

## **Nikolay SUKHOMLIN, Ph D**

from Moscow State University Lomonosov (<http://www.msu.ru/en/>)  
Titular PROFESSOR

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**Trilingual:** Russian-French-Spanish, English

Web pages:

<http://www.genealogy.ams.org/id.php?id=126055> (Mathematics Genealogy Project)  
<http://economicsbulletin.vanderbilt.edu/BrowseDirectory.asp?Value=S>  
[http://www.ioffe.ru/trade\\_union/Photos/physfac67/sukhomlin.html](http://www.ioffe.ru/trade_union/Photos/physfac67/sukhomlin.html)  
[http://umalcaimpa.br/cgi-bin/LAM\\_browsePesquisadores.cgi?language=engl](http://umalcaimpa.br/cgi-bin/LAM_browsePesquisadores.cgi?language=engl)  
[http://www.ceregmia.eu/ceregmia/Architecture/Principal/extrait\\_tous\\_membres.asp](http://www.ceregmia.eu/ceregmia/Architecture/Principal/extrait_tous_membres.asp)

### **DIPLOMAS:**

- **PhD** (Applied Mathematics & Physics) – 1982, **from Moscow State University Lomonosov** (Moscow, Russia);
- **Senior Lecturer Diploma** (a pedagogic diploma after the PhD grade) – 1986, from St-Petersburg National Academy of Cosmos and Aviation Engineering, Department of Applied Mathematics and Statistics (Russia);
- Master degree in Physics – 1967, from Faculty of Physical Sciences, Leningrad University (St-Petersburg, Russia);
- Pre doctoral diploma in Geopolitics (DEA) - 1993, from Paris-8 University (France)
- Pre doctoral diploma in history of Arts (DEA) - 1996, from Paris-1 University (France)
- PhD thesis in history of Arts - 1998, from Paris-1 University (France)

### **PRESENT STUDIES**

= 2008 Pre doctoral diploma in Economics (DEA) - from University of the Basque Country (Spain)  
= 2008 - present - **Ph D Studies in Economics**, University of the Basque Country (Spain)

### **TEACHING EXPERIENCE:**

= 2004 – 2008 - Full time Professor of Economics Department, Pontifical Catholic University (PUCMM), Santo-Domingo, Dominican Republic  
= 2002 – present - Invited Professor, Faculty of Economy, Autonomous University of Santo-Domingo (UASD), Dominican Republic  
= 2000 – present - Titular Professor, Faculty of Sciences, Autonomous University of Santo-Domingo (UASD), Dominican Republic  
= 1999–2000 - Invited Professor of the National Haitian Diplomatic Academy & Quisqueya University (Haiti)  
= 1998-1999 - Invited Professor of the Haitian State University  
= 1992-1998 - Lecturer and Associate Professor, Department of Mathematics & Informatics, Paris-8 University, France  
= 1971-1991 - Lecturer and Senior Lecturer, Assistant Professor in: St-Petersburg University (Russia); Elista Stat University (Russia); St-Petersburg National Academy of Cosmos and Aviation Engineering, Applied Mathematics and Statistics Department (Russia)

= 1991-1995 - Teaching in Colleges and national high schools (Paris, France)

### **PUBLICATIONS:**

= 43 scientific articles + 5 manuscripts + 32 participations in International and National Conferences (1967-2009);

= 2 papers submitted

= 4 books (manuscripts);

= Ph D thesis (1982), Master degree thesis (1967)

### **The last papers in Economic and Finance:**

- Sukhomlin N. (2009), "Index of Inversion of Functions", *Russian Physics Journal* (submitted)
- Sukhomlin N., Ortiz J. (2007), "New exact solutions for the **Black Scholes equation** & diffusion equation", *Applied Mathematics E-Notes*, 7 (2007), 206-213  
<http://www.math.nthu.edu.tw/%7Eamen/>
- Sukhomlin N. (2007), "**The Black Scholes type Financial Models and the Arbitrage Opportunities**", *Revista de Matemática: Teoría y Aplicaciones*, 14 (1), pp. 1–6, The University of Costa Rica, Costa Rica
- Sukhomlin N. (2007), "**Conservation Law of Strike Price and Inversion of the Black Scholes Formula**", *Russian Physics Journal*, 7, pp. 741-743, Russia
- Sukhomlin N. and Jacquinet Ph. (2007), « **Solution exacte du problème inverse de valorisation des options dans le cadre du modèle de Black et Scholes** », May 04, 2007, France (in French) [http://hal.archives-ouvertes.fr/docs/00/14/47/81/PDF/Sukhomlin-Jacquinet\\_04\\_05\\_2007.pdf](http://hal.archives-ouvertes.fr/docs/00/14/47/81/PDF/Sukhomlin-Jacquinet_04_05_2007.pdf)
- Sukhomlin N. (2006) "**Conservation Law of Strike Price in the Black Scholes Model**", *Economía*, n. 17-18, pp. 147-161, University of the Andes, Venezuela (in Spanish)  
<http://www.saber.ula.ve/revistaeconomia/>

### **THE CORSE NOTES:**

= "*Introduction in Theory of Stock Market*", 2008, Santo Domingo (Manuscript)

= "*Understanding Money & Investing*", 2008, Santo Domingo (Manuscript)

= "*Exchange market theory*", 2007, Santo Domingo (Manuscript)

= "*Stochastic Process (applications in Economy & Finance)*", 2007, 2009, Santo Domingo (Manuscript)

= "*Dynamical Optimization*", 2006, Santo Domingo (Manuscript)

= "*Dynamical models in Economy*", 2005, 2009, Santo Domingo (Manuscript)

= "*Linear Algebra (application in Economy & Finance)*", 2004, 2008, 2009 Santo Domingo (Manuscript)

= "*Concepts of the Topology and Functional Analysis with applications in Economy & Finance*", 2005, 2006, 2007, Santo Domingo (Manuscript)

= "*Game Theory*", 2006, 2006, 2007, 2008, 2009, Santo Domingo (Manuscript)

= "*Bond Theory & Introduction in stock market*", 2005, 2007, 2008, 2009 Santo Domingo (Manuscript)

= Several Programs of Masters and graduated Courses in Economy & Finance, particularly: "Financial Engineering" (PUCMM, 2007), "Mathematical Economics" (UASD, 2007)

= Course Notes of the Conference: "History of the Game Theory", 2003 (Dominican Academy of History, UASD, INTEC, PUCMM);

### **BOOKS:**

- "*Differential Partial Equations and Symmetry (with applications for Finance Markets)*" (Santo Domingo, 2008) (Manuscript)
- "*Concepts of the Topology and Functional Analysis with applications in Economics and Finance*" (Santo Domingo, 2006) (Manuscript)
- "*The economic mechanisms*", Translation from French in Russian of this book to order of the Insurance Companies Association of France (Paris, 1994),
- A book about history of a Russian country palace Gostilitzy (St-Petersburg, 1991)

**EDITORIAL BOARD**

*Journal of Economics and International Finance* (<http://www.academicjournals.org/JEIF/Editors.htm>)

**REFEREE of REVIEWS and INTERNATIONAL CONFERENCES:**

- 2009 - present – *Economics Bulletin*, <http://www.economicsbulletin.com/>
- 2009 - present - International Journal of Physical Sciences, <http://www.academicjournals.org/ijps/>
- 2008 - present - *Eastern Finance Association* (USA) for the Meeting in Washington D.C., April 29-May 2, 2009, and for the Meeting in Miami Beach Resort and Spa Miami Beach, Florida, April 14 - 17, 2010
- 2008 - *Revista de Matemática: Teoría y Aplicaciones*, The University of Costa Rica, Costa Rica
- 2007 - *Economía*, Universidad de los Andes, Merida, Venezuela
- 2007 – *Applied Mathematics E-notes*, Taiwan
- 2009 - Journal of Medicinal Plants Research (ACADEMIC JOURNALS, **Statistic area**) by appeals of the Editor, Professor Hilary Edeoga

**MEMBERSHIP:**

=2009 - Associate Member of the *Center of Study and Researches in Economics, Management, Modeling and Applied Informatics* (CEREGMIA) – University of Antilles and Guyana (Martinique), FRANCE, <http://www.ceregmia.eu/>

= 2008 – present - Member of the Section “*Mathematics for Finance, Mathematical Economics & Administration of Risks*” (MAFEMAR) of the Mexican Mathematical Society

= 2004 – present - Member of the “*Foundation for the Advances of Mathematics*”, Santo-Domingo (Dominican Republic)

**RESEARCH:**

1) **Research in Finance** (mathematical modeling), **Theoretical and Applied Economy**

2) **Research in Applied Mathematics** and Mathematical Physics

3) **Research Interests:**

= Quantitative Finance & Economics, Econophysics, Business Mathematics, Modern Methods in Financial Markets, Bases of Microeconomics

= Elaboration of the Graduate Education Program in Econophysics (UASD, 2004)

= The partial differential equation symmetry

= The research in the history of the separation of variables method (partial differential equations): 1805 - 1990 (300 references)

= I was the director of several master's degree theses, and with my best students I published

4) **Congress, Research Conferences & Invited Academic Visits**

= 2009, November, 10 – December, 5, invited by CEREGMIA – University of Antilles and Guyana (Martinique), FRANCE

= 2009, March, 14, Chairman of the Session: *Options & Derivatives: 5th International Finance Conference*, <http://www.ifc5.com>, March, 12, 13, 14, 2009, TUNISIA

= 2009, February, 25 – 27 – Conference “*Symmetry of the Black-Scholes-Merton model and the market calibration problem*” in University of Puerto Rico and scientific collaboration with professor Julian Velez of the Institute of Functional Nanomaterials, University of Puerto Rico, San Juan, PUERTO RICO, USA

= 2008, October – November – Invited Lecture on *Financial Mathematics* for Master's students of the University Antilles-Guyana (Guadeloupe, FRANCE), Course: “*Economical Modeling 2*”  
 = 2008, October, 25 – 31 – Participation in Regional Mathematics School in French Guyana (UAG), Course: “*Mathematical Modeling in Finance*”, Kourou, FRANCE  
 = 2008, June 27 – Conference in Seminar of the University Antilles-Guyana (FRANCE) “*Inversion of the Black Scholes classical formula & Symmetry of the Black Scholes Equation*”  
 = 2005 – 2009 – Participation in twenty six International Conferences and Congress (France, Costa Rica, Dominican Republic, Colombia, etc.)

#### GRANTS:

- 2008, Mars – 2009, February, N. Sukhomlin & M. Pencova, “New results in Mathematical Modeling in Engineering” Technological Institute (INTEC), Santo-Domingo, Dominican Republic
- 2007, October – 2008, September, N. Sukhomlin, “**New results in Mathematical Modeling of Financial Markets**”, Pontifical Catholic University (PUCMM), Santo-Domingo, Dominican Republic
- 2005, September – 2006, August, N. Sukhomlin, “**New results in the Theory of Dynamical Systems**”, Superior Education, Sciences & Technology Stat Secretary (SEESCyT), Dominican Republic
- 2003, April – 2003, August, N. Sukhomlin, “Study of Symmetry & Exact Solutions of the Schrödinger and Hamilton-Jacobi Equations for Free System”, Technological Institute (INTEC), Santo-Domingo, Dominican Republic

#### PEDAGOGIC ACTIVITY:

##### 1) Course Notes and Programs

= Six (6) **Course Notes of Economics** (manuscripts)

= I was the director of several Master's Theses, and with my best students I was publishing 10 papers (1981 – 2009)

= Several **Programs of Masters and Courses in Economy & Finance**, Econophysics, Physics

##### 2) Ph D Thesis Director

N. Barinov - 1984 “*Stochastic Process with Applications in Engineering*”, Department of Mathematics and Statistic, National College of Cosmos and Aviation Engineering (St Petersburg, Russia)

##### 3) Graduate and Master Thesis Supervisions (UASD, PUCMM, Dominican Republic and University of Antilles-Guyana, France):

Melvin Áreas – 2004 (in 2007 was the Philosophical Doctor (Ph D), University of Puerto Rico) currently he work in UASD

Vladimir Pérez – 2005 (now in PhD studies, USA, University of Pennsylvania)

Juan López – 2005 (now in PhD studies, University of Puerto Rico)

José Liriano – 2005 (now in PhD studies, University of Puerto Rico)

Jan Ortiz – 2006 (now in Sloan School of Management, MIT, USA) **FINANCE, ECONOMICS**

Washington Silvestre – 2006 (now in Master studies, University of Puerto Rico)

José Álvarez – 2007 (now in PhD studies, University of Puerto Rico) **ECONOPHYSICS**

Antonio Pellerano – 2007 (now in PhD studies, University A&O, Texas, USA) **ECONOMICS**

Esly Onestas – 2008, Master 2, University of Antilles-Guyana, France (**MATHEMATICAL FINANCE, THEORY OF DERIVATIVE MARKET**)

#### CONFERENCES ORGANISING

- 2010 - Program Committee Member of the “*Vlith Interdisciplinary Congress of Scientific Researches*”, organized by the State Secretary of Superior Education, Sciences and Technology

(SEESCyT), Santo Domingo, Dominican Republic, June, 2010 (**Sections: Economics & Mathematics**)

- 2009 - Program Committee Member of the “*Vth Interdisciplinary Congress of Scientific Researches*”, SEESCyT, Santo Domingo, Dominican Republic, June, 2009 (**Section: Economics & Mathematics**)
- 2008 - Program Committee Member of the “*IVth Interdisciplinary Congress of Scientific Researches*”, SEESCyT, Santo Domingo, Dominican Republic, June, 2008 (Section: Mathematics - Physics)
- 2007 - International Conference “*Modern Mathematics in Finance*”, Mars 13, 2007, Pontifical Catholic University (PUCMM), Santo-Domingo, Dominican Republic together with The University of the West Indies, at Mona, Jamaica
- 2007 - Program Committee Member of the “*II International Congress of Physics*”, UASD, Santo Domingo, Dominican Republic, October 30 – November 2, 2007
- 2007 - Program Committee Member of the “*IIIth Interdisciplinary Congress of Scientific Researches*”, SEESCyT, Santo Domingo, Dominican Republic, June 7-8, 2007 (**Section: Mathematics - Economics**)
- 2006 - Program Committee Member of the “*Ild Interdisciplinary Congress of Scientific Researches*”, SEESCyT, Santo Domingo, Dominican Republic, June 7-10, 2006 (Section: Mathematics)
- Program Committee Member of the “*Ist International Congress of Physics*”, UASD, Santo Domingo, Dominican Republic, October 31 – November 3, 2005
- Seven Personal Conferences: “**Econophysics**”, “**Neural Forecasting**” “**Mathematic Methods for International Financial Markets**”, “**Financial Engineering**” “**Bonds Theory**”, “**Game Theory**”, “**Concept of Stock Market**” (UASD, INTEC, UnAPEC, PUCMM) 2003 - 2007

#### **COURSES EXECUTED:**

= **ECONOMICS, FINANCE, MATHEMATICS FOR ECONOMY & FINANCE:** Theory of Financial Risk, Mathematical Methods of Business, Modern Mathematical Finance, Microeconomic, Statistical methods in the business administration, Paradoxes of the electoral systems, Linear programming, Dynamical programming, Dynamical Optimization, Stochastic Process (application in Finance), Financial International Marketing, Market of derivatives (Valuation of financial assets), Recursive Macroeconomic, Topology for Economic Applications, Game Theory, Applications of Games Theory in Economy & Finance, History of the Game Theory, Topology & Functional Analysis for Economists; Complex Systems & Econophysics, Econophysics & Financial International Marketing, Financial strategy, Planning of Strategy, Linear Algebra for Business, Dynamical systems in Economy, Chaos Theory in Economics, Bond Theory & Stock Market, Mathematical support for economists.

= **APPLIED MATHEMATICS:** Approximation theory, Mathematical application in Physics and Engineering, Mathematical methods in fluid mechanics, Numerical simulation, Mathematical analysis I, II and III (Calculus I, II & III); Linear algebra, Topology, Probability, Stochastic Process, Mathematical statistics, Fourier's series, Linear operators, Differential equations (ordinary, and partial), Qualitative theory of Differential equations, Functional analysis and approximation of functions, Theory of systems, Matrix theory, Tensor theory, Mathematical logic, Integral equations.

= **BASES of COMPUTER SCIENCE:** Combinatory, Mathematical Logic, Linear Programming, Non-linear Programming;

= **PHYSICS, MECHANICS, ASTRONOMY, ENGINEERING:** General Physics, All COURSES of THEORETICAL & MATHEMATICAL PHYSICS, etc.

= **OTHERS:** Geopolitics, French in the St-Petersburg Business School, Theory of Arts, General History of Arts, History of Architecture, Russian

**ADMINISTRATIVE EXPERIENCE:**

- = 2007 – 2008 - **Director of Research Laboratory in Finance, Department of Economy, Pontifical Catholic University** (Santo-Domingo, Dominican Republic)
- = 2000 - present - **Director of the Theoretical Economy, Applied Mathematics and Econophysics Scientific Seminar** (Autonomous University of Santo-Domingo, Dominican Republic)
- = 2000-2005 - Director of the Ph D & MSc Formation, Department of Physics (Autonomous University of Santo-Domingo /Dominican Republic)
- = 1980-1983 - Associate Dean, Faculty of the Physical Sciences, Elista University (Russia)

**OTHER ACTIVITY:**

- Master degree in General History (St-Petersburg University, Russia, 1990)
- Ph D Thesis in History of Arts (University Paris-I, France, 1998)
- Pre doctoral diploma in History of Arts = DEA (Paris-I University, France, 1996)
- Vice-President of the Russian-French Association of Patrimony Protection (St-Petersburg - Paris) 1987-1998
- French courses in business class (Private St-Petersburg Business School, Russia) 1985-1990
- Interpreter of several groups

**REFEREES:**

- = Dean of the Faculty of Administrative & Social Sciences, Guillermo Van der Linde, Pontifical Catholic University, Santo Domingo, [gevanderlinde@yahoo.com](mailto:gevanderlinde@yahoo.com)
- = Director of the Economics Department, Professor José Paulino (Pontifical Catholic University, Santo Domingo), (809)535 01 11 (ext. 2144, 2143), [josepaulino@pucmm.edu.do](mailto:josepaulino@pucmm.edu.do)
- = Director of the Economics Department Melvin Perez (Autonomous University of Santo Domingo) [mperez14@uasd.edu.do](mailto:mperez14@uasd.edu.do)
- = Director of the Statistic Department, Zenon Ceballos, Ph D (Autonomous University of Santo Domingo) [zenonceballos@hotmail.com](mailto:zenonceballos@hotmail.com)
- = Director of the PhD program in Economics, Manuel Linares (Autonomous University of Santo Domingo, Faculty of Economics & Social Sciences) [profesormanuellinares@gmail.com](mailto:profesormanuellinares@gmail.com)
- = Director of the Physics Department Lilio Tirso (Autonomous University of Santo Domingo) [ltirso45@yahoo.es](mailto:ltirso45@yahoo.es)
- = Professor Vladislav Bagrov, D Sc (Director of the Dept of Mathematical Physics, Tomsk University, Academia of Sciences, Siberian section): [bagrov@phys.tsu.tomsk.su](mailto:bagrov@phys.tsu.tomsk.su)
- = Professor Anatoly Meshkov, D Sc (Director of the Dept of Informatics, Oryol University, Russia central): [meshkov@oryol.ru](mailto:meshkov@oryol.ru)