

## CURRICULUM VITAE

- Name:** Kolev, Nikolai Valtchev
- Address:** Department of Statistics, Institute of Mathematics and Statistics (IME)  
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E-mails: kolev.ime@gmail.com and nkolev@ime.usp.br
- Personal:** Born Topolovgrad, Bulgaria, 17 March 1956; Father of four children.
- Education:**
- October 1976 - July 1981: Faculty of Mathematics, Sofia University  
Supervisor: Professor Boyan Dimitrov, MSc in Mathematics (1981)  
Thesis: *Minimal Blocking Time of Unreliable Server*;
  - March 1990 - April 1994: Faculty of Mathematics, Sofia University  
Supervisor: Professor Boyan Dimitrov, PhD in Mathematics (1994)  
Thesis: *Optimization Problems by Servicing with One or Two Devices*.
- Employment History:**
- National Programming Library, Sofia, Bulgaria  
September 1981 - August 1983: Programmer  
Duties: Programming Data Bases;
  - Central Laboratory of Bioinstrumentation  
Bulgarian Academy of Sciences, Sofia, Bulgaria  
September 1983 - March 1989: Research Fellow  
Duties: Research and Programming;
  - Institute of Mathematics and Informatics  
Bulgarian Academy of Sciences, Sofia, Bulgaria  
April 1989 - February 1998: Research Fellow  
Duties: Teaching, Research and Supervising;
  - Department of Statistics and Operations Research  
Public University of Navarra, Pamplona, Spain  
November 1995 - June 1996: Visiting Associate Professor  
Duties: Teaching, Research and Supervising;
  - Department of Statistics, Western Michigan University, USA  
October 2005 - April 2006: Visiting Associate Professor  
Duties: Teaching, Research and Supervising;
  - Department of Statistics, IME-USP, Brazil  
March 1998 - January 2001: Assistant Professor  
February 2001 - January 2013: Associate Professor, level 1  
February 2013 - April 2017: Associate Professor, level 2  
May 2017 - present: Full Professor  
Duties: Teaching, Research and Supervising.

**Languages:** Fluent Bulgarian (native), English, Portuguese, Russian and Spanish.

**Teaching:**

- 1989-1992: Technical University of Sofia, Bulgaria
  - *Calculus I and II*, (for undergraduates).
- 1989-1995: Faculty of Mathematics, Sofia University, Bulgaria
  - *Reliability and Inventory Theory*, (for graduates);
  - *Probability Theory and Statistics*, (for undergraduates).
- 1995-1996: Public University of Navarra, Pamplona, Spain
  - *Generalized Linear Models*, (for graduates and PhD).
- 1997: Business Faculty, Sofia University, Bulgaria
  - *Discrete Models and Applications in Finance*, (for graduates).
- October 2005-April 2006: Western Michigan University, USA
  - *Survival Analysis*, (for graduates and PhD);
  - *Statistical Methods*, (for undergraduates).
- March 1998 - present: IME-USP, Brazil
  - *Introduction in Risk Analysis*, (for graduates and PhD);
  - *Quantitative Risk Management*, (for graduates and PhD);
  - *Copula Theory and Applications*, (for graduates and PhD);
  - *Statistical Theory of Reliability*, (for graduates and PhD);
  - *Discrete Models and Applications*, (for graduates and PhD);
  - *Probability II (Stochastic Calculus)*, (for graduates and PhD);
  - *Categorical Data Analysis*, (for undergraduates);
  - *Probability & Statistics I and II*, (variety of undergraduate courses).

**Invited Presentations:**

**(Selected List)**

- More than 50 invited talks (about half in Brazil).
- Santiago de Compostela University, Spain, March 1995;
- Carlos III University, Madrid, Spain, April 1996;
- *Actuarial Sci.: Theory & Implement.*, Moscow, Russia, October 1997;
- Heriot-Watt University, Edinburgh, UK, November 1999;
- *31st Mathematical Union Conference*, Borovets, Bulgaria, April 2002;
- *2nd Actuarial Science Workshop*, Leuven, Belgium, March 2003;
- *Colloquium at the Occasion of Jef Teugels*, Leuven, Belgium, May 2004;
- *8th Symposium of Stochastic Processes*, Puebla, Mexico, June 2004;
- *6th Conf. Multiv. Ditr. with Fixed Marginals*, Tartu, Estonia, June 2007;
- *VI Workshop on Simulation*, St. Petersburg, Russia, June, 2009;
- *Stochastic Day*, University of Southern Denmark, Odense, Nov. 2010;
- *Gnedenko's Centennial Conference*, Moscow, Russia, June 2012;
- Izmir University of Economics, Turkey, November 2012;
- Vienna University of Technology, Austria, September 2013;
- *Advances in Marshall-Olkin Modeling*, Bologna, Italy, October 2013;
- *21th SINAPE Conference* (Copula course), Natal, Brazil, July 2014;
- *16th ASMDA Conference*, Athens, Greece, July 2015;
- McGill University, Montreal, Canada, October 2017;
- Costa Rica Univ. (Copula course), San Jose, Costa Rica, February 2018;
- Universities of Durham, Manchester and York, UK, June 2018;
- University of Bologna (Line Integral Course), Italy, December 2019.

**Grants: A. Sponsored by the Bulgarian Science Foundation**

- No. 43/87: *Mathematical Methods in Reliability*, Coordinator: B. Dimitrov;
- No. M60/91: *Mathematical Methods in Risk Theory*, Coordinator: B. Dimitrov;
- No. I444/94: *Financial Mathematics and Statistics*, Coordinator: D. Vandev;
- No. 705/97: *Probability Measures and Limit Theorems*, Coordinator: L. Mutafchiev.

**B. International**

- 1987-1989: *Statistical Quality Control. Repeatability and Reproducibility of the Results by Inter-Laboratory Tests*, (Standard corresponding to ISO Standard No. 5726-1986), Coordinator: B. Dimitrov;
- 1998-1999: *Inflation Parameter Family of Discrete Probability Distributions and their Application in Analysis of Over- and Under-dispersed Insurance Data*, (Sponsored by CKER, Society of Actuaries, USA), Coordinator: N. Kolev;
- 2004-2006, No. 171/04: *Modelling Randomness and Uncertainty for Multivariate Scenarios*, (Sponsored by CAPES-DAAD), Coordinators: N. Kolev and von Collani.

**C. Sponsored by Sao Paulo Sci. Foundation, FAPESP (Principal Investigator)**

- No. 99/08263-1: *Correlated Uncertainty in Periodic Random Environment*;
- No. 00/13505-3: *Zero-inflated Random Mappings*;
- 2001-2003, No. 01/02699-4: *Extended Premium Principles*;
- No. 03/05116-5: *Random Sums of Exchangeable Variables*;
- No. 05/50686-0: *Risk Processes with Dependent Claims*;
- No. 06/55061-0: *Random Sums, Dependence and Occupation Measures*;
- No. 07/60952-1: *Randomness and Uncertainty for Multivariate Scenarios*;
- No. 08/51207-6: *Sibuya's Dependence Function as a Copula Alternative*;
- 2008-2012, No. 08/51097-6: *Time Series, Dependence Analysis and Applications*;
- 2013-2014, No. 2013/08059-4: *Extended Marshall-Olkin Models and Applications*;
- 2013-2023, No. 2013/07375-0: *CEPID Interdisciplinary: Mathematics Applied to Industry*.

**D. Several Grants Sponsored by USP, CAPES, CNPq (Main Scientific Found.).**

- Referee:**
- Annals of the Institute of Statistical Mathematics;
  - Applied Stochastic Models in Business and Industry (Editorial Board 2002-2007);
  - Brazilian Journal of Probability and Statistics;
  - Chilean Journal of Statistics (Associate Editor since 2010);
  - Communications in Statistics: TM and SC (Associate Editor 2009 - 2019);
  - Communications in Statistics: TM (Guest Editor Volume 42, Number 4, 2013);
  - Economic Quality Control (Regional Editor 2005-2013);
  - Emerging Markets, Finance and Trade;
  - European Journal of Operational Research;
  - Insurance: Mathematics and Economics;
  - Journal of Computational and Applied Mathematics;
  - Journal of Methodology and Computing in Applied Probability;
  - Journal of Statistical Planning and Inference;
  - Journal of Systems Science and Complexity;
  - Journal of Turkish Statistical Association (Associate Editor since 2012);
  - Spanish Journal of Statistics (Associate Editor since 2019), and 25 more.

**Supervision:**  
(PhD and Post-doc)

- Minkova, L. (1995). *Gaussian Processes Equivalent to Gaussian Martingale*, Sofia University, Bulgaria;
- Ugarte, D. (1996). *Tests and Models for Detecting and Explaining Overdispersion*, Public University of Navarra, Spain;
- Bakeva, V. (1998). *Discrete Queuing Systems with Unreliable Server*, University of Skopje, Macedonia;
- Neytchev, P. (2000). Post-doc, IME-USP, Brazil;
- Paiva, D. (2003). *Sums of Equally Correlated Random Variables and Applications in Risk Analysis and Discrete Time Series*, IME-USP, Brazil;
- Anjos, U. (2005). *Development and Analysis of Dependence Structures via Copulas*, IME-USP, Brazil;
- Paiva, D. (2005-2006). Post-doc, IME-USP, Brazil;
- Fernandez, M. (2007). *Bivariate Density Classification by the Geometry of Marginals*, IME-USP, Brazil;
- Ferreira, F. (2008). *Bivariate Asymmetry and Local Dependence Measures*, IME-USP, Brazil;
- Goncalves, M. (2008). *A Study on Dependence Functions and Risk Measures*, IME-USP, Brazil;
- Baumann, L. (2011): *Local Measures of Dependence*, IME-USP, Brazil;
- Pinto, J. (2014): *Deepening the Notions of Bivariate Aging*, IME-USP;
- Ara, A. (2016-2017). Post-doc, IME-USP, Brazil;
- Bahraoui, T. (2018-2019). Post-doc, IME-USP, Brazil.

**Supervision:**  
(MBA in Data Science)

- Paula, F. (2020). *Classification of Public Funds and Information Transparency of the Government*, ICMC-USP, Brazil;
- Furlan, J. (2020). *Semantic Documents Categorization of the Electronic System*, ICMC-USP, Brazil;
- Fernandes, R. (2020). *Automatic Analysis of the Public Funds Planning*, ICMC-USP, Brazil;
- Pedatella, R. (2020). *A Predictive Model for Risk Contract Identification*, ICMC-USP, Brazil;
- Vieira, H. (2020). *Patent Classification Through Categories and Topics*, ICMC-USP, Brazil.

**Current Supervision:**

- Lucas Pereira Lopes (PhD): *New Data Science Tools with Finance Applications*, IME-USP;
- Daniel Morales (PhD): *Line Integral on Discrete Grids with Applications in Finance and Economics*, IME-USP;
- Yuri Verges (PhD): *Vine Copulas Tools in Machine Learning*, IME-USP;
- Eduardo Flores (MBA in Data Science): *Machine Learning and Tax Transaction Applications*, ICMC-USP.

- Visiting Professor:**
- November 1995 - June 1996: Dept. of Statistics and Operation Research  
Public University of Navarra, Pamplona, Spain  
PhD Course: *Generalized Linear Models*;
  - January - February 2003: Department of Probability and Statistics  
CIMAT, Guanajuato, Mexico;
  - September - October 2004, June - July 2005 and June - July 2006:  
Department of Economics, University of Würzburg, Germany;
  - October 2005 - April 2006: Department of Statistics  
Western Michigan University, Kalamazoo, USA  
PhD Course: *Survival Analysis*;
  - February 2008: Department of Mathematics  
National Technical University, Quito, Ecuador  
PhD Course: *Introduction to Copulas*;
  - October - December 2012: Department of Mathematics  
Izmir University of Economics, Turkey, PhD Course: *Copula Theory*;
  - September- November 2013 and September 2015 - February 2016:  
Department of Statistics, Bologna University, Italy;
  - May-Dezember 2022, Dept. Finance Math., TUMunich, Germany.

- Several Short Visits:**  
(up to 3 weeks)
- September 1997: Department of Probability and Statistics  
University of Skopje, Skopje;
  - October 1997, June 2002, June 2012 and November 2017:  
Department of Probability and Statistics  
Lomonosov State University, Moscow, Russia;
  - March 2003 and May 2004: Department of Actuarial Science  
Catholic University of Leuven, Belgium;
  - June 2006: Mid-West Technical University, Ankara;
  - July 2006: Delft University of Technology, Delft, The Netherlands;
  - November 2010: University of Southern Denmark, Odense, Denmark;
  - September 2011: University of British Columbia, Vancouver, Canada;
  - October 2011 and October 2017: McGill University, Montreal, Canada;
  - September 2012: Technical University of Munich, Germany;
  - September 2013: Vienna University of Technology, Austria;
  - November 2013: Technical University of Zurich, Switzerland;
  - November 2012 and June 2015: University of Piraeus, Greece;
  - June 2018: Universities of Durham, Manchester and York, UK;
  - July and December 2019, June 2022: Bologna University, Italy.

- Patents:**
- *PIBT: Program for Parametric Identification of the Results  
Biotechnological Processes*. No. 1.M011.00273-01/1987, Bulgaria;
  - *Rr: Program for Repeatability and Reproducibility of  
Inter-laboratory Tests*. No. 1.B034.00576-01/1989, Bulgaria;
  - *AUTOFREQ: Program for Automatic Log-linear Hierarchical Model  
Selection in Contingency Tables*. No. 1.B034.01840-01/1992, Bulgaria.

**Organizer:**

- International Workshop *Mathematical Theory of Ruin Probabilities* Bankya, Bulgaria, February 1996;
- Working Seminars at IME-USP: *Risk Analysis Methods* (1998-2003), *Time Series and Dependence Modeling* (2004-2012), *Copula Modelling with Insurance and Finance Applications*, since 2010;
- *Workshop on Statistical Modelling in Insurance and Finance*, IME-USP, Sao Paulo, Brazil, November 2006;
- *Colloquium on Time Series Analysis (at the Occasion of P. Morettin)* Campus de Jordao, Brazil, June 2007;
- *7th Conference on Multivariate Distributions with Applications* Maresias, Brazil, August 2010 (see details at [www.ime.usp.br/~mda](http://www.ime.usp.br/~mda));
- *3rd Workshop on Risk Assessment* IME-USP, Sao Paulo, Brazil, November 2016;
- *Workshop on Copula Modelling - a Nonstandard Brazilian View* IME-USP, Sao Paulo, Brazil, June 2017;
- *Workshop on Dependence Modelling* IME-USP, Sao Paulo, Brazil, February 2019;
- *Workshop on Risk Analysis* IME-USP, Sao Paulo, Brazil, March 2020;
- *1st to 8th Brazilian Conferences on Statistical Modelling in Insurance and Finance (BCSMIF)*, in Ubatuba, Brazil, Sept. 2003 and Maresias: Sept.2005, March 2007, April 2009, April 2011, March 2013, March 2015, March 2017, March 2019, March 2020 and Sept. 2025 (see details at [8bcsmf.ime.usp.br](http://8bcsmf.ime.usp.br)).

**Statistical Consultancy:** • Statistical Modelling in Finance, Insurance and Industry, (coordinator of interdisciplinary teams in the use of copula models).

**Academic Membership:** • Brazilian Statistical Society;  
• International Association of Statistical Computing.

**Committee Member:** • Search (Professorship in Brazil + WMU and KetteringU, USA): 5 times  
• Search (Associate Professorship in Brazil): 5 times;  
• Search (Assistant Professorship in Brazil): 7 times;  
• Scientific Committee Member International Conferences: 15 times;  
• PhD defenses in Brazilian Universities: 33 times.

**Honor Distinctions:** • CKER Research Grant, Society of Actuaries, USA, 1998;  
• Quarterly Franklin Membership, London Math. Society, UK, 2019;  
• As-hoc referee of CAPES, CNPq, FPAESP (Brazilian Sci. Foundations)

**Areas of Interest:** • Dependence Modeling via Copulas and Finance Applications;  
• Dependent Random Sums and Insurance Applications;  
• Multivariate Analysis and Industry Applications;  
• Sibuya's Dependence Function as a Copula Alternative;  
• Line Integral on Discrete Grids and Finance Applications;  
• New Machine Learning and Data Science Tools.

**Reference Colleagues: • Prof. Boyan Dimitrov (theses supervisor)**

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Department of Mathematics, Kettering University  
1700 West Third Ave., Flint, MI 8504, USA  
Phone +1 810 762 7910, FAX: +1 810 762 9796;

**• Prof. Christian Genest**

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Dept. of Mathematics and Statistics, McGill University  
805, rue Sherbrooke ouest, Montreal, Canada  
Phone: +1 514 398 3818 , FAX: +1 514 3983899;

**• Prof. Ismihan Bayramoglu**

e-mail: [ismihan.bayramoglu@iz mirekonomi.edu.tr](mailto:ismihan.bayramoglu@iz mirekonomi.edu.tr)

Department of Mathematics, Izmir University of Economics  
Teleferik, Sakarya Str. 156, 35330 Izmir, Turkey  
Phone: +90 232 488 8139, FAX: +90 232 279 2626;

**• Prof. Jan Dhaene**

e-mail: [Jan.Dhaene@econ.kuleuven.be](mailto:Jan.Dhaene@econ.kuleuven.be)

Center for Risk and Insurance, Katolieke Universiteit Leuven  
Naamsestraat 69 - bus 3507, 3000 Leuven, Belgium  
Phone: +32 9 386 9956, FAX: +32 16 323 740;

**• Prof. Umberto Cherubini**

e-mail: [umberto.cherubini@unibo.it](mailto:umberto.cherubini@unibo.it)

Dipartimento di Scienze Economiche, Bologna University  
Piazza Scaravilli 2, Bologna, Italy  
Phone: +39 051 20 9 2615;

**• Prof. Uwe Schmock**

e-mail: [schmock@fam.tuwien.ac.at](mailto:schmock@fam.tuwien.ac.at)

Institute for Mathematical Methods in Economics  
Vienna University of Technology  
Wiedner Hauptstrae 8-10/105-1, A-1040 Vienna, Austria  
Phone: +43 1 58801-10510; FAX: +43 1 58801-9-10510.

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## LIST OF PUBLICATIONS

Nikolai Kolev

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### Books:

1. *Applied Statistics, Part 1 (with Program PRISTAT 1)*. "Stopanstvo" Publishing House, Sofia, (1994), 289 pp; ISBN 954-494-097-9, (in Bulgarian).
2. *Statistical Methods in Geography*, (with M. Vodenska). St. "Kl. Ohridski" University Press, Sofia, (1995), 402 pp; ISBN 954-07-0356-5, (in Bulgarian).
3. *Modelling Dependence Through Copulas*, (with U. Anjos, F. Ferreira and B. Mendes), University Press, Sao Paulo, (2004), 143 pp; (in Portuguese; English monograph in preparation).

### Book Chapters:

1. A new measure of bivariate asymmetry and its evaluation (with F. Ferreira). In: *Bayesian Inference and Maximum Entropy Methods in Science and Engineering*, (C. Pereira and J. Stern, eds.), AIF **1073** (2008), 173-180.
2. Copula representations for invariant dependence functions (with J. Pinto). In: *Innovations in Quantitative Risk Management*, (K. Glau, M. Scherer and R. Zagst, eds.), Springer Series in Probability & Statistics **99**, Chapter 24, (2015), 411-421.
3. Extended Marshall-Olkin model and its dual version, (with J. Pinto). In: *Marshall-Olkin Distributions - Advances in Theory and Applications*, (U. Cherubini, F. Durante and S. Mulinacci, eds.), Springer Series in Probability & Statistics **141**, Chapter 6, (2015), 87-113.
4. Bivariate Teissier distributions (with N. Ngo ; Ting Ju). In: *Lecture Notes in Computer Science*, Springer International Publishing (V. Rykov and A. Kozyrev, eds.), **10684** (2017), 279-290.

### Proceedings Editor:

1. *Proceedings of the First Brazilian Conference on Statistical Modelling in Insurance and Finance*, (with J. Dhaene and P. Morettin), University Press, Sao Paulo, (2003), 287 pp; ISBN 85-88697-03-3.
2. *Proceedings of the Second Brazilian Conference on Statistical Modelling in Insurance and Finance*, (with P. Morettin), University Press, Sao Paulo, (2005), 354 pp; ISBN 85-88697-07-6.
3. *Proceedings of the Third Brazilian Conference on Statistical Modelling in Insurance and Finance*, (with C. Fernandes and H. Schmidli), University Press, Sao Paulo, (2007), 361 pp; ISBN 85-88697-12-2.
4. *Proceedings of the Fourth Brazilian Conference on Statistical Modelling in Insurance and Finance*, Electronic version CD-ROM, Sao Paulo, (2009), 363pp.

### Book Reviews:

1. *Econometric Analysis of Count Data*, (by R. Winkelmann). *The Statistician* **47**, (1998), 560-561.
2. *Random Iterative Models*, (by D. Duflo). *The Statistician* **47**, (1998), 708-709.

## Papers in Refereed Journals:

1. Minimization of blocking time of unreliable server with implicit breakdowns, (with P. Petrov). *Serdica* **12**, (1986), 245-249, (in Russian).
2. Poisson distribution of order K and some of its properties, (with L. Minkova). *Comptes rendus de l'Académie bulgare des Sciences* **39(5)**, (1986), 31-33.
3. Controlled unreliable process with implicit or explicit breakdowns and mixed executive times, (with B. Dimitrov and P. Petrov). *Lecture Notes in Engineering* **33**, (1987), 77-90.
4. An optimal control problem when the breakdowns are implicit and its connection with distributions of order K. *Comptes rendus de l'Académie bulgare des Sciences* **40(7)**, (1987), 15-17.
5. Control of unreliable process with implicit breakdowns and mixed executive times, (with B. Dimitrov and P. Petrov). *Mathematica Balkanica* **2**, (1988), 391-396.
6. Optimal implementation of tests when the breakdowns are implicit. *Mathematics and Education in Mathematics* **18**, (1989), 378-382.
7. On the optimal total processing time using checkpoints, (with B. Dimitrov, Z. Khalil and P. Petrov). *IEEE Transactions on Software Engineering* **SE-17**, (1991), 436-442.
8. Joint distribution of successes and failures related to runs of length K in homogeneous Markov chain, (with L. Minkova). *Comptes rendus de l'Académie bulgare des Sciences* **48(9)**, (1995), 19-22.
9. Tests for detecting overdispersion in a natural exponential family, (with D. Ugarte). *Comptes rendus de l'Académie bulgare des Sciences* **49(2)**, (1996), 13-16.
10.  $C(\alpha)$  statistics for different negative binomial parameterizations in one-way layout of data, (with D. Ugarte). *Comptes rendus de l'Académie bulgare des Sciences* **49(3)**, (1996), 9-12.
11. Discrete distributions related to success runs of length K in a multi-state Markov chain, (with L. Minkova). *Communications in Statistics: Theory and Methods* **26**, (1997), 1031-1049.
12. Run and frequency quotas in a multi-state Markov chain, (with L. Minkova). *Communications in Statistics: Theory and Methods* **28**, (1999), 2223-2233.
13. Quotas on runs of successes and failures in a multi-state Markov chain, (with L. Minkova). *Communications in Statistics: Theory and Methods* **28**, (1999), 2235-2248.
14. Minimization of the blocking time of the unreliable  $Geo/G_D/1$  queueing system, (with V. Bakeva). *Mathematical Communications* **4**, (1999), 1-10.
15. Two characterizations of the geometric distribution related to an unreliable  $Geo/G_D/1$  queueing system, (with V. Bakeva and M. Georgieva). *Engineering Simulation* **16**, (1999), 611-620.
16. A characterization of the negative binomial distribution, (with L. Minkova). *Pliska: Studia Mathematica Bulgarica* **13**, (2000), 151-154.
17. Inflated-parameter family of generalized power series distributions and their application in analysis of overdispersed insurance data, (with L. Minkova and P. Neytchev), *ARCH Research Clearing House* **2**, (2000), 295-320.
18. Beta transformation. Beta-type self-decomposition and related characterizations, (with B. Dimitrov). *Brazilian Journal of Probability and Statistics* **14**, (2000), 123-140.
19. Bernoulli trials: extensions, related probability distributions and modeling powers, (with B. Dimitrov). *Mathematics and Education in Mathematics* **31**, (2002), 15-24.
20. A zero-inflated occupancy distribution: exact results and Poisson convergence, (with L. Mutafchiev). *Intern. Journal of Mathematics and Math. Sciences* **28**, (2003), 1771-1782.

21. An application of Kendall distribution, (with U. Anjos). *Journal for Economy and Management* **L(1)**, (2005), 95-101.
22. Run and frequency quotas under Markovian fashion and their application in risk analysis. *Economic Quality Control* **20**, (2005), 97-109.
23. Copula associated to order statistics, (with U. Anjos and N. Tanaka). *Brazilian Journal of Probability and Statistics* **19**, (2005), 111-123.
24. Multinomial model for random sums, (with D. Paiva). *Insurance: Mathematics & Economics* **37**, (2005), 494-504.
25. Joint probability generating function for a vector of arbitrary indicator variables, (with J. Lopez-Mimbela and E. Kolkovska). *Journal of Computational and Applied Mathematics* **186**, (2006), 89-98.
26. Copulas: a review and recent developments, (with U. Anjos and B. Mendes). *Stochastic Models* **22**, (2006), 617-660, (Invited paper).
27. Bivariate density classification by the geometry of marginals, (with M. Fernandez). *Economic Quality Control* **22**, (2007), 3-18.
28. Random sums of exchangeable variables and actuarial applications, (with D. Paiva). *Insurance: Mathematics & Economics* **42**, (2008), 147-153.
29. How long memory in volatility affects true dependence structure, (with B. Mendes). *International Review of Financial Analysis* **17**, (2008), 1070-1086.
30. Bounds for quantile-based risk measures of functions of dependent random variables, (with M. Goncalves and A. Fabris). *Economic Quality Control* **23**, (2008), 55-70.
31. Bounds for distorted risk measures, (with M. Goncalves and A. Fabris). *Economic Quality Control* **23**, (2008), 243-255.
32. A new measure of bivariate asymmetry and its evaluation, (with F. Ferreira). *American Institute of Physics Conference Proceedings* **1073**, (2008), 173-180.
33. Copula-based regression models: a survey, (with D. Paiva). *Journal of Statistical Planning and Inference* **139**, (2009), 3847-3856.
34. A simple relation between the Leimkuhler curve and the mean residual life, (with N. Balakrishnan and J.M. Sarabia). *Journal of Informetrics* **4**, (2010), 602-607.
35. The BALM copula, (with B. Dimitrov). *International Journal of Stochastic Analysis* **201**, (2013), 1-6.
36. Transfer of global measures of dependence into cumulative local, (with B. Dimitrov, S. Esa and G. Pitselis). *Applied Mathematics* **5**, (2014), 615-627.
37. Sibuya-type bivariate lack of memory property, (with J. Pinto). *Journal of Multivariate Analysis* **134**, (2015), 119-128.
38. A class of continuous bivariate distributions with linear sum of hazard gradient components, (with J. Pinto). *Journal of Statistical Distributions and Applications* **3**, (2016), 1-17.
39. Characterizations of the class of bivariate Gompertz distributions. *Journal of Multivariate Analysis* **148**, (2016), 173-179.
40. Extreme value properties of Extended Marshall-Olkin models, (with J. Pinto). *International Journal of Statistics and Probability* **5**, (2016), 253-260.
41. Dependence modeling in energy markets using Sibuya-type copulas, (with J. Pinto). *International Journal of Statistics and Probability* **5**, (2017), 43-50.
42. A weak version of the bivariate lack of memory property, (with J. Pinto). *Brazilian Journal of Probability and Statistics* **32**, (2018), 873-906.

43. Functional equations involving Sibuya's dependence function, (with J. Pinto). *Aequationes Mathematicae* **92**, (2018), 441-451.
44. Reliability function of renewable system under Marshall-Olkin failure model, (with D. Kozyrev and V. Rykov). *Reliability: Theory and Applications* **13**, (2018), 39-46.
45. Joint life insurance pricing using extended Marshall-Olkin models, (with F. Gobbi and S. Mulinacci). *Astin Bulletin* **49**, (2019), 409-432.
46. New measure of the bivariate asymmetry, (with T. Bahraoui). *Sankhya A* **82**, (2020), 1-28.
47. Discrete line integral on uniform grids: probabilistic interpretation and applications. *Brazilian Journal of Probability and Statistics* **34**, (2020), 821-843.
48. A law of uniform seniority for dependent lives, (with C. Genest). *Scandinavian Actuarial Journal* (2021) **2021(8)**, 726-743.
49. Ryu-type extended Marshall-Olkin model with implicit shocks and joint life insurance applications, (with F. Gobbi and S. Mulinacci). *Insurance: Mathematics and Economics* **101, Part B**, (2021), 342-358.
50. New characterizations of bivariate discrete Schur-constant models, (with S. Mulinacci). *Statistics and Probability Letters* **180** (2021), 109-114.
51. New measure of the bivariate asymmetry, (with T. Bahraoui). *Sankhya A* **83** (2021), 421-448.
52. Probability solutions of the Sincov's functional equation on the set of nonnegative integers, (with S. Mulinacci). *Brazilian Journal of Probability and Statistics* **36** (2022), 685-691.
53. Representation of certain lifetime models via sequences of special numbers (with C. Genest). *Reliability: Theory and Applications* **72** (2023), 360-367.

#### Discussion Contribution:

In: *North American Actuarial Journal (NAAJ)* **2**, (1998), pp. 51-52, (with L. Minkova), by E.W. Frees: Relative importance of risk sources in insurance systems. *NAAJ* **2**, (1998), 34-52.

#### Refereed Conference Papers (selected):

1. Analysis of contingency tables having ordered categories - an overview. In: *Proc. Statistical Data Analysis*, Varna, Bulgaria, (1987), 63-71.
2. On the optimal service in M/G/1 queue with failures caused from the input, (with B. Dimitrov and Z. Khalil). In: *Proc. 2nd International Seminar of Teletraffic Theory and Computer Modeling* **1**, Moscow, Russia, (1989), 1-12.
3. Work optimization of distributed system with two processors. In: *Proc. 2nd International Seminar of Teletraffic Theory and Computer Modeling* **2**, Moscow, Russia, (1989), 1-9. (In Russian).
4. Log-linear analysis of data from Parliamentary Elections'91 and Presidential Elections'92 in Bulgaria using the program AUTOFREQ. In: *Proc. Statistical Data Analysis*, Varna, Bulgaria, (1992), 38-52.
5. Statistical methods for contingency tables analysis of data from behavioral sciences - an overview. In: *Proc. SMABS'94 European Meeting*, Varna, Bulgaria, (1994), 102-128.
6. A program AUTOFREQ for automatic log-linear model selection in contingency tables (Release: 2.0). In: *Proc. Computational Statistics Software Descriptions, COMPSTAT'94* (Eds. R. Dutter and W. Grossman), Wien, Austria, (1994), 51-52.

7. Modified power series distribution as a model for the analysis of cross-classified data, (with D. Ugarte). In: *Proc. Statistical Data Analysis*, Varna, Bulgaria, (1995), 41-50.
8. Generalized negative binomial parameterization and corresponding  $C(\alpha)$  statistics in a one-way layout of data, (with D. Ugarte). In: *Proc. COMPSTAT'96*, (Eds. A. Prat and E. Ripoll), Barcelona, Spain, (1996), 129-130.
9. Correlated INAR(1) process, (with D. Paiva). In: *Proc. of Contributed Papers, COMPSTAT'2000*, (Eds. J. Bethlehem and P. van der Heijden), Utrecht, the Netherlands, (2000), 337-342.
10. Maintenance characteristics under imperfect repairs, (with W. Borges, B. Dimitrov and Z. Khalil). In: *Proc. 2nd International Conference Mathematical Methods in Reliability*, Bordeaux, France, (2000), 338-341.
11. On optimum maintenance strategies under imperfect repairs, (with W. Borges, B. Dimitrov and Z. Khalil). In: *Proc. 2nd International Conference Mathematical Methods in Reliability*, Bordeaux, France, (2000), 342-345.
12. Correlation between dependent risks and associated overdispersed models, (with D. Paiva). In: *Annals of the 46th RBRAS and 9th SEAGRO*, Piracicaba, Brazil, (2001), 459-462, (In Portuguese).
13. Extended DAR(1) processes, (with D. Paiva). In: *Proc. 16th International Workshop on Statistical Modelling*, (Eds. B. Klein and L. Korsholm), Odense, Denmark, (2001), 487-490.
14. Volodya, I miss you (two correlated collective risk models). In: *Proc. Applied Stochastic Models and Information Processes*, Petrozavodsk, Russia, (2002), 94-97.
15. Generation of binary random vectors, (with F. Ferreira). In: *Proc. First Brazilian Conference on Statistical Modelling in Insurance and Finance*, (Eds. J. Dhaene, N. Kolev and P. Morettin), Ubatuba, Brazil, (2003), 114-117.
16. Multinomial model for random sums and actuarial applications, (with D. Paiva). In: *Proc. First Brazilian Conference on Statistical Modelling in Insurance and Finance*, (Eds. J. Dhaene, N. Kolev and P. Morettin), Ubatuba, Brazil, (2003), 268-271.
17. Copulas with given multivariate marginals, (with U. Anjos). In: *Proc. 3rd Conference in Actuarial Science and Finance*, Samos, Greece, (2004), 55-62.
18. Bounds for distortion functions of dependent risks via copulas, (with M. Goncalves and A. Fabris). In: *Proc. Second Brazilian Conference on Statistical Modelling in Insurance and Finance*, (Eds. N. Kolev and P. Morettin), Maresias, Brazil, (2005), 122-127.
19. Random sums of partially exchangeable variables, (with D. Paiva and M. Fernandez). In: *Proc. Second Brazilian Conference on Statistical Modelling in Insurance and Finance*, (Eds. N. Kolev and P. Morettin), Maresias, Brazil, (2005), 306-309.
20. A unified approach to testing hypotheses about parameters of normal population, (with D. Paiva). In: *Proc. ICOTS7*, (Ed. P. Neil), Salvador, Brazil, (2006), 171-175.
21. Bivariate density approximation under marginal and conditional information, (with M. Fernandez) In: *Proc. Third Brazilian Conference on Statistical Modelling in Insurance and Finance*, (Eds. C. Fernandes, H. Schmidli and N. Kolev), Maresias, Brazil, (2007), 322-325.
22. Some probabilistic properties of Sibuya's dependence fiction, (with M. Goncalves). In: *Proc. Third Brazilian Conference on Statistical Modelling in Insurance and Finance*, (Eds. C. Fernandes, H. Schmidli and N. Kolev), Maresias, Brazil, (2007), 336-339.
23. A general representation of multivariate distribution with applications. (with D. Paiva and J. Lopez-Mimbela). In: *Proc. Third Brazilian Conference on Statistical Modelling in*

*Insurance and Finance*, (Eds. C. Fernandes, H. Schmidli and N. Kolev), Maresias, Brazil, (2007), 352-355.

24. Copula regression models: an insurance application (with D. Paiva). In: *Proceedings of the Fourth Brazilian Conference on Statistical Modelling in Insurance and Finance*, Maresias, Brazil, (2009), 308-313.

25. A new notion of bivariate lack of memory property (with J. Pinto). In: *Proceedings of 16th ASMDA Conference*, (Ed. C. Skiadis), Athens, Greece, (2015), 417-423.

26. Probability models generated via line integral and joint life insurance application. In: *Proceedings of CNMAC2023 Conference* **10**, (Ed. C. Fernandes), Bonito, Brazil, (2023), 357-365.

### **Selected Conference Abstracts:**

1. An approach for modeling in the presence of overdispersion, (with D. Ugarte). In: *Proc. 9th European Meeting of the Psychometric Society*, Leiden, (1995), p. 124; and In: *Proc. 10th International Workshop on Statistical Modeling*, Innsbruck, Austria, (1995), 23-24.

2. Some hierarchical models to explain overdispersion in contingency tables, (with D. Ugarte and A. Militino). In: *Proc. 22do Congresso Nacional de Estadística e I.O.*, Sevilla, Spain, (1995), 265-266.

3. Extended partially correlated binomial and Poisson distributions, (with L. Minkova). In: *Proc. 13th International SINAPE Conference*, Caxambu, Brazil, (1998), 217-218.

4. A generalization of the INAR(1) process. In: *Proc. 8th ESTE*, Nova Friburgo, Brazil, (1999), p. 145.

5. Negative binomial cross-classifications. In: *Proc. 44th REBASO*, Botucatu, Brazil, (1999), p. 164.

6. An extension of INAR(1) process, (with D. Paiva). In: *Proc. 14th SINAPE*, vol. **1**, Caxambu, Brazil, (2000), 264-265.

7. Correlation between dependent risks, (with D. Paiva). In: *Proc. 14th SINAPE*, vol. **2**, Caxambu, Brazil, (2000), 389-390.

8. Extensions of DAR(1) process, (with D. Paiva). In: *Proc. 9th ESTE*, Belo Horizonte, Brazil, (2001), p. 103.

9. Modelo multinomial latente para somas aleatórias, (with D. Paiva). In: *Proc. 15th SINAPE*, vol. **2**, Águas de Lindóia, Brazil, (2002), p. 261.

10. Multinomial latent model for random sums, (with D. Paiva). In: *Proc. 2nd Conference in Actuarial Science and Finance*, Samos, Greece, (2002), 10-11.

11. Bounds for quantile-based measures of dependent risk functions, (with M. Goncalves). In: *Proc. 9th International Vinius Conference on Probability Theory and Mathematical Statistics*, Vilnius, Litva, (2006), p. 187.

12. Bounds for quantile-based measures of dependent risks' functions, (with M. Goncalves and A. Fabris). In: *Proc. 10th International Congress on Insurance: Mathematics and Economics*, Leuven, Belgium, (2006), 60-61.

13. Bivariate density classification by the geometry of marginals, (with M. Fernandez). In: *Proc. 10th International Congress on Insurance: Mathematics and Economics*, Leuven, Belgium, (2006), 73-74.

14. Copula-based regression models. In: *Proc. 6th Conference on Multivariate Distributions with Fixed Marginals*, Tartu, Estonia, (2007), p. 42.

15. Sibuya's function, (with M. Goncalves and B. Dimitrov). In: *Proc. 11th International Congress on Insurance: Mathematics and Economics*, Piareus, Greece, (2007), p. 5.
16. A new measure of bivariate asymmetry. In: *Proc. 1st Workshop in Stochastic Modeling*, Ribeirao Preto, (2008), p. 11.
17. On the IFR aging of bivariate lifetime distributions under binary associative operation, (with J. Pinto). In: *Proc. International Conference "Probability Theory and its Applications"*, Moscow, Russia, (2012), 284-285.
18. Marshall-Olkin model with singularity along the arbitrary line (with J. Pinto and H. Brango). In: *Proc. 4th Workshop of Survival Analysis*, Belo Horizonte, Brazil, (2015), p. 27.

### **Technical Reports (Department of Statistics, IME-USP):**

1. Over- and underdispersed models for ruin probabilities, (with L. Minkova). RT-MAE 9812, June, Sao Paulo, (1998), 34p.
2. Negative binomial cross-classifications. RT-MAE 9813, June, Sao Paulo, (1998), 16p.
3. Two characterizations of the geometric distribution related to an unreliable  $Geo/G_D/1$  queuing system, (with V. Bakeva and M. Georgieva). RT-MAE 9814, July, Sao Paulo, (1998), 11p.
4. Some basic inflated-parameter discrete distributions, (with L. Minkova). RT-MAE 9815, June, Sao Paulo, (1998), 19p.
5. New over-/uner- dispersed class of inflated-parameter discrete probability distributions, (with L. Minkova). RT-MAE 9819, July, Sao Paulo, (1998), 10p.
6. Inflated-parameter family of generalized power series distributions, (with L. Minkova). RT-MAE 9820, July, Sao Paulo, (1998), 11p.
7. The optimal blocking time of the unreliable  $Geo/G_D/1$  queueing system, (with V. Bakeva). RT-MAE 9904, February, Sao Paulo, (1999), 12p.
8. Run and frequency quotas in a multi-state Markov chain, (with L. Minkova). RT-MAE 9905, February, Sao Paulo, (1999), 14p.
9. Quotas on runs of successes and failures in a multi-state Markov chain, (with L. Minkova). RT-MAE 9906, March, Sao Paulo, (1999), 11p.
10. Run and frequency quotas under Markovian fashion and their application in risk analysis. RT-MAE 9919, July, Sao Paulo, (1999), 15p.
11. Two characterizations of the geometric distribution related to  $\beta$ -transformation. RT-MAE 9920, July, Sao Paulo, (1999), 11p.
12. Correlated INAR(1) process. RT-MAE 9921, July, Sao Paulo, (1999), 12p.
13. Two extended partially correlated models. RT-MAE 9922, August, Sao Paulo, (1999), 13p.
14. System's performance under mixed minimal and imperfect repair maintenance strategies, (with W. Borges, B. Dimitrov and Z. Khalil). RT-MAE 2000-6, Sao Paulo, (2000), 17p.
15. The number of empty cells in an allocation scheme generated by a zero-inflated distribution: Exact results and Poisson convergence, (with L. Mutafchiev). RT-MAE 2001-13, Sao Paulo, (2001), 11p.
16. Multinomial latent model for random sums, (with D. Paiva). RT-MAE 2002-08, Sao Paulo, (2002), 9p.
17. Volodya, I miss you (two correlated collective risk models). RT-MAE 2002-15, Sao Paulo, (2002), 20p.

18. Copula associated to order statistics, (with U. Anjos and N. Tanaka). RT-MAE 2004-16, Sao Paulo, (2004), 12p.
19. Copulas with given nonoverlapping multivariate marginals, (with U. Anjos). RT-MAE 2005-02, Sao Paulo, (2005), 9p.
20. Representation of bivariate copulas via local measure of dependence, (with U. Anjos). RT-MAE 2005-03, Sao Paulo, (2005), 15p.
21. Copulas: a review and recent developments, (with U. Anjos and B. Mendes). RT-MAE 2005-07, Sao Paulo, (2005), 46p.
22. Bounds for quantile-based measures of dependent risks' functions, (with M. Goncalves and A. Fabris). RT-MAE 2007-02, Sao Paulo, (2007), 16p.
23. Occupation measure of Markov-modulated risk processes, (with J. Lopez-Mimbela), RT-MAE 2007-03, Sao Paulo, (2007), 12p.
24. Bounds for distortion measures of dependent risks, (with M. Goncalves and A. Fabris). RT-MAE 2007-04, Sao Paulo, (2007), 11p.
25. Copula-based regression models, (with D. Paiva). RT-MAE 2007-07, Sao Paulo, (2007), 28p.
26. Probabilistic properties of Sibuya's dependence function, (with M. Goncalves and B. Dimitrov). RT-MAE 2008-18, Sao Paulo, (2008), 16p.
27. Extended Marshall-Olkin model and applications, (with J. Pinto). RT-MAE 2012-06, Sao Paulo, (2012), 13p.
28. Continuous bivariate distributions with linear sum of hazard gradient components, (with J. Pinto). RT-MAE 2013-05, Sao Paulo, (2013), 37p.

### **Selected Papers Published in Refereed Mathematical Journals and Conference Proceedings (in Bulgarian):**

1. Application of queueing theory in the motor transport. *Motor Transport*, (1981), 81-90.
2. Parameter estimation of probit and logit models, (with S. Yanev, P. Neytchev and N. Neykov). In: *Proc. 4th Pharmacology Congress*, Plovdiv, (1984), 28-37.
3. Analysis of "dose-response" data applied to quality control, (with P. Neytchev and N. Neykov). In: *Proc. Mathematical Methods in Quality Control*, Smolian, (1984), 25-29.
4. Methods for contingency tables analysis. *Mathematics and Education in Mathematics* **14**, (1985), 442-447.
5. Program system for modelling and parametric identification of biotechnological processes, (with N. Neykov, I. Simeonov and T. Iliev). In: *Proc. 2nd International Seminar of Biotechnological Processes*, Varna, (1985), 38-47.
6. A generalization of the geometric distribution of order K. *Mathematics and Education in Mathematics* **15**, (1986), 417-421.
7. An optimization problem when the server is unreliable and breakdowns are implicit. *Mathematics and Education in Mathematics* **16**, (1987), 447-481.
8. Analysis of contingency tables having ordered categories and applications in quality control. *Statistical Methods in Quality Control*, (1988), 20-25.
9. Traffic profiles of satellite systems, (with P. Todorov and P. Neytchev). In: *Proc. TELECOM'95*, Varna, (1995), 154-160.

**Working Papers:**

1. Two general bivariate frailty models (with S. Mulinacci).
2. Bivariate models generated by multiplicative form of the sum of hazard gradient components, (with Y. Verges).
3. Non-exchangeability and radial asymmetry identification via bivariate quantiles, (with F. Ferreira).

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