

# Publikationsverzeichnis

## Zitationskennzahlen

Google Scholar citations: 169, h-index: 7, i10-index: 6 (Stand 28.06.2019)

Bemerkung: SCOPUS, MathSciNet, Zentralblatt berücksichtigen nicht Publikationen auf Russisch.

## Fünf wichtigste Publikationen

1. Ya. A. Butko. Chernoff approximation for semigroups generated by killed Feller processes and Feynman formulae for time-fractional Fokker-Planck-Kolmogorov equations. *Fract. Calc. Appl. Anal.* **21** N 5 (2018), 35 pp.
2. Ya.A. Butko. Chernoff approximation of subordinate semigroups. *Stoch. Dyn.*, **18** N3 (2018), 1850021, 19 pp., DOI: 10.1142/S0219493718500211.
3. Ya.A. Butko, M. Grothaus and O.G. Smolyanov. Feynman formulae and phase space Feynman path integrals for tau-quantization of some Lévy-Khintchine type Hamilton functions, *J. Math. Phys.*, **57**, 023508 (2016), 23 p. DOI: 10.1063/1.4940697.
4. K. Bogdan, Ya.A. Butko, K. Szczypkowski. Majorization, 4G Theorem and Schrödinger perturbations, *J. Evol. Equ.*, **16** (2016), 241-260. DOI:10.1007/s00028-015-0301-7.
5. Ya.A. Butko, R.L. Schilling and O.G. Smolyanov. Lagrangian and Hamiltonian Feynman formulae for some Feller semigroups and their perturbations, *Inf. Dim. Anal. Quant. Probab. Rel. Top.*, **15** N 3 (2012), 26 p. DOI: 10.1142/S0219025712500154.

## Handbuch

Ya. A. Butko. Elemente von Funktionalanalysis und Methoden Mathematischer Physik. Teil I. Auf Russisch, 2011, 66 Seiten, Verlag: Bauman Moskauer Staatliche Technische Universität.

## Habilitationschrift

Ya. A. Kinderknecht (Butko). Chernoff approximation of evolution semigroups generated by Markov processes. Feynman formulae and path integrals, 2018, xi+168 Seiten.

## Promotionsschrift

1. Ya.A. Butko. Representations of solutions of initial-boundary value problems for evolutionary equations by functional integrals (in Russian), PhD thesis, Department of Mechanics and Mathematics, Lomonosov Moscow State University, Moscow, 2005, 81 p.
2. Ya.A. Butko. Representations of solutions of initial-boundary value problems for evolutionary equations by functional integrals. Abstract of the PhD Thesis (in Russian), Department of Mechanics and Mathematics, Lomonosov Moscow State University, Moscow, 2006, 19 p.

## Publikationen in peer-reviewed Journalen auf Englisch

1. Ya.A. Butko. Chernoff approximation for semigroups generated by killed Feller processes and Feynman formulae for time-fractional Fokker-Planck-Kolmogorov equations. *Fract. Calc. Appl. Anal.* **21** N 5 (2018), 35 pp.
2. Ya.A. Butko. Chernoff approximation of subordinate semigroups. *Stoch. Dyn.*, **18** N3 (2018), 1850021, 19 pp., DOI: 10.1142/S0219493718500211.
3. Ya.A. Butko, M. Grothaus and O.G. Smolyanov. Feynman formulae and phase space Feynman path integrals for tau-quantization of some Lévy-Khintchine type Hamilton functions. *J. Math. Phys.*, **57**, 023508 (2016), 23 p. DOI: 10.1063/1.4940697.
4. K. Bogdan, Ya.A. Butko, K. Szczypkowski. Majorization, 4G Theorem and Schrödinger perturbations, *J. Evol. Equ.*, **16** (2016), 241-260. DOI:10.1007/s00028-015-0301-7.
5. Ya.A. Butko. On fundamental solutions, transition probabilities and fractional derivatives. *Electronic scientific and technical periodical "Science and education" of the Bauman MSTU*, N1 (2015), 42-52. DOI: 10.7463/0115.0754986.
6. Ya.A. Butko, R.L. Schilling and O.G. Smolyanov. Lagrangian and Hamiltonian Feynman formulae for some Feller semigroups and their perturbations, *Inf. Dim. Anal. Quant. Probab. Rel. Top.*, **15** N 3 (2012), 26 p. DOI: 10.1142/S0219025712500154.
7. B. Böttcher, Ya.A. Butko, R.L. Schilling and O.G. Smolyanov. Feynman formulae and path integrals for some evolutionary semigroups related to tau-quantization, *Rus. J. Math. Phys.*, **18** N 4 (2011), 387-399. DOI: 10.1134/S1061920811040017.
8. Ya.A. Butko, R.L. Schilling and O.G. Smolyanov. Hamiltonian Feynman-Kac and Feynman formulae for dynamics of particles with position-dependent mass, *Int. J. Theor. Phys.*, **50** (2011), 2009--2018. DOI: 10.1007/s10773-010-0538-4.
9. Ya.A. Butko, M. Grothaus and O.G. Smolyanov. Lagrangian Feynman formulae for second order parabolic equations in bounded and unbounded domains, *Inf. Dim. Anal. Quant. Probab. Rel. Top.*, **13** N3 (2010), 377-392. DOI: 10.1142/S0219025710004097.
10. Ya.A. Butko, R.L. Schilling and O.G. Smolyanov. Feynman formulae for Feller semigroups, *Dokl. Math.*, **82** N2 (2010), 697-683. Translated from: *Doklady Akademii Nauk*, **434** N1 (2010), 7-11. DOI: 10.1134/S1064562410050017.
11. Ya.A. Butko, M. Grothaus and O.G. Smolyanov. Feynman formula for a class of second order parabolic equations in a bounded domain, *Dokl. Math.*, **78** N1 (2008), 590-595. Translated from: *Doklady Akademii Nauk*, **421** N6 (2008), 727-732. DOI: 10.1134/S1064562408040327.
12. Ya.A. Butko, M. Grothaus and O.G. Smolyanov. Feynman formula for a diffusion of particles with a variable mass in a domain, *J. Phys. Conf. Ser.*, **128** (2008) 012050, 9 p. DOI: 10.1088/1742-6596/128/1/012050.
13. Ya.A. Butko. Feynman formulas and functional integrals for diffusion with drift in a domain on a manifold, *Math. Notes*, **83** N3 (2008), 301-316. Translated from: *Matematicheskie Zametki*, **83** N3 (2008), 333-349. DOI: 10.1134/S0001434608030024.
14. Ya.A. Butko. Function integrals corresponding to a solution of the Cauchy-Dirichlet problem for the heat equation in a domain of a Riemannian manifold, *J. Math. Sci.*, **151** N1 (2008), 2629-2638. Translated from: *Fundamentalnaya i Prikladnaya Matematika*, **12** N6 (2006), 3-15. DOI: 10.1007/s10948-008-0161-2.
15. Ya.A. Butko. Functional Integrals for the Schroedinger Equation on a Compact Riemannian manifold, *Math. Notes*, **79** N2 (2006), 178-184. Translated from: *Matematicheskie Zametki*, **79** N2 (2006), 194-200. DOI: 10.4213/mzm2690.

16. Ya.A. Butko. Representations of the solution of the Cauchy-Dirichlet problem for the heat equation in a domain of a compact Riemannian manifold by functional integrals, *Russ. J. Math. Phys.*, **11** N2 (2004), 1-9.

## Publikationen in peer-reviewed Journalen auf Russisch

17. Ya.A. Butko. Formuly Feynmana dlya evolyutsionnyh polugrupp [Feynman formulae for evolution semigroups]. *Electronic scientific and technical periodical "Science and education" of the Bauman MSTU*, **3** (2014), 95-132. DOI: 10.7463/0314.0701581.
18. Ya.A. Butko. Predstavleniya evolyutsionnyh polugrupp s pomoshiyu formul Feynmana i intergralov Feynmana po traektoriyam v fazovom prostranstve [Representation of evolution semigroups by Feynman formulae and phase space Feynman path integrals]. *Electronic scientific and technical periodical "Science and education" of the Bauman MSTU*, 77-30569/315838, **N 2** (2012), 34 p. <http://engineering-science.ru/doc/315838.html>.
19. M.S. Buzinov, Ya.A. Butko. Formuly Feynmana dlya parabolicheskogo uravneniya s bigarmonicheskim differentsialnym operatorom na konfiguratsionnom prostranstve [Feynman formulae for a parabolic equation with biharmonic differential operator on a configuration space], *Electronic scientific and technical periodical "Science and education" of the Bauman MSTU*, **N 8** (2012), 135-154. DOI: 10.7463/0812.0445534.
20. Ya.A. Butko, O.G. Smolyanov. Formuly Feynmana v stokhasticheskoy i kvantovoy dinamike [Feynman formulae in stochastic and quantum dynamics], *Sovremennye problemi matematiki i mehaniki (Scientific Periodical of the Department of Mechanics and Mathematics, Lomonosov Moscow State University)*, **6** N1 (2011), 61-75. <http://en.math.msu.su/node/370>.
21. Ya.A. Butko, A.V. Duryagin. Formuly Feynmana dlya semeystva parabolicheskikh uravneniy, sootvetstvuyushih tau-kvantovaniyu kvadrachnoy funkzii Gamiltona [Feynman formulae for a family of parabolic equations corresponding to the tau-quantization of a quadratic Hamilton function], *Electronic scientific and technical periodical "Science and education" of the Bauman MSTU*, 77-30569/251251, **N 11** (2011), 27 p. <http://engineering-science.ru/doc/251251.html>.
22. Ya.A. Butko, A.V. Morozov. Predstavlenie resheniya zadachi Koshi-Neymana dlya parabolicheskogo uravneniya na polupryamoy s pomoshiyu Lagranzhevoy formuly Feynmana [Representation of the solution of the Cauchy-Neumann problem for a parabolic equation on a ray by a Lagrangian Feynman formula], *Electronic scientific and technical periodical "Science and education" of the Bauman MSTU*, 77-30569/246219, **N 10** (2011), 17 p. <http://engineering-science.ru/doc/246219.html>.
23. Ya.A. Butko. Formula Feynmana dlya polugrupp s multiplikativno vozmushennymi generatorami [Feynman formula for semigroups with multiplicatively perturbed generators], *Electronic scientific and technical periodical "Science and education" of the Bauman MSTU*, 77-30569/239563, **N 10** (2011), 14 p. <http://engineering-science.ru/doc/239563.html>.
24. Ya.A. Butko. Formula Feynmana-Kaza-Ito dlya beskonechnomernogo uravneniya Shrodingera so skalyarnym i vektornym potentsialami [Feynman-Kac-Itô formula for the infinite dimensional Schrödinger equation with scalar and vector potentials], *Russian Journal of Nonlinear Dynamics*, **2** N1 (2006), 75-87. [http://nd.ics.org.ru/authors\\_nd/detail/1696-yana\\_butko](http://nd.ics.org.ru/authors_nd/detail/1696-yana_butko).

## Conference Proceedings

25. Ya.A. Butko. The Method of Chernoff approximation. To appear in *Proceedings of the Conference "Semigroups of Operators: Theory and Applications SOTA-2018"*, Springer, 2019.
26. Ya.A. Butko. Chernoff approximation of transition kernels of Markov processes. *Proceedings of the International Conference on Analytical and Computational Methods in Probability Theory and Its*

Applications, October 23-27, 2017, Moscow, Russia, p. 139-143. <http://acmpt.moscow/wp-content/uploads/2017/11/ACMPT-2017-conference-proceedings.pdf>.

27. Ya.A. Butko. Description of quantum and classical dynamics via Feynman formulae. *Mathematical Results in Quantum Mechanics: Proceedings of the QMath12 Conference*, p.227-234. World Scientific, 2014. ISBN: 978-981-4618-13-7 (hardcover), ISBN: 978-981-4618-15-1 (ebook).
28. Ya.A. Butko. Functional integrals over Smolyanov surface measures for evolutionary equations on a Riemannian manifold, Accardi, Luigi (ed.) et al., *Quantum probability and infinite dimensional analysis. Proceedings of the 26<sup>th</sup> conference*, Levico, Italy, 20-26 February 2005. Hackensack, NJ: World Scientific (ISBN 978-981-270-851-9/hbk). *QP-PQ: Quant. Probab. White Noise Anal.*, **20** (2007), 145-155.
29. Ya.A. Butko. Smolyanov surface measures and solutions of Schrödinger and heat type equations on a Riemannian manifold, *Proceedings of the International Conference "Days on Diffraction 2006"*, May 30 - June 2, 2006, St. Petersburg, Russia, (2006), 74-85.
30. Ya.A. Butko. Smolyanov surface measures for Schroedinger equation on a compact Riemannian manifold (IN RUSSIAN), *Proc. XXVIII Conf. Young Scientists, Faculty of Mechanics and Mathematics, MSU* (2006), 10-14.
31. Ya.A. Butko. Feynman formula for diffusion with drift in a domain of a compact Riemannian manifold (IN RUSSIAN), *Proc. XXVI Conf. Young Scientists, Faculty of Mechanics and Mathematics, MSU* (2005), 10-17.
32. Ya.A. Butko. Functional integrals, corresponding to the Cauchy-Dirichlet problem for the heat equation in a domain of a compact Riemannian manifold (IN RUSSIAN), *Proc. XXVI Conf. Young Scientists, Faculty of Mechanics and Mathematics, MSU*, (2004), 37-43.