

PUBLICATIONS

1. Dynamical Systems:

- *Applications du théorème des tores invariants*, Ph.D. thesis, Univ. Paris 7, 1982.
- *Une démonstration directe de l'équivalence des théorèmes de tores invariants pour difféomorphismes et champs de vecteurs*, C. R. Acad. Sc. Paris, t. 295 (1982) Serie 1 p. 201-204
- *Exemple de point fixe elliptique non topologiquement stable en dimension 4*, C. R. Acad. Sc. Paris, t. 296 (1983) Serie 1 p. 895-898
- *Nombre de rotation des difféomorphismes du cercle et mesures automorphes*, (with J.C. Yoccoz), Reg. and Chaotic Dynamics, vol. 4, n°4, 1999, 19-38.
- *Systèmes Dynamiques non autonomes : Démonstration d'un théorème de Pustyl'nikov*, J. Math. pures et appl., 68, 1989, p. 297- 318.
- *Stabilité ou instabilité des points fixes elliptiques*, Ann. sci. de l'E.N.S. Paris, 4th series, t. 21, 1988, p. 1-46.
- *Regular dependence of invariant curves and Aubry-Mather sets of twist maps of an annulus*, Erg. Th. and Dyn. Syst., t. 8, 1988, p. 555-584.
- *Analytical Determination Of Unstable Periodic Orbits In Area Preserving Maps*, (with G.L. Da Silva Ritter And A.M. Ozorio De Almeida) Physica 29D (1987), p. 181-190.
- *La Théorie de Pesin*, Seminaire EDP Ghidaglia-Saut, Travaux en cours, Hermann, 1985

2. Financial Mathematics and Economics:

- *Static Hedging of Barrier Options with a Smile: An Inverse Problem* (with C. Bardos and A. Fursikov) COCV vol. 8, June 2002, p. 127-142
- *On Probability Characteristics of Downfalls in a Standard Brownian Motion* (with A. Shiryaev and M. Yor) Th. Prob. and Appl., vol. 44, n°1, 2000, 29-38.
- *Closed Form Formulas for Exotic Options and Their Lifetime Distribution* Int. Jour of Th. and Appl. Finance, vol. 2, n°1, 1998, 17-42.
- *A Rating-based Model for Credit Derivatives* (with M. Jeanblanc) Europ. Invest. Review, Jan 2002, p. 1-13
- *On measuring risk with scarce observations* (with A.S. Cherny, S.A. Molchanov) Finance and Stochastics, 14 (2010), No. 3, p. 375-395.
- *The Stress VaR: A New Risk Concept for Extreme Risk and Fund Allocation* (with C. Coste and I. Zovko) Journal of Alternative Investments Winter 2011, Vol. 13, No. 3: pp. 10-23
- *Financial Crisis Dynamics: Attempt to Define a Market Instability Indicator* (with Y. Choi) Quantitative Finance 2012, 12 (9), pp.1351-1365
- *Mathematical Definition, Mapping and Detection of (Anti)Fragility* (with N.N. Taleb) in Quantitative Finance 2013, 13 (11), pp.1677-1689
- *The Whys of the LOIS: Credit Skew and Funding Rates Volatility* (with S. Crépey, Univ. Evry) Risk June 2013
- *Bank regulation, risk and return: evidence from the credit and sovereign debt crises* (with Hafiz Hoque, Dimitris Andriosopoulos, Kostas Andriosopoulos) Journ. of Banking and Finance, special issue for the 3rd FEBS Conference, 2014. 01/2015; 50:455-474
- *Financial Regulation and Systemic Risk* (with Kostas Andriosopoulos) Journ. Of Banking and Finance, Vol 50, Jan 2015, 381-382.

- *On the Super-Additivity and Estimation Biases of Quantile Contributions* (with N. Taleb) *Physica A: Statistical Mechanics and its Applications* 02/2015; 429
- *An Empirical Approach to Financial Crisis Indicators Based on Random Matrices* (with A. Kornprobst) *Int Journ. of Theo. and Applied Finance*, 2018, vol. 21, issue 03, 1-22

3. Book Chapters

- *Bermudan Option Pricing by Monte-Carlo* in “*Quantitative Methods in Financial Markets*” vol.3, ed. M. Avellaneda, World Scientific, 2001.
- *Model Calibration in the Monte-Carlo Framework* in “*Monte-Carlo*”, ed. B. Dupire, Risk Books, 1998, p. 103-122
- *Yield Curve Smoothing and Residual Variance of Fixed Income Positions* in Musiela's *Festschrift*, Ed. Yu. Kabanov, Springer (2013)
- *Financial Crisis and Contagion: A Dynamical Systems Approach* (with Y. Choi) in *Handbook on Systemic Risk*, ed. R. Sircar, Cambridge Univ. Press (2012)
- *A Non-cyclical Capital Adequacy Rule and the Aversion of Systemic Risk* in “*La régulation financière peut-elle sortir l'Europe de la crise*”, LabEx ReFi/ENA (2014)
- *Capital Adequacy, Procyclicality and Systemic Risk*, in *Future Perspectives in Risk Models and Finance*, ed. C. Tapiero, D. Guégan, A. Bensoussan, Springer, 2014

4. Book edition

- *Financial Regulation in the EU: from resilience to growth*, Palgrave MacMillan, to appear in 2017

5. Popularization

- *Mathématiques et Finance*, Bibliothèque Tangente, hors-série n° 32, 2007
- *Are more conservative capital adequacy rules always safer?* PRMIA 2013
- *Les mathématiciens dans crise financière* Tangente Hors-série *Esthétique et Ethique*, 2014

6. Dynamical Systems (preprints and lecture notes):

- Unpublished note with M. Herman (1984) : *Existe-t-il une géométrie symplectique en classe C^0 ? Exemple de difféomorphisme de T^{2n} préservant la mesure, homotope à l'identité et ne pouvant être topologiquement approché par des difféomorphismes symplectiques.*
- *Lecture notes on Hamiltonian Dynamics* (1986) Lecture given at Ecole Normale Supérieure, Paris and IMPA, Rio de Janeiro, Brazil

7. Financial mathematics (preprints and lecture notes):

- *On Measuring Hedge Fund Risk*, (with A. Cherny and S. Moltchanov) preprint SSRN, March 2008.
- *Monte-Carlo Path Weighing*, preprint ENS Cachan, 2002
- *Correlations in Interest Rate Models*, preprint ENS Cachan, 2002
- *2-Factor Models with Closed Form Formulas: 1) Convertible Bonds 2) Oil Futures & Swaptions*, Preprint ENS Cachan, 2001.
- *Multi-currency BGM Monte-Carlo Mathematical Model*, preprint ENS Cachan, 2001
- *Note sur les volatilités instantanées “à la Dupire”*, preprint ENS Cachan, 2001

- *Calibration of the London and HJM Monte-Carlo Models for Interest Rates and FX diffusion with Stochastic Volatility*, internal publication CIBC, 1998
- *Energy Minimization and Optimal Hedging of Contingent Claims with transaction Costs*, (with N. Dubourg), preprint Courant Institute, NYU, 1997.
- *Modèles de taux d'intérêt, de Vasicek à Heath-Jarrow-Morton*, Lecture notes Univ. Paris I, 1994
- *The Nonlinearity of Hedge Fund Returns* (with E. Derman) preprint Riskdata 2005
- *Statistical Undecidability* (with N. Taleb), preprint SSRN 2011
- *Greek Debt Restructuring*, preprint Riskdata 2012
- *The Volatility of Low Rates*, preprint Riskdata 2013
- *Extreme Risk, excess return and leverage: the LP formula* (with O. Le Marois and Y. Mikhalevski) preprint CES Univ. Paris 1, 2014
- *The precautionary principle (with application to the genetic modification of organisms)*.(with Taleb, Nassim Nicholas, Rupert Read, Joseph Norman, and Yaneer Bar-Yam. *arXiv preprint arXiv:1410.5787* (2014).
- *Polymodels and their application in portfolio risk* (with I. Zovko) preprint CES Univ. Paris 1, 2015
- *A practical approach to financial crisis indicators based on random matrices* (with A. Kornprobst) preprint CES Univ. Paris 1, 2015
- *Repurchase agreements and systemic risk in the European sovereign debt crises: the role of European clearing houses* (with A. Armakola, J.-P. Laurent, F. Molteni) preprint Labex ReFi, 2015, Policy Paper #6
- *Hamiltonian Flow Simulation of Rare Events* (with Sh. Miryusupov) preprint CES Univ. Paris 1, 2017
- *Optimal Transport Filtering with Particle Reweighting in Finance* (with Sh. Miryusupov) preprint CES Univ. Paris 1, 2017