Sergei Levendorskiĭ

LIST OF PUBLICATIONS

Monographs and chapters in monographs

1. Svetlana Boyarchenko and Sergei Levendorskiĭ, Irreversible Decisions under Uncertainty (Optimal Stopping made Easy), Springer-Verlag, Berlin, 2007, xvi+283 pp.
2. Svetlana Boyarchenko and Sergei Levendorskiĭ, Non-Gaussian Merton-Black-Scholes theory, New Jersey-London-Singapore-Hong Kong: World Scientific, 2002, xxi+398 pp.
3. Levendorskiĭ, Serge. Degenerate elliptic equations. Mathematics and its Applications, 258. Kluwer Academic Publishers Group, Dordrecht, 1993, xii+431 pp.
4. Levendorskiĭ, Serge. Asymptotic distribution of eigenvalues of differential operators. Translated from Russian. Mathematics and its Applications (Soviet Series), 53. Kluwer Academic Publishers Group, Dordrecht, 1990, xviii+279 pp.
5. Levendorskiĭ, S. Z.; Paneyakh, B. P. Degenerate elliptic equations and boundary value problems. Current problems in mathematics. Fundamental directions, Vol. 63 (Russian), 131–200, Itogi Nauki i Tekhniki, Akad. Nauk SSSR, Vsesoyuz. Inst. Nauchn. i Tekhn. Inform., Moscow, 1990. Translation in Encyclopaedia of Mathematical Sciences, v.63, 131-202, Springer-Verlag

Papers

1. Oleg Kudryavtsev and Sergei Levendorskiĭ, Fast and accurate pricing of barrier options under Lévy processes, to appear in Special Issue of *Finance and Stochastics*
2. Svetlana Boyarchenko and Sergei Levendorskiĭ, American options in Lévy models with stochastic interest rates, to appear in *Computational Finance*
3. Sergei Levendorskiĭ, American and European Options in Multi-Factor Jump-Diffusion Models, Near Expiry, *Finance and Stochastics*, 12:4 (2008), pp. 541-560
4. Svetlana Boyarchenko and Sergei Levendorskiĭ, American options in regime-switching models with non-semibounded stochastic interest rates, *Proceedings of 2008 American Control Conference* (2008), pp. 1023–1028.
5. Svetlana Boyarchenko and Sergei Levendorskiĭ, Exit Problems in Regime-Switching Models, *Journal of Mathematical Economics* 44:2 (2008), 180-206
6. Nina Boyarchenko and Sergei Levendorskiĭ, The eigenfunction expansion method in multifactor quadratic term structure models, *Mathematical Finance* 17, No. 4 (2007), pp.503-539
7. Nina Boyarchenko and Sergei Levendorskiĭ, On errors and bias of Fourier transform methods in quadratic term structure models, *International Journal of Theoretical and Applied Finance*, 10, No. 2 (2007), pp. 273-306
8. S.I. Boyarchenko and S.Z. Levendorskiĭ, Optimal stopping made easy, *Journal of Mathematical Economics*, 43:2 (2007), pp. 201-217
9. S.I. Boyarchenko and S.Z. Levendorskiĭ, Practical guide to real options in discrete time, *International Economic Review*, 48:1 (2007), 275–306.
10. Mitya Boyarchenko and Sergei Levendorskiĭ, Beyond the classical Weyl and Colin de Verdière's formulas for Schrödinger operators with polynomial magnetic and electric fields, *Annales de l'Institut Fourier*, vol. 56, no. 6 (2006), pp. 1827–1901.

11. Svetlana Boyarchenko and Sergei Levendorskiǐ, General option exercise rules, with applications to embedded options and monopolistic expansion, *Contributions to Theoretical Economics,* 6:1, Article 2 (2006)
12. S.Z. Levendorskiǐ, O.Kudryavtsev and V.Zherder, The relative efficiency of numerical methods for pricing American options under Lévy processes, *Journal of Computational Finance,* 9:2, Winter 2005/06, 69–98
13. S.Z Levendorskiǐ, Consistency conditions for Affine Term Structure Models II. Option pricing under diffusions with embedded jumps, *Annals of Finance* (2:2, 207-224 (2006)
14. O.Kudryavtsev and S.Z. Levendorskiǐ, Pricing of first touch digitals under Normal Inverse Gaussian processes, *International Journal of Theoretical and Applied Finance* 9:6, 915-949
15. S.Z Levendorskiǐ, Pseudo-diffusions and quadratic term structure models, *Mathematical Finance* (2005), 15, 393-424.
16. Mitya Boyarchenko and Sergei Levendorskiǐ, Generalizations of the classical Weyl and Colin de Verdière's formulas and the orbit method, *Proceedings of National Academy of Sciences USA* 102 (2005), 5663-5668
17. S.I. Boyarchenko and S.Z. Levendorskiǐ, American options: the EPV-pricing model, *Annals of Finance*, 1:3 (2005), 267–292.
18. S.Z Levendorskiǐ, Early exercise boundary and option pricing in Lévy driven models, *Quantitative Finance* 4 (2004), 525–547
19. S.Z Levendorskiǐ, Consistency conditions for affine term structure models, *Stochastic Processes and their Applications* 109 (2004), 225-261
20. S.Z Levendorskiǐ, Pricing of the American put under Lévy processes, *International Journal of Theoretical and Applied Finance* 7:3 (2004), 303–336
21. S.I. Boyarchenko and S.Z. Levendorskiǐ, Pricing of perpetual Bermudan options, *Quantitative Finance*, **2** (2002), 432–442
22. S.I. Boyarchenko and S.Z. Levendorskiǐ, Barrier Options and Touch-and-out Options under regular Lévy processes of Exponential Type, Annals of Applied Probability, **12**:4 (2002), 1261–1298.
23. S.I. Boyarchenko and S.Z. Levendorskiǐ, Perpetual American options under Lévy processes, SIAM Journal on Control and Optimization, **40**:6 (2002), 1663–1696
24. Kuchment, Peter; Levendorskiǐ, Sergei. On the structure of spectra of periodic elliptic operators, Trans. AMS, **354** (2002), no. 2, 537–569
25. Ole E. Barndorff-Nielsen and Sergei Levendorskiǐ, Feller Processes of Normal Inverse Gaussian Type, Quantitative Finance, 1 (2001), 318-331
26. S.I. Boyarchenko and S.Z. Levendorskiǐ, Option pricing and hedging under regular Lévy Processes of exponential type, In: Trends in Mathematics. Mathematical Finance, M.Kohlman and S.Tang, eds. (2001), pp.121-130
27. S.I. Boyarchenko and S.Z. Levendorskiǐ, Spectral asymptotics of the Neumann Laplacian on Oscillating Horns, Russian Journal of Mathematical Physics, v.7, no. 1 (2000), 1-14
28. S.I. Boyarchenko and S.Z. Levendorskiǐ, Option Pricing for Truncated Levy processes, International Journal of Theoretical and Applied Finance, 3:3 (2000), 549-552
29. S.I. Boyarchenko and S.Z. Levendorskiǐ, Entry and exit strategies under uncertainty: the case of non-gaussian distributions, In M.J. Brennan and L. Trigeorgis (eds.), Project Flexibility, Agency and Competition, Oxford. New York: Oxford University Press (2000), 71-84

30. S.I. Boyarchenko and S.Z. Levendorskiĭ, Search-Money-and-Barter Models of Financial Stabilization, Working Paper Number 332, July 2000, The Davidson Institute Working Paper Series, The William Davidson Institute at the University of Michigan Business School.
31. Kuchment, Peter; Levendorskiĭ, Sergei. On absolute continuity of spectra of periodic elliptic operators. Mathematical results in quantum mechanics (Prague, 1998), 291–297, Oper. Theory Adv. Appl., 108, Birkhäuser, Basel, 1999.
32. Boyarchenko, S. I.; Levendorskiĭ, S. Z. Spectral asymptotics of Laplace operators on a cusp: the case of a rapidly growing counting function. (Russian) Funktsional. Anal. i Prilozhen. 32 (1998), no. 3,70–73 translation in Funct. Anal. Appl. 32 (1998), no. 3, 198–200 (1999)
33. Levendorskiĭ, S. Z. Asymptotic formulae with remainder estimates for eigenvalue branches of the Schrödinger operator $H - \lambda W$ in a gap of H. Trans. Amer. Math. Soc. 351 (1999), no. 3, 857–899.
34. Boyarchenko, S. I.; Levendorskiĭ, S. Z. Spectral asymptotics with a remainder estimate of the Neumann Laplacian on horns: the case of the rapidly growing counting function. Proc. Roy. Soc. Edinburgh Sect. A 128 (1998), no. 1, 11–22.
35. Hempel, Rainer; Levendorskiĭ, Serge Z. On eigenvalues in gaps for perturbed magnetic Schrödinger operators. J. Math. Phys. 39 (1998), no. 1, 63–78.
36. Levendorskiĭ, S. Z. Acoustic waves in perturbed periodic layer: a limiting absorption principle. Asymptot. Anal. 16 (1998), no. 1, 15–24.
37. Boyarchenko, S. I.; Levendorskiĭ, S. Z. An asymptotic formula for the number of eigenvalue branches of a divergence form operator $A + \lambda B$ in a spectral gap of A. Comm. Partial Differential Equations 22 (1997), no. 11-12, 1771–1786.
38. Levendorskiĭ, S. Z. Floquet's theory for the Schödinger operator with perturbed periodic potential, and exact spectral asymptotics. (Russian) Dokl. Akad. Nauk 355 (1997), no. 1, 21–24.
39. Levendorskiĭ, S. Z. Spectral properties of Schrödinger operators with irregular magnetic potentials, for a spin 1/2 particle. J. Math. Anal. Appl. 216 (1997), no. 1, 48–68.
40. Boyarchenko, S. I.; Levendorskiĭ, S. Z. Precise spectral asymptotics for perturbed magnetic Schrödinger operator. J. Math. Pures Appl. (9) 76 (1997), no. 3, 211–236.
41. Levendorskiĭ, S. Z. Magnetic Floquet theory and spectral asymptotics for Schrödinger operators. (Russian) Funktsional. Anal. i Prilozhen. 30 (1996), no. 4,77–80 translation in Funct. Anal. Appl. 30 (1996), no. 4, 282–285 (1997)
42. Levendorskiĭ, S. Z. The asymptotics for the number of eigenvalue branches for the magnetic Schrödinger operator $H - \lambda W$ in a gap of H. Math. Z. 223 (1996), no. 4, 609–625.
43. Levendorskiĭ, S. Z. Spectral asymptotics with a remainder estimate for Schrödinger operators with slowly growing potentials. Proc. Roy. Soc. Edinburgh Sect. A 126 (1996), no. 4, 829–836.
44. Levendorskiĭ, S. Z.; Sudbery, A. Yangian construction of the Virasoro algebra. Lett. Math. Phys. 37 (1996), no. 3, 243–247.
45. Levendorskiĭ, S. Z. Lower bounds for the number of eigenvalue branches for the Schrödinger operator $H - \lambda W$ in a gap of H: the case of indefinite W. Comm. Partial Differential Equations 20 (1995), no. 5-6, 827–854.
46. Boyarchenko, S. I.; Levendorskiĭ, S. Z. On affine Yangians. Lett. Math. Phys. 32 (1994), no. 4, 269–274.

47. Levendorskii, Serge; Soibelman, Yan; Stukopin, Vladimir The quantum Weyl group and the universal quantum R-matrix for affine Lie algebra $A_1^{(1)}$. Lett. Math. Phys. 27 (1993), no. 4, 253–264.
48. Levendorskiĭ, S. Z. On generators and defining relations of Yangians. J. Geom. Phys. 12 (1993), no. 1, 1–11.
49. Levendorskiĭ, Serge Z. On PBW bases for Yangians. Lett. Math. Phys. 27 (1993), no. 1, 37–42.
50. Levendorskiĭ, S. Z. A class of elliptic operators that degenerate in nonpower fashion on the boundary. (Russian) Sibirsk. Mat. Zh. 33 (1992), no. 5,91–99, 222 translation in Siberian Math. J. 33 (1992), no. 5, 826–834 (1993)
51. Levendorskiĭ, S. Z. Twisted function algebras on a compact quantum group and their representations. (Russian) Algebra i Analiz 3 (1991), no. 2,180–198 translation in St. Petersburg Math. J. 3 (1992), no. 2, 405–423
52. Levendorskiĭ, S. Z. An algebra of boundary value problems for a class of pseudodifferential operators of variable order. (Russian) Izv. Akad. Nauk SSSR Ser. Mat. 55 (1991), no. 1,134–158 translation in Math. USSR-Izv. 38 (1992), no. 1, 131–154
53. Levendorskiĭ, S. Z.; Soibel'man, Ya. S. The quantum Weyl group and a multiplicative formula for the R-matrix of a simple Lie algebra. (Russian) Funktsional. Anal. i Prilozhen. 25 (1991), no. 2,73–76 translation in Functional Anal. Appl. 25 (1991), no. 2, 143–145
54. Levendorskiĭ, Serge; Soibel'man, Yan Algebras of functions on compact quantum groups, Schubert cells and quantum tori. Comm. Math. Phys. 139 (1991), no. 1, 141–170.
55. Levendorskiĭ, Serge; Soibel'man, Yan Quantum group A_∞. Comm. Math. Phys. 140 (1991), no. 2, 399–414.
56. Levendorskiĭ, S. Z.; Soibel'man, Ya. S. Some applications of the quantum Weyl groups. J. Geom. Phys. 7 (1990), no. 2, 241–254.
57. Levendorskiĭ, S. Z. Twisted algebras of functions on a compact quantum group and their representations. (Russian) Funktsional. Anal. i Prilozhen. 24 (1990), no. 4,80–81 translation in Functional Anal. Appl. 24 (1990), no. 4, 330–332 (1991)
58. Levendorskiĭ, S. Z. The algebra of boundary value problems for a class of pseudodifferential operators of variable order. (Russian) Dokl. Akad. Nauk SSSR 313 (1990), no. 4,795–798 translation in Soviet Math. Dokl. 42 (1991), no. 1, 77–81
59. Levendorskiĭ, S. Z. The asymptotics of the spectrum of operators that are elliptic in the sense of Douglis-Nirenberg. (Russian) Trudy Moskov. Mat. Obshch. 52 (1989), 34–57, 247 translation in Trans. Moscow Math. Soc. 1990, , 33–57 (1991)
60. Levendorskiĭ, S. Z. On the types of degenerate elliptic operators. (Russian) Mat. Sb. 180 (1989), no. 4,513–528, 559 translation in Math. USSR-Sb. 66 (1990), no. 2, 523–540
61. Levendorskiĭ, S. Z. Nonclassical spectral asymptotics in the case of degeneration that is not in a power form. (Russian) Differentsial'nye Uravneniya 24 (1988), no. 6,1021–1027, translation in Differential Equations 24 (1988), no. 6, 677–682
62. Levendorskiĭ, S. Z. Types of degenerate elliptic operators. (Russian) Dokl. Akad. Nauk SSSR 303 (1988), no. 1,24–28 translation in Soviet Math. Dokl. 38 (1989), no. 3, 462–466
63. Levendorskiĭ, S. Z. Asymptotic behavior of the discrete spectrum of the Dirac operator with decreasing potential. (Russian) Sibirsk. Mat. Zh. 29 (1988), no. 2,115–123, 218 translation in Siberian Math. J. 29 (1988), no. 2, 253–259

64. Levendorskiĭ, S. Z. On the symbols of degenerate elliptic differential and hypoelliptic pseudodifferential operators. (Russian) Izv. Akad. Nauk SSSR Ser. Mat. 52 (1988), no. 3,541–558, 671 translation in Math. USSR-Izv. 32 (1989), no. 3, 543–561
65. Levendorskiĭ, S. Z. Nonclassical spectral asymptotics. (Russian) Uspekhi Mat. Nauk 43 (1988), no. 1(259),123–157, 247 translation in Russian Math. Surveys 43 (1988), no. 1, 149–192
66. Levendorskiĭ, S. Z. Coercivity of degenerate elliptic operators. (Russian) Dokl. Akad. Nauk SSSR 298 (1988), no. 1,29–31 translation in Soviet Math. Dokl. 37 (1988), no. 1, 21–24
67. Levendorskiĭ, S. Z. Asymptotic behavior of the spectrum of pseudodifferential operators of negative order with multiple characteristics. (Russian) Dokl. Akad. Nauk SSSR 288 (1986), no. 3, 540–543.
68. Levendorskiĭ, S. Z. The approximate spectral projection method. Acta Appl. Math. 7 (1986), no. 2, 137–197.
69. Levendorskiĭ, S. Z. On generalizations of the Weyl formula for degenerate operators. (Russian) Dokl. Akad. Nauk SSSR 293 (1987), no. 6, 1297–1301.
70. Levendorskiĭ, S. Z. Asymptotic behavior of the spectrum of problems with constraints. (Russian) Mat. Sb. (N.S.) 129(171) (1986), no. 1, 73–89, 159.
71. Levendorskiĭ, S. Z. Spectral asymptotics of weakly elliptic systems of pseudodifferential operators. (Russian) Sibirsk. Mat. Zh. 27 (1986), no. 1, 111–122, 199.
72. Levendorskiĭ, S. Z. Asymptotic behavior of the spectrum of degenerate elliptic systems in unbounded domains. (Russian) Funktsional. Anal. i Prilozhen. 19 (1985), no. 2, 80–81.
73. Levendorskiĭ, S. Z. Asymptotic behavior of the spectrum of linear pseudodifferential pencils in the degenerate case. (Russian) Dokl. Akad. Nauk SSSR 285 (1985), no. 6, 1321–1324.
74. Levendorskiĭ, S. Z. The approximate spectral projector method. (Russian) Izv. Akad. Nauk SSSR Ser. Mat. 49 (1985), no. 6, 1177–1228, 1342.
75. Levendorskiĭ, S. Z. Spectral asymptotics of differential operators with operator coefficients and some applications. (Russian) Dokl. Akad. Nauk SSSR 280 (1985), no. 6, 1303–1306.
76. Levendorskiĭ, S. Z. Spectral asymptotics of degenerate systems. (Russian) Dokl. Akad. Nauk SSSR 280 (1985), no. 4, 793–796. 35P20 (47F05)
77. Levendorskiĭ, S. Z. Asymptotic behavior of the spectrum of problems with constraints. (Russian) Dokl. Akad. Nauk SSSR 276 (1984), no. 2, 282–285.
78. Levendorskiĭ, S. Z. Asymptotic behavior of the spectrum of problems of the type $Au = tBu$ for operators elliptic in the Douglis–Nirenberg sense. (Russian) Funktsional. Anal. i Prilozhen. 18 (1984), no. 3, 84–85.
79. Levendorskiĭ, S. Z. Asymptotic distribution of eigenvalues of systems of Navier–Stokes type. (Russian) Uspekhi Mat. Nauk 39 (1984), no. 4(238), 169–170.
80. Levendorskiĭ, S. Z. Asymptotic behavior of the spectrum of linear operator pencils. (Russian) Mat. Sb. (N.S.) 124(166) (1984), no. 2, 251–271.
81. Levendorskiĭ, S. Z. The approximate spectral projector method as a general method of justifying the classical formula of spectral asymptotics. (Russian) Dokl. Akad. Nauk SSSR 271 (1983), no. 2, 287–291.
82. Levendorskiĭ, S. Z. Spectral asymptotics of nonlinear pencils and operators with nonempty essential spectrum. (Russian) Dokl. Akad. Nauk SSSR 272 (1983), no. 6, 1314–1317.

83. Levendorskiĭ, S. Z. Distribution of eigenvalues of systems of the form $Au = tBu$. (Russian) Funktsional. Anal. i Prilozhen. 17 (1983), no. 2, 82–83.
84. Levendorskiĭ, S. Z. General calculus of pseudodifferential operators with symbols of power growth. (Russian) Differentsial'nye Uravneniya 19 (1983), no. 10, 1796–1797.
85. Levendorskiĭ, S. Z. Asymptotic distribution of eigenvalues. (Russian) Izv. Akad. Nauk SSSR Ser. Mat. 46 (1982), no. 4, 810–852,
86. Levendorskiĭ, S. Z. A general method for investigating the asymptotic behavior of a spectrum and its application to the theory of shells. (Russian) Dokl. Akad. Nauk SSSR 266 (1982), no. 2, 276–280.
87. Levendorskiĭ, S. Z. Quasiclassical asymptotic behavior of eigenvalues of systems of pseudodifferential operators. (Russian) Dokl. Akad. Nauk SSSR 256 (1981), no. 1, 32–36.
88. Levendorskiĭ, S. Z. General calculus of pseudodifferential operators and asymptotic properties of the spectrum. (Russian) Funktsional. Anal. i Prilozhen. 15 (1981), no. 2, 79–80.
89. Levendorskiĭ, S. Z. Algebras of pseudodifferential operators with discontinuous symbols. (Russian) Dokl. Akad. Nauk SSSR 248 (1979), no. 4, 777–779.
90. Levendorskiĭ, S. Z. Boundary value problems in a half-space for quasielliptic pseudodifferential operators that degenerate on the boundary. (Russian) Mat. Sb. (N.S.) 111(153) (1980), no. 4, 483–502.
91. Levendorskiĭ, S. Z.; Rabinovič, V. S. Exponential decrease at infinity of the solutions of multidimensional equations of convolution type in cones. (Russian) Izv. Vyssh. Uchebn. Zaved. Mat. 1979, no. 3, 38–44.