Nikolay M. YANEV-CV-Selected Publications-2025

Affiliation and official address
Professor Emeritus, Department of Operations Research, Probability and Statistics; Institute of Mathematics and Informatics; Bulgarian Academy of Sciences, 8, G.Bonchev Str., 1113 Sofia, Bulgaria, E. mail: yanev@math.bas.bg

Personal information
Birthday - 30.XI.1943; Birth-place - town of Burgas, Bulgaria; Home place - town of Pomorie, Bulgaria: High school - 1961; Navy - 1961-1964 (obligatory after the school) - helmsman of the flagship. Diploma for captain up to 100 gross register tons.

Education
B.S. 1964-1967, Faculty of Mathematics and Informatics, University of Sofia, Bulgaria;
M.S. 1967-1969, Faculty of Mathematics and Informatics, University of Sofia, Bulgaria;
Ph.D. in Probability and Statistics, 1972-1975, Moscow State University, Russia; Supervisor - B.A.Sevastyanov, Chair of the jury - A.N.Kolmogorov.
Doctor of Mathematical Sciences (Second degree after PhD), 1985, Bulgarian Academy of Sciences and University of Sofia, Bulgaria.

Languages: Bulgarian, English, French, Russian.

Specialization
Main field: Probability, Statistics, Stochastic Processes and Applications.
Special fields:

- Branching Stochastic Processes: Controlled Branching Processes, Age-Dependent Models, State-Dependent Immigration, Processes with Random Migration, Multitype Processes, Poisson Random Measures and Branching Processes, Large Number of Ancestors, Probability of Extinction, Limit theorems;
- Statistical Inference for Branching Processes; Simulation and Estimation of Branching Processes;
- Branching Processes as Mathematical Models in Cell and Molecular Biology, Cancer Research and Radiobiology.
- Sums of Random Number of Random Variables and Applications;
- Renewal Theory and Regenerative Processes.

Publications
- Papers in refereed journals: 151 (See the List of Publications).
- Books: 7
- Communications to scientific meetings: over 60.
- Invited Talks: over 30.
- Citations: over 500 (among them 16 monographs).

Career/Employment
(1) *Academic Positions:* Department of Probability and Statistics at the Institute of Mathematics and Informatics of the Bulgarian Academy of Sciences:

1969-1972 - Research Fellow; 1972-1975 - PhD Student in Moscow State University, Russia; 1975-1978 - Research Fellow; 1978-1988 - S. Research Fellow;

1988-1991 - Associate Professor; 1991-2012 - Professor; 2012-2015 - Professor, Associate member; 2015 - Professor Emeritus.

1993-2000 - Director of the Institute of Mathematics and Informatics;

2000-2010 - Chair of the Department of Probability and Statistics.

(2) *Basic Teaching Activities:*

(i) Faculty of Mathematics and Informatics, University "St. Kl. Ohridski", Sofia - (from 1976):

- Introductory Course in Probability and Statistics;
- Special Courses in Probability and Statistics;
- Random Walk and Renewal Theory;
- Branching Stochastic Processes;
- Introductory Course in Stochastic Processes;
- Probability, Statistics and Stochastic Processes.

(ii) Université du Quebec à Montreal – 1989-1990 – Probabilité et Statistique; Statistique appliquée.

(iii) Université de Versailles – 1998-2000 – Statistique appliquée; Probabilités et Statistique.

(iv) University of Rochester – 2005 – Stochastic Processes for PhD students.

(3) *Supervision* - 15 M.S. students and 8 Ph. D. students.

Visiting Professor

(1) *Up to one month (for research and lectures):*

Athens, Berlin, Bordeaux, Bucharest, Budapest, Goteborg, Los Angeles, Minneapolis, Moscow, New York, Oberwolfach, Paris, Prague, Sanct Petersburg, Tampa, Thessaloniki, Vienna, Warsaw.

(2) *Université du Quebec à Montreal, Canada* (for teaching in French and research):

December 1989- June 1990, April - June 1991, May - June 1992.

(3) *Oregon State University, Corvallis, USA*: October 1994 - January 1995 (research).

(4) *Université de Versailles, France* (for teaching in French and research): February-July 1998; January -July 1999; December 1999- July 2000.

(5) *University of New South Wales, Sydney, Australia*: November-December, 2001.

(6) *University of Extremadura, Badajoz, Spain*: November 2002 – May 2003.

(7) *University of Rochester (State New York, USA)*: January-July 2005; January-July 2007; January-June 2008; May-June 2009.

Fellowships and Membership of Professional Societies:

International Statistical Institute and Bernoulli Society: From 1993 - Elected member.

Bulgarian Statistical Society (member of the Committee; vise-president; president).

Editorial Boards: Mathematical Modelling - Biology Direct; Serdica Mathematical Journal; Pliska Mathematical Journal.

Organizer: Chair of OC of the First Word Congress of Branching Processes, Varna, Bulgaria, 1993; Chair of OC of 10 International Conferences on Probability and Statistics, Bulgaria (1995-2015).

Special awards

Honorary citizen of Pomorie, Bulgaria (2011).
Doctor Honoris Causa of University of Extremadura, Spain (2019).
Doctor Honoris Causa of Sofia University "St. Kliment Ohridski" (2021).

Hobby: Windsurfing. Captain Nick is well known as "the best windsurfer among the mathematicians and the best mathematician among the windsurfers". Proof: Third place on the World Championship on Windsurfing 2004 for Veterans, where the first two persons were not mathematicians.

Nikolay M. YANEV. Selected List of Publications in International Journals and Proceedings.

1. Conditions of extinction of φ-branching processes with random φ. **Theor. Probab. Appl.** XX, 2 (1975), 433-440.

2. On the statistics of branching processes. **Theor. Probab. Appl.** XX, 3 (1975), 623-633.

3. Dynamics of induced cell proliferation systems within a framework of a branching process model: 1. Numbers of cells in successive generations. **CYTOLOGY**, 22 (1980), 945-953. (CA: A. Yakovlev; In Russian)

4. The life-periods of critical branching processes with random migration. **Theor. Probab. Appl.** XXVIII, 3 (1983), 458-467. (CA: K.V. Mitov)

5. Dynamics of induced cell proliferation systems within a framework of a branching process model: 2. Some characteristics of the cell cycle temporal organization. **CYTOLOGY,** 25, 1983, 818-826. (CA: A. Yakovlev, in Russian).

6. Critical Galton-Watson processes with decreasing state-dependent immigration. **J. Appl. Probab.** 21 (1984), 22-39. (CA: K.V. Mitov).

7. Continuous-time branching processes with decreasing state-dependent immigration. **Adv. Appl. Probab.** 16 (1984), 697-714. (CA: V.A. Vatutin, K.V. Mitov)

8. Bellman-Harris branching processes with state-dependent immigration. **J. Appl. Probab.** 22 (1985), 757-765. (CA: K.V. Mitov)

9. On the distribution of marks over a proliferating cell population obeying the Bellman-Harris branching process. **Mathematical Biosciences** 5 (1985), 159-173. (CA: A. Yakovlev).

10. Critical branching processes with nonhomogeneous migration. **Annals of Probability** 13 (1985), 923-933. (CA: K. Mitov).

11. Bellman-Harris branching processes and distribution of marks in proliferating cell populations. **Proceedings of the I-st Word Congress of the Bernoulli Society**, v. 2, 1987, 725-728. (CA: A.Yakovlev, M.S.Tanoushev)

12. Non-parametric statistical inference for Galton-Watson branching processes. **Proceedings of 6th European Y.S. Meeting**, Prague, Charles University, 1989, 269-276. (CA: I.Tzankova)

13. Bellman-Harris branching processes with a special type of state-dependent immigration. **Adv. Appl. Probab.** 21 (1989), 270-283. (CA: K.V.Mitov).

14. Multitype Critical Galton-Watson Branching Processes with Final Types. **Discrete Mathematics**, v.1, no.4, 1989, 113-122. (CA: V.Vatutin)

15. Limit Theorems for Sums of a Random Number of Random Variables and Applications in Branching Processes. In: **Selected Talks on Stochastic Processes**. Aristotle University, Thessaloniki, 1990, 1-28. (CA: J.-P. Dion)

16. Statistical Inference for Branching Processes with an Increasing Random Number of Ancestors. **J. Statistical Planning and Inference**, 39, 1994, 329-352 (CA: J.P.-Dion)

17. Age-dependent branching processes with state-dependent immigration. In: C.C. Heyde (Editor), Branching Processes, Proceedings of the First World Congress. **Lecture Notes in Statistics**, 99. Springer-Verlag, New York, 1995, 77-89. (CA: M. Slavtchova-Bojkova).

18. Critical branching processes with random migration. In: C.C. Heyde (Editor), Branching Processes (Proceedings of the First World Congress). **Lecture Notes in Statistics**, 99, Springer-Verlag, New York, 1995, 36-46. (CA: G.P. Yanev)

19. Central limit theorem for martingales in BGWR branching processes with some statistical applications. **Math. Methods of Statistics**, V. 4, No.3, 1995, 344-358. (CA: J.P.-Dion)

20. Branching Processes with two types of emigration and state-dependent immigration. In: **Lecture Notes in Statistics** 114, Springer-Verlag, New York, 1996, 216-228. (CA: G.P.Yanev)

21. Limit theorems for branching processes with random migration stopped at zero. In: K. Athreya and P. Jagers (Editors). Classical and Modern Branching Processes. **The IMA volumes in Mathematics and its Applications**, v.84, Springer, New York, 1997, 323-336. (CA: G.P.Yanev).

22. Limit theorems and estimation theory for branching processes with an increasing random number of ancestors. **J. Appl. Probab**. 34, 309 -327 (1997). (CA:J.-P. Dion).

23. Branching Processes with Random Migration as Mathematical Models of Population Dynamics. **Bulletin of the ISI, 51 Session, Invited Papers Meetings**, Tome LVII, Book 1, 177-180 (1997).

24. Extremal problems on probability distributions. **Mathematical and Computer Modelling**, 32, (2000), 877-886 (CA: E. Galperin).

25. One dimensional analogue of the global optimality criterion. **Nonlinear Analysis - Theory, Methods and Applications**, Series A: Theory and Methods. 44, (2001), 759-766. (CA: E. Galperin).

26. Regenerative processes in the infinite mean cycle case. **J. Appl. Probab.**, 38, (2001), 65-179. (CA:K.V.Mitov)

27. Limit theorems for alternating renewal processes in the infinite mean case. **Advances in Appl. Probab.** 33, (2001), 896-911. (CA: K.V.Mitov)

28. Critical Bellman-Harris branching processes with infinite variance allowing state-dependent immigration. **Stochastic Models**, 18 (2), 281-300 (2002). (CA: K.V.Mitov)

29. Critical Branching Regenerative Processes with Migration. **J. Appl. Stat. Sciences**, v.12, No. 1, 41-54, 2003. (CA: G.P.Yanev, K.V.Mitov)

30. A Critical Branching Process with Stationary-Limiting Distribution. **Stochastic Analysis and Appl.**, v.22, no.3, 2004, 721-738. (CA: G.P.Yanev)

31. Renewal, Regenerative, and Branching Processes with Stable Distributions. **Journal of Mathematical Sciences**, August 2004, vol. 122, no. 4, pp. 3438-3448(11), Kluwer Academic Publishers. (CA: Mitov K.V.; Yanev G.P.).

32. Superpositions of renewal processes with heavy-tailed interarrival times. **Statistics & Probability Letters**, 2006, v. 76, no.6, 555-561. (CA: K. Mitov)

33. Analysis of a Recurrence Related to Critical Nonhomogeneous Branching Processes. **Stochastic Analysis and Applications**, 2006, v. 24, no. 1, 37-59. (CA: Michael Drmota, Guy Louchard).

34. Branching stochastic processes with immigration in analysis of renewing cell populations. **Mathematical Biosciences** 203, 2006, 37-63. (CA: A. Yu. Yakovlev)

35. Age and residual lifetime distributions for branching processes. **Statistics and Probability Letters** 77, 2007, 503-513. (CA: A. Yu. Yakovlev)

36. Stationary distributions for branching processes with multi-type random control functions. **J. Appl. Stat. Sci**., 2008, v. 16, No.1, 91-102. (CA: I.M. Del Puerto)

37. Branching processes as models of progenitor cell populations and estimation of the offspring distributions. **JASA (J. Amer. Stat. Assoc.)**, 2008, v. 103, no. 484, 1357-1366. (CA: A. Yu. Yakovlev, V. K. Stoimenova)

38. Relative frequencies in multitype branching processes. **Annals Appl. Probab.**, 2009, v.19, No.1, 1-14. (CA: A. Yu. Yakovlev)

39. Critical randomly indexed branching processes. **Statistics and Probability Letters**, 2009, v.79, 1512-1521. (CA: G.K.Mitov, K.V.Mitov)

40. Limiting distributions in multitype branching processes. **Stochastic Analysis and Applications**, 2010, v.28, 1040-1060. (CA: A. Yu. Yakovlev)

41. Branching Processes in Cell Proliferation Kinetics. In: M. G. Velasko et al. (Eds.), **Lecture Notes in Statistics** 197, 2010, 159-179.

42. Limit Theorems for Critical Randomly Indexed Branching Processes. In: M. G. Velasko et al. (Eds.), **Lecture Notes in Statistics** 197, 2010, 95-109. (CA: K. V. Mitov, G. K. Mitov)

43. Asymptotic behaviour of cell populations described by two-type reducible age-dependent branching processes with non-homogeneous immigration, **Mathematical Population Studies**, 19:164-176, 2012. (CA: O. Hyrien)

44. Sevastyanov branching processes with non-homogeneous Poisson immigration. **Proceedings of the Steklov Institute of Mathematics**, 2013, Vol.282, pp. 172-185. (K.V. Mitov)

45. CLT for Sevastyanov branching processes with non-homogeneous Poisson Immigration. **J. Appl. Stat. Sciences**, Volume 21, Number 3, 2013, pp. 229–237. (CA: Ollivier Hyrien, Kosto V. Mitov)

46. Stochastic modeling of stress erythropoiesis using a two-type age-dependent branching process with immigration. **J. Math. Biology** (2015) 70:1485–1521. (CA: O. Hyrien • S. A. Peslak • J. Palis)

47. A test of homogeneity for age-dependent branching processes with immigration. **Electronic Journal of Statistics**. Vol. 9 (2015) 898–925.(CA: Ollivier Hyrien, Craig T. Jordan)

48. Supercritical Sevastyanov branching processes with non-homogeneous Poisson immigration. In: I.M. del Puerto et al. (eds.), Branching Processes and Their Applications, **Lecture Notes in Statistics** 219, Springer 2016, 151-166. (CA: O. Hyrien, K. V. Mitov)

49. Subcritical Sevastyanov Branching Processes with Non-Homogeneous Poisson Immigration. **J. Appl. Probability**, 54, 2, 569-587, 2017. (CA: Ollivier Hyrien, Kosto V. Mitov)

50. Multitype branching processes with inhomogeneous Poisson immigration. **Adv.App.Probability**, Vol. 50, Issue A (Branching and Applied Probability), 2018 , 211-228. (CA: Ollivier Hyrien, Kosto V. Mitov)

51. Poisson random measures and critical Sevastyanov branching processes. **Stochastic Models,** 35, 2,197-208, 2019. (CA:Maroussia Slavtchova-Bojkova)

52. Age-Dependent Branching Processes with Non-Homogeneous Poisson Immigration as Models of Cell Kinetics. In: A. Almudevar et al. (eds.), Statistical Modeling for Biological Systems, © **Springer Nature** Switzerland AG 2020, 21-46. (CA: O. Hyrien).

53. Stochastic Models of Cell Proliferation Kinetics Applying Branching Processes. In: A. Almudevar et al. (eds.), Statistical Modeling for Biological Systems, © **Springer Nature** Switzerland AG 2020, 3-20.

54. Controlled branching processes with continuous time. **J. Appl. Probab.** 58, 2021.830-848. (CA: Miguel Gonzalez, Manuel Molina, Ines M. del Puerto, George P. Yanev)

55. Branching Process Modelling of COVID-19 Pandemic Including Immunity and Vaccination. **Stochastics and Quality Control**, De Gruyter, 2021, ISSN: 2367-2404, DOI:https://doi.org/10.1515/eqc-2021-0040 (CA: Dimitar Atanasov, Vessela Stoimenova)

56. Statistical modelling of COVID-19 pandemic development applying branching processes. **Journal of Applied Statistics**, Taylor and Francis Online, 2021, DOI:https://doi.org/10.1080/02664763.2021.2006154 (Dimitar Atanasov, Vessela Stoimenova)

57. Poisson random measures and supercritical multitype Markov branching processes. **Stochastic Models**, 39, 1, 141-160 (2023), (M. Slavtchova-Bojkova, O. Hyrien) https://doi.org/10.1080/15326349.2021.201644

58. Subcritical multitype Markov branching processes with immigration generated by Poisson random measures. **Communications in Statistics - Theory and Methods.** Volume 53, 2024, Issue 14, Pages 5076-5091. Received 27 June 2022, Accepted 07 Apr 2023, Published online: 04 May 2023. https://doi.org/10.1080/03610926.2023.2205972 (M. Slavtchova-Bojkova, O. Hyrien)

59. A branching stochastic evolutionary model of the B-cell repertoire. **Journal of Mathematical Biology** (2024) 89:10.
https://doi.org/10.1007/s00285-024-02102-y . (CA: O. Hyrien).

60. Critical Markov branching process with infinite variance allowing Poisson immigration with increasing intensity. **Stochastic Analysis and Applications,** 2024, Vol. 42, Issue 4, 828-841. (CA: K.V.Mitov).

61. On a class of critical Markov branching process with non-homogeneous Poisson immigration. **Stochastic Models**, 2025, 41(4), 610-623. (CA: K.V.Mitov)

Nikolay M. YANEV. *BOOKS and Chapters.*

1. **Transient Processes in Cell Proliferation Kinetics**. *Lecture Notes in Biomathematics*, v. 82, Springer, New York, 1989. (CA: A.Yakovlev)

2. **Exercise Manual in Mathematical Statistic**s. *Sofia University Press*, Sofia, 1989. (CA: M.S.Tanoushev; in Bulgarian)

3. **Probability and Statistics**. *Sofia University Press*, Sofia, 1990. Second edition 1998. Third edition 2007. (CA: B.Dimitrov; in Bulgarian)

4. **Branching Stochastic Processes**. *University Publ. "St. Kl.Ohridski"*, Sofia, 2007. (CA: M. Slavtchova-Bojkova; in Bulgarian)

5. **Regenerative Branching Processes**, Ch.3 (37-62) in: Records and Branching processes, Ed. M.Ahsanullah, G.P.Yanev, *Nova Science Publishers, Inc.*, New York, 2008. (CA: K.V.Mitov)

6. **Statistical Inference for Branching Processes**, Ch.7 (143-168) in: Records and Branching processes, Ed. M.Ahsanullah, G.P.Yanev, *Nova Science Publishers, Inc.*., New York, 2008.

7. **Branching Processes with Multi-Type Random Control Functions: Subcritical Case**, Ch. 11 (363-374) in: Leading-Edge Applied Mathematical Modeling Research. Editor: M.P.Alvarez, *Nova Science Publishers, Inc.*, New York, 2008. (CA: I.M. Del Puerto)