sh.Liptser, W.J.Runggaldier, "Diffusion Approximations in Past Dependent Models and Applications to Option Pricing" The Annals of Appl.Probability. **1** (1991), pp.379-405.
- [60] W.J.Runggaldier, L.Stettner, "On the Construction of Nearly Optimal Strategies for a General Problem of Control of Partially Observed Diffusions", IMPAN Preprint 450, Warsaw 1989 and Stochastics and Stochastics Reports, **37** (1991), pp.15-47.
- [61] W.J.Runggaldier, L.Stettner, "Partially observable control problems with compulsory shifts of the state". IIASA Working Paper WP-92-34, May 1992.
- [62] F.Mercurio, W.J.Runggaldier, "On continuous and discrete time option pricing: approximations and their interpretation" . Dipartimento di Matematica Pura ed Applicata, Universitá di Padova. Rapporto Interno 4 / 92, settembre 1992.

- [63] W.J.Runggaldier, "Some aspects of Robustness in Stochastic and Adaptive Control", in STOCHASTIC THEORY AND ADAPTIVE CONTROL (T.E.Duncan , B.Pasik-Duncan, eds.), LN in Control and Info. Sci. Vol.184, Springer Verlag, Berlin, 1992, pp.398-410.
- [64] W. J. Runggaldier, M. Bonollo, "Robust Techniques for Combined Filtering and Parameter Estimation" , in CONTROL AND DYNAMIC SYSTEMS (C.T. Leondes ed.) Vol. 53: High Performance Systems Techniques and Applications, Academic Press, 1992, pp. 57-97.
- [65] W.J.Runggaldier, L.Stettner, "Nearly Optimal Controls for Stochastic Ergodic Problems with Partial Observation" , IMPAN Preprint, Warsaw, Feb. 1991, and SIAM J. Control & Optimiz., **31** (1993), pp. 180-218.
- [66] F.Mercurio, W.J.Runggaldier, "Option Pricing for Jump-Diffusions: Approximations and Their Interpretation". Mathematical Finance, **3** (1993), pp.191-200.
- [67] W.J. Runggaldier, C. De Francesco, "On logarithmic and other transformations in stochastic control". Dipartimento di Matematica Pura ed Applicata, Universitá di Padova. Rapporto Interno 3 / 93, giugno 1993. Also : Proceedings 29th Annual Conference, The Operations Research Society of New Zealand, Auckland Aug. 1993, pp. 227 - 233.
- [68] H. Korezlioglu, W.J. Runggaldier, "An approach to nonlinear filtering with noise processes having Markovian representations". Proceedings of the Second European Control Conference ECC '93, June 28 - July 1,1993, Groningen, The Netherlands. Vol.I, pp.120-122.
- [69] W. J. Runggaldier, " Concepts of Optimality in Stochastic Control", in RELIABILITY AND DECISION MAKING (R.E.Barlow, C.A.Clarotti, F.Spizzichino, eds.), Chapman & Hall, London 1993, pp. 101 - 114.
- [70] W.J.Runggaldier, "On Stochastic Control Concepts for Sequential Burn-in Procedures" in RELIABILITY AND DECISION MAKING (R.E.Barlow,

C.A.Clarotti, F.Spizzichino, eds.), Chapman & Hall, London 1993, pp. 211 - 232.

- [71] H. Korezlioglu, W.J. Runggaldier, "Filtering for nonlinear systems driven by nonwhite noises : an approximation scheme". Stochastics and Stochastics Reports, **44** (1993), pp. 65-102.
- [72] O.Hernández-Lerma, W.J.Runggaldier, "Monotone approximations for convex stochastic control problems". Journal of Mathematical Systems, Estimation, and Control, **4** (1994), pp. 99 - 140.
- [73] G.B. Di Masi, Yu. M. Kabanov, W.J. Runggaldier, "Mean-variance hedging of options on stocks with Markov volatilities", Theory of Probability and Its Applications, **39** (1994), pp. 211-222 (in Russian).
- [74] W.J.Runggaldier, "Hedging of risk in financial operations - European contingent claims", in: STATISTICAL METHODS FOR DECISION PROCESSES (G.Hellwig, P.Kall, P.Abel eds.) Proceedings of a Daimler-Benz - GAMM - IFIP - Digital Equipment - Workshop (Nürtingen, June 24-26, 1992). Daimler-Benz Lecture Notes Series, Stuttgart-Möhringen 1994, pp. 138-146.
- [75] P. Dai Pra, C. Rudari, W.J. Runggaldier, " On dynamic programming for multistage decision problems under uncertainty", in : OPERATIONS RESEARCH PROCEEDINGS 1994 (U.Derigs, A.Bachem, A.Drexel eds.), Springer Verlag, Berlin, Heidelberg 1995, pp. 70-75.
- [76] B.M.Miller, W.J. Runggaldier, "Stochastic control for the optimization of observations", Proceedings of the International Conference on Control and Information 1995 (Wong Wing Shing ed.), The Chinese University Press, Hong Kong 1995, pp. 193-198.
- [77] R.Sh. Liptser, W.J. Runggaldier, "Nonlinear Filters for Linear Models (A Robust Approach)", IEEE Trans. Information Theory, **41**, (1995), pp. 1001-1009.
- [78] G.B. Di Masi, E. Platen, W.J. Runggaldier, "Hedging of Options Under

Discrete Observation on Assets With Stochastic Volatility ”. in : SEMINAR ON STOCHASTIC ANALYSIS, RANDOM FIELDS AND APPLICATIONS (E.Bolthausen, M.Dozzi, F.Russo, eds.). Progress in Probability, Vol.36, Birkhäuser Verlag, 1995, pp. 359-364.

- [79] W.J.Runggaldier, M.Schweizer, “Convergence of option values under incompleteness”, in : SEMINAR ON STOCHASTIC ANALYSIS, RANDOM FIELDS AND APPLICATIONS (E.Bolthausen, M.Dozzi, F.Russo, eds.). Progress in Probability, Vol.36, Birkhäuser Verlag, 1995, pp. 365-384.

Also : Discussion paper No. B-333, Sonderforschungsbereich 303, Universität Bonn

- [80] O.Hernández-Lerma, C.Piovesan, W.J.Runggaldier, “Numerical aspects of monotone approximations in convex stochastic control problems”, Annals of Operations Research **56** (1995), Special Volume on Stochastic Programming (G.B.Andreatta, G.Salinetti, R.J.-B.Wets, eds.), pp. 135-156.

- [81] T. Björk, Yu. Kabanov, W.J. Runggaldier, “Bond markets where prices are driven by a general marked point process”, Working paper no. 67, Department of Finance, Stockholm School of Economics, Nov. 1995.

- [82] W. Runggaldier, “Aspetti matematico-probablistici di nuove problematiche in Finanza”. Bollettino U.M.I., **10-A** (1996), pp.19-36.

- [83] R.Sh. Liptser, W.J. Runggaldier, M.Taksar, “Deterministic approximation for stochastic control problems”, SIAM J. Control & Optimiz., **34** (1996), pp. 161-178.

- [84] T. Björk, Yu. Kabanov, W.J. Runggaldier, “Marked Point Processes in the Theory of Bond Markets”, in : WORKSHOP ON QUANTITATIVE METHODS IN FINANCE Vol.II (E. Platen ed.), Financial Mathematics Research Report No. FMRR 008-96, The Australian National University, pp. 203-216.

- [85] W.J. Runggaldier, “Un approccio alla copertura di titoli derivati in mercati completi a tempo discreto”, Atti del XX Convegno A.M.A.S.E.S., 25-39, Urbino, 5-7 settembre 1996.
- [86] W.J. Runggaldier, C. De Francesco, “A stochastic control approach to option pricing in incomplete markets”, preprint.
- [87] Yu.M.Kabanov, W.J.Runggaldier, “On control of two-scale stochastic systems with linear dynamics in the fast variables”, Math. Control Signals Systems, **9** (1996), pp. 107-122.
- [88] P. Dai Pra, L.Meneghini, W.J. Runggaldier, “Connections between stochastic control and dynamic games”, Math. Control Signals Systems, **9** (1996), pp. 303-326.
- [89] P. Dai Pra, C. Rudari, W.J. Runggaldier, “On Dynamic Programming for Sequential Decision Problems under a General Form of Uncertainty”, ZOR - Mathematical Methods of Operations Research **45** (1997), pp. 81-107.
- [90] T. Björk, Yu. Kabanov, W. Runggaldier, “Bond Market Structure in the Presence of Marked Point Processes”, Mathematical Finance **7** (1997), pp. 211-239.
- [91] T. Björk, G. Di Masi, Yu. Kabanov, W. Runggaldier, “Towards a general theory of bond markets”, Finance and Stochastics **1** (1997), pp.141-174.
- [92] B.M.Miller, W.J. Runggaldier, “Optimization of Observations : a Stochastic Control Approach”, SIAM J. Control & Optimiz., **35** (1997), pp. 1030-1052.
- [93] W. Runggaldier, “Sulla trattazione matematica dell’incerto”, in : Fondamenti della Matematica per la sua didattica e nei loro legami con la societa’ contemporanea, Atti del Congresso Nazionale MATHESIS, Verona 1996, pp. 331-340.

- [94] B.M.Miller, W.J. Runggaldier, “Kalman filtering for linear systems with coefficients driven by a hidden Markov jump process”, Systems and Control Letters, **31** (1997), pp. 93-102.
- [95] S. Frasson, W.J. Runggaldier, “A stochastic control model for hedging in incomplete markets”, in: STATISTICS AND CONTROL OF STOCHASTIC PROCESSES, The Liptser Festschrift (Yu.M.Kabanov, B.L.Rozovski, A.N.Shiryaev, eds.), World Scientific 1997, pp.103-121.
- [96] W.J. Runggaldier, “Concepts and methods for discrete and continuous time control under uncertainty”, Insurance : Mathematics and Economics, **22** (1998), pp. 25-39.
- [97] P. Dai Pra, L.Meneghini, W.J. Runggaldier, “Explicit solutions for multivariate, discrete-time control problems under uncertainty”, Systems and Control Letters, **34** (1998), pp. 169-176.
- [98] E. D’Ambrosio, W.J. Runggaldier, F. Spizzichino, “Construction of discrete time models admitting a finite dimensional filter : an approach based on the inverse Laplace transform”. Report 32/98, Dipartimento di Matematica “Guido Castelnuovo”, Universitá di Roma “La Sapienza”, September 1998.
- [99] P. Fischer, E. Platen, W. J. Runggaldier, “Risk minimizing hedging strategies under partial observation”, in : Seminar on Stochastic Analysis, Random Fields and Applications (R.C.Dalang, M.Dozzi, F.Russo, eds.). Progress in Probability, Vol.45, Birkhäuser Verlag, 1999, pp.175-188.
- [100] E. Nicolato, W.J. Runggaldier, “A Bayesian Dynamic Programming approach to optimal maintenance combined with Burn-in”, Annals of Operations Research **91** (1999), pp. 105-122.
- [101] R. Frey, W.J. Runggaldier, “Risk-minimizing hedging strategies under restricted information : The case of stochastic volatility models observable only at discrete random times”. Mathematical Methods of Operations Research **50** (1999), pp. 339-350.

- [102] S. Florio, W.J. Runggaldier, “On hedging in finite security markets”. Applied Mathematical Finance **6** (1999), pp. 159-176.
- [103] R.Sh. Liptser, W.J. Runggaldier, M.Taksar, “Asymptotic Optimality for Stochastic Control Problems via Diffusion Approximation”, Theory of Probability and Its Applications, **44** (1999), pp. 705-737.
- [104] W.J. Runggaldier, “Sugli sviluppi della matematica applicata in un settore interdisciplinare : la finanza matematica”, Bollettino U.M.I. (8) **3-A** (1999), pp. 297-316.
- [105] W.J. Runggaldier, A. Zaccaria, “A Stochastic Control Approach to Risk Management under Restricted Information”. Mathematical Finance **10** (2000), pp. 277-288.
- [106] W.J. Runggaldier, “Adaptive and robust control procedures for risk minimization under uncertainty”, in Optimal Control and Partial Differential Equations (J.L.Menaldi,E.Rofman,A.Sulem, eds.).Volume in honour of Prof. Alain Bensoussan’s 60th Birthday, IOS Press, 2001, pp.549-557.
- [107] W.J. Runggaldier, F. Spizzichino, “Sufficient conditions for finite-dimensionality of filters in discrete time : a Laplace transform-based approach”, Bernoulli **7** (2001), pp. 211-221.
- [108] R. Frey, W.J. Runggaldier, “A Nonlinear Filtering Approach to Volatility Estimation with a View Towards High Frequency Data”. International Journal of Theoretical and Applied Finance **4** (2) (2001), pp.199 -210.
- [109] A. Gombani, W.J. Runggaldier, “A filtering approach to pricing in multifactor term structure models”, International Journal of Theoretical and Applied Finance **4** (2) (2001), pp.303-320.
- [110] W. Runggaldier, “The choice of the loss function for a decision problem under uncertainty as a compromise between representativity and tractability”, ESReDA International Seminar on Decision Analysis, Rome, June 18-19, 2001, pp. 141-148.

- [111] C.Chiarella, S.Pasquali, W.J.Runggaldier, “On Filtering in Markovian Term Structure Models (an approximation approach)”, Advances in Applied Probability **33**(4) (2001), pp. 794-809.
- [112] W.J.Runggaldier, B.Trivellato, T.Vargiolo, “A Bayesian adaptive control approach to risk management in a binomial model”, in : Seminar on Stochastic Analysis, Random Fields and Applications (R.C.Dalang, M.Dozzi, F.Russo, eds.). Progress in Probability, Vol.52, Birkhäuser Verlag, 2002, pp.243-258.
- [113] C.Chiarella, S.Pasquali, W.J.Runggaldier, “On Filtering in Markovian Term Structure Models”, in : Recent Developments in Mathematical Finance (J. Yong, ed.). World Scientific Publishing Co.Pte.Ltd., 2002, pp. 139-150.
- [114] S. Pasquali, W.J. Runggaldier, Approximations of a controlled diffusion model for renewable resource exploitation. In : Markov Processes and Controlled Markov Chains (Z.Hou, J.A.Filar, A.Chen eds.). Kluwer Academic Publishers, 2002, pp. 287-302.
- [115] G.Favero, W.J. Runggaldier, A robustness result for stochastic control. Systems and Control Letters 46 (2002), pp. 91-97.
- [116] R.Bhar, C.Chiarella, W.J. Runggaldier, Estimation in Models of the Instantaneous Short Term Interest Rate by use of a Dynamic Bayesian Algorithm. In : Advances in Finance and Stochastics - Essays in Honour of Dieter Sondermann (K.Sandmann and P.Schoenbucher, eds.), Springer Verlag 2002, pp. 177-195.
- [117] W.J. Runggaldier, Jump Diffusion Models. In : Handbook of Heavy Tailed Distributions in Finance (S.T. Rachev, ed.), Handbooks in Finance, Book 1 (W.Ziemba Series Ed.), Elesevier/North-Holland 2003, pp.169-209.

- [118] W.J. Runggaldier, On stochastic control in finance. In: Mathematical Systems Theory in Biology, Communication, Computation and Finance (*J.Rosenthal and D.S. Gilliam, eds.*). IMA Volumes in Mathematics and its Applications, Vol. 134, pp.317-344. Springer Verlag, New York, 2003.
- [119] R.Bhar, C.Chiarella, W.J. Runggaldier, Inferring the Forward Looking Equity Risk Premium from Derivative Prices. Studies in Nonlinear Dynamics & Econometrics Vol. 8: No. 1 (2004), Article 3. <http://www.bepress.com/snnde/vol8/iss1/art3>.
- [120] P.Dai Pra, W.J. Runggaldier, M.Tolotti, Pathwise optimality for benchmark tracking. IEEE Transactions on AC, **49** (2004) (Special Issue on Stochastic Control Methods in Financial Engineering), pp. 386-395.
- [121] W.J. Runggaldier, Estimation via stochastic filtering in financial market models. In : Contemporary Mathematics, Vol. 351 (Proceedings of an AMS-IMS-SIAM Joint Summer Research Conference on Mathematics of Finance, G.Yin and Q.Zhang, eds.), pp.309-318. American Mathematical Society, 2004.
- [122] M. Kirch, W.J. Runggaldier, Efficient hedging when asset prices follow a geometric Poisson process with unknown intensities, SIAM J. Control & Optimiz., **43** (2004), pp. 1174-1195.
- [123] A.Gombani, S.R.Jaschke,W.J. Runggaldier, A filtered no arbitrage model for term structures from noisy data. Stochastic Processes and their Applications, 115/3 (2005), pp. 381-400.
- [124] E.Platen, W.J. Runggaldier, A Benchmark Approach to Filtering in Finance. Asia Pacific Financial Markets , 11/1 (2005), pp. 79-105.
- [125] H. Pham, W.Runggaldier, A.Sellami, Approximation by quantization of the filter process and applications to optimal stopping problems under partial observation. Monte Carlo Methods and Applications, 11/1 (2005),

pp. 57-81.

- [126] W.J.Runggaldier, S. Di Emidio, Computing efficient hedging strategies in discontinuous market models. In : Stochastic Finance (*M. do Rosario Grossinho, A.N. Shiryaev, M.L. Esquivel, P.E. Oliveira, eds*), pp. 197-212. Springer Science + Business Media 2006.
- [127] H. Nagai, W.J. Runggaldier, PDE approach to utility maximization with partial information. In : The 7th Workshop on Stochastic Numerics (*Shigeyoshi Ogawa ed.*). RIMS Kokyuroku 1462, pp. 197-212. Kyoto University, Kyoto, Japan 2006.
- [128] R.Bhar, C.Chiarella, H.Hung, W.J.Runggaldier, The volatility of the instantaneous spot interest rate implied by arbitrage pricing - A dynamic Bayesian approach. Automatica, 42/8 (2006), pp. 1381-1393.
- [129] G. Callegaro, G.B. Di Masi, W.J. Runggaldier, Portfolio Optimization in Discontinuous Markets under Incomplete Information. Asia Pacific Financial Markets, 13/4 (2006), pp. 373-394.
- [130] A.Gombani, S.Jaschke, W.Runggaldier, Consistent Price Systems for Subfiltrations. ESAIM : Probability and Statistics, 11 (2007), pp. 35-39.
- [131] R. Frey, C. Prosdocimi, W.J. Runggaldier, Affine credit risk models under incomplete information. In : Stochastic Processes and Applications to Mathematical Finance - Proceedings of the 6th Ritsumeikan International Symposium. (*J. Akahori, S. Ogawa, S. Watanabe, eds.*). World Scientific, 2007, pp. 97-113.
- [132] E. Platen, W.J. Runggaldier, A Benchmark Approach to Portfolio Optimization under Partial Information. Asia Pacific Financial Markets, 14 (2007), pp. 25-43.
- [133] H. Nagai, W.J. Runggaldier, “PDE approach to utility maximization for market models with hidden Markov factors”, in: Seminar on Stochastic Analysis, Random Fields and Applications V (R.C.Dalang, M.Dozzi,

F.Russo, eds.). *Progress in Probability*, Vol.59, Birkhäuser Verlag, 2008, pp.493-506.

[134] P. Dai Pra, W.J. Runggaldier, E. Sartori, M. Tolotti, Large portfolio losses; A dynamic contagion model. *Annals of Applied Probability* 19 (2009) No. 1, pp. 347-394.

[135] M. Corsi, H. Pham, W.J.Runggaldier, Numerical Approximation by Quantization of Control Problems in Finance under Partial Observations. In: *Mathematical modelling and numerical methods in finance* (A. Bensoussan and Q. Zhang eds.), Handbook of Numerical Analysis Vol XV. North Holland, 2008, pp. 325-360.

[136] W. Runggaldier, Filtering. In: *Encyclopedia of Quantitative Finance* (R.Cont, ed.), John Wiley & Sons Ltd. Chichester, UK, 2010, pp. 674--683.

[137] R. Frey, W.J.Runggaldier, Credit Risk and Incomplete Information : a Nonlinear-Filtering Approach. *Finance and Stochastics*, 14 (2010), pp. 495-526.

[138] G.Galetto, W.J.Runggaldier, Pricing without equivalent martingale measures under complete and incomplete observation. In: *Contemporary Quantitative Finance; Essays in Honour of Eckhard Platen* (C.Chiarella and A.Novikov, eds.) Springer Verlag, Berlin-Heidelberg, 2010, pp.99-121.

[139] C.Fontana, W.J.Runggaldier, Credit risk and incomplete information: filtering and EM parameter estimation. *International Journal of Theoretical and Applied Finance*, 13 (2010) No. 1, pp. 683-715.

[140] E.Edoli, W.J.Runggaldier, On Optimal Investment in a Reinsurance Context with a Point Process Market Model. *Insurance: Mathematics and Economics* 47 (2010), pp. 315-326.

- [141] R. Frey, W.J.Runggaldier, Nonlinear Filtering in Models for Interest-Rate and Credit Risk. In: The Oxford Handbook on Nonlinear Filtering (D.Crisan, B.Rozovski, eds.), Oxford University Press, 2011, pp. 923-959.
- [142] G. Callegaro, M. Jeanblanc, W.J.Runggaldier, Portfolio optimization in a defaultable market under incomplete information. Decisions in Economics and Finance, 35 (2012) No.2, pp. 91-111.
- [143] R.Romera, W.Runggaldier, Ruin probabilities in a finite-horizon risk model with investment and reinsurance. Journal of Applied Probability, 49 (2012) No.4, pp. 954-966.
- [144] A. Gombani, W.J. Runggaldier, Arbitrage-free multifactor term structure models: a theory based on stochastic control. Mathematical Finance, 23 (2013) No.4, pp. 659-686.
- [145] K. Fujimoto, H. Nagai, W.J.Runggaldier, Expected power-utility maximization under incomplete information and with Cox-process observations. Applied Mathematics and Optimization, 67 (2013) No.1, pp. 33-72. DOI: 10.1007/S00245-012-9180-2.
- [146] C. Fontana, W.J. Runggaldier, Diffusion-Based Models for Financial Markets Without Martingale Measures. In: Risk Measures and Attitudes (F.Biagini, A.Richter, H. Schlesinger, eds.), EAA Series, Springer Verlag London 2013, pp. 45-81. (Also ArXiv:1209.4449).
- [147] K. Fujimoto, H. Nagai, W.J.Runggaldier, Expected log-utility maximization under incomplete information and with Cox-process observations. Asia-Pacific Financial Markets, 21 (2014) No.1, pp. 35-66. DOI: 10.1007/s10690-013-9176-1.
- [148] R. Cogo, A. Gombani, W.J.Runggaldier, Stochastic control and pricing under Swap measures. In : Seminar on Stochastic Analysis, Random Fields and

Applications VII (R.C.Dalang, M.Dozzi, F.Russo, eds.). Progress in Probability, Vol.67, Birkhaeuser/Springer Basel, 2013, pp.363-379.

- [149] J. Ruf, W. Runggaldier, A Systematic Approach to Constructing Market Models With Arbitrage. In: Arbitrage, Credit and Informational Risks (C. Hillairet, M. Jeanblanc, Y. Jiao, eds.). Peking University Series in Mathematics, Vol.5, World Scientific Publishing Co. Pte. Ltd., 2014, pp.19-28. (Also ArXiv: 1309.1988.)
- [150] J. Mancin, W.J. Runggaldier, On the Existence of Martingale Measures in Jump Diffusion Market Models. In: Arbitrage, Credit and Informational Risks (C. Hillairet, M. Jeanblanc, Y. Jiao, eds.). Peking University Series in Mathematics, Vol.5, World Scientific Publishing Co. Pte. Ltd., 2014, pp.29-51. (Also ArXiv:1511.08349).
- [151] L. Morino, W.J. Runggaldier, On multicurve models for the term structure. In: Nonlinear Economic Dynamics and Financial Modelling (Essays in Honour of Carl Chiarella). (R. Dieci, X.Z. He, C. Hommes, eds.) Springer International, 2014, pp. 275-290. (Also ArXiv: 1401.5431.)
- [152] J.M. Montes, V.Prezioso, W. J. Runggaldier, Monte Carlo variance reduction by conditioning for pricing with underlying a continuous-time finite state Markov process. SIAM J. Finan. Math., 5 (2014) No.1, pp. 557-580.
- [153] G.Bertola, W.J.Runggaldier, K.Yasuda, On classical and restricted impulse stochastic control for the exchange rate. Applied Mathematics and Optimization, 74 (2016) No.2, pp 423-454. DOI:10.1007/S00245-015-9320-6.
- [154] Z. Grbac, L. Meneghelli, W.J. Runggaldier, Derivative pricing for a multicurve extension of the Gaussian, exponentially quadratic short rate model. In: Innovations

in Derivative Markets (K.Glau, Z.Grbac, M.Scherer, R.Zagst, eds.) Springer Proceedings in Mathematics and Statistics Vol.165, 2016, pp. 191-226.
DOI: 10.1007/978-3-319-33446-2_10. (Also ArXiv:1512.03259).

- [155] W.J. Runggaldier, K. Yasuda, Classical and Restricted Impulse Control for the Exchange Rate under a Stochastic Trend Model. Journal of Economic Dynamics and Control, 91 (2018), pp. 369–390. <https://doi.org/10.1016/j.jedc.2018.01.017>.
- [156] N.H. Chau, W. Runggaldier, P. Tankov, Arbitrage and utility maximization in market models with an insider. Mathematics and Financial Economics, Vol 12 (2018), Issue 4, pp. 589-614. <https://doi.org/10.1007/s11579-018-0217-4>.
- [157] M. Antonello, L. Cipani, W.J. Runggaldier, Minimizing capital injections by investment and reinsurance for a piecewise deterministic reserve process model. Scandinavian Actuarial Journal, Vol.2018 (2018), Issue 10, pp 907-932. <https://doi.org/10.1080/03461238.2018.1471001>.
- [158] C. Fontana, W.J. Runggaldier, Arbitrage concepts under trading restrictions in discrete-time financial markets. Journal of Mathematical Economics. Vol. 92 (2021), pp 66-80. (online: <https://authors.elsevier.com/c/1c1R115DiyP2aV>) (also:arXiv:2006.15563v2).
- [159] W.J. Runggaldier, An Italian perspective on the development of financial mathematics from 1992 to 2008. Finance and Stochastics, Vol. 26 (2022), pp 5--31 . <https://doi.org/10.1007/s00780-021-00452-9>.
- [160] C. Fontana, S. Pavarana, W.J. Runggaldier, A stochastic control perspective on term structure models with roll-over risk. Finance and Stochastics, Vol. 27 (2023), pp 903--932 . (Also ArXiv:2304.04453).

[161] S. Leo, W.J. Runggaldier, On the separation of estimation and control in risk-sensitive investment problems under incomplete observation. [European Journal of Operational Research](#). *Online first* <https://doi.org/10.1016/j.ejor.2024.01.044>

B) Books

- [1] G.Andreatta, W.Runggaldier, *Statistica Matematica : Problemi ed esercizi risolti*, Liguori Editore, Napoli 1983.
- [2] W. Runggaldier (ed.), *Stochastic Processes : Applications in Mathematical Economics - Finance*, Applied Mathematics Monographs, Vol. 5, Giardini Editori e Stampatori in Pisa, Pisa 1992.
- [3] W.J. Runggaldier, L. Stettner, *Approximations of Discrete Time Partially Observed Control Problems*, Applied Mathematics Monographs, Vol. 6, Giardini Editori e Stampatori in Pisa, Pisa 1994.
- [4] W.J. Runggaldier (ed.), *Financial Mathematics*, Lecture Notes in Mathematics, Vol. 1656, Springer Verlag, Berlin, Heidelberg, 1997.
- [5] M. Frittelli, W. Runggaldier (eds.), *Stochastic Methods in Finance*, Lecture Notes in Mathematics, Vol. 1856, Springer Verlag, Berlin, Heidelberg, 2004.
- [6] A.Pascucci, W.Runggaldier, *Finanza matematica, Teoria e problemi per modelli multiperiodali*, Springer Verlag Italia, Series UNITEXT, 2009.
- [7] H. Albrecher, W.J. Runggaldier, W.Schachermayer (eds.), *Advanced Financial Modelling*, Radon Series on Computational and Applied Mathematics 8, Walter de Gruyter Verlag, Berlin, New York, 2009.
- [8] A.Pascucci, W.J.Runggaldier, *Financial Mathematics, Theory and Problems for Multi-period Models*, Springer Verlag Italia, Series UNITEXT, 2012.
- [9] Z. Grbac, W.J. Runggaldier, *Interest Rate Modeling: Post-Crisis Challenges and Approaches*. SpringerBriefs in Quantitative Finance. Springer Verlag 2015.

C) PREPRINTS

1. E. D'Ambrosio, W.J. Runggaldier, F. Spizzichino, Construction of discrete time models admitting a finite dimensional filter: an approach based on the inverse Laplace transform. Report 32/98, Dipartimento di Matematica “Guido Castelnuovo”, Universita’ di Roma “La Sapienza”. September 1998.
2. V.Prezioso, W.J.Runggaldier, Interest rate derivatives pricing when the short rate is a continuous time finite state Markov process. Preprint 2010.

C) Varia

- [1] W. Runggaldier, “Filtraggio probabilistico”, Enciclopedia <https://doi.org/10.1080/03461238.2018.1471001> Treccani delle Scienze Fisiche, Vol. II, pp. 577 - 583.
- [2] W. Runggaldier, “ Relazione introduttiva su Statistica matematica”, in : Convegno sull’insegnamento della Probabilitá e della Statistica nei corsi di laurea e di diploma nelle Facoltá di Scienze (a cura di A.Giovagnoli e E.Regazzini), Notiziario UMI, Suppl. al no.6, giugno 1995, pp. 39-43.
- [3] W.J. Runggaldier, “Research at LADSEB - CNR in Padova, Italy”, *SIAG / CST Newsletter*, Vol.3, No.4, October, 1995.
- [4] W.Runggaldier, “Finanza Matematica”, in : Atti delle Giornate di Studio, Progetto Strategico CNR *Decisioni statistiche : teoria ed applicazioni*, Pitagora Editrice, Bologna, 1999, pp. 139-145.
- [5] W.J. Runggaldier, Introduzione a “Finanza e Rischi”, in: Matematici al Lavoro (a cura di E. Del Prete, A.Russo, G. Anzellotti), Sironi Editore, 2008, pp.33-37.
New edition 2018: <https://www.mestierideimatematici.it>