

## References

- [Agm1] S. Agmon, *On kernels, eigenvalues, and eigenfunctions of operators related to elliptic problems*, Comm. Pure Appl. Math. **18** (1965), 627–663.
- [Agm2] ———, *Asymptotic formulas with remainder estimates for eigenvalues of elliptic operators*, Arch. Rat. Mech. Anal. **28**, no. 3 (1967/68), 165–183.
- [AgmDoNir] S. Agmon, A. Douglis, L. Nirenberg, *Estimates near the boundary for solutions of elliptic partial differential equations satisfying general boundary conditions, Parts I and II*, Comm. Pure Appl. Math. **12**, no. 4 (1959), 623–727; **17**, no. 1 (1964), 35–92.
- [AgrVi] M. S. Agranovich and M. I. Vishik, *Elliptic problems with a parameter and parabolic problems of general type*, Uspekhi Mat. Nauk **19**, no. 3 (117) (1964), 53–161 (Russian); English transl. in Russian Math. Surveys **19**, no. 3 (1964), 53–157.
- [Ar1] V. I. Arnol'd, *On a characteristic class entering into conditions of quantization*, Funktsional. Anal. i Prilozhen. **1**, no. 1 (1967), 1–14 (Russian); English transl. in Functional Anal. Appl. **1** (1967), 1–13.
- [Ar2] V. I. Arnol'd, *Mathematical methods of classical mechanics*, “Nauka”, Moscow, 1974 (Russian); English transl., Springer, New York, 1989.
- [AsLid] A. G. Aslanyan and V. B. Lidskii, *The distribution of eigenfrequencies of thin elastic shells*, “Nauka”, Moscow, 1974. (Russian)
- [AsLidVa] A. G. Aslanyan, V. B. Lidskii, and D. Vassiliev, *Frequencies of free vibrations of a thin shell interacting with a liquid*, Funktsional. Anal. i Prilozhen. **15**, no. 3 (1981), 1–9 (Russian); English transl. in Functional Anal. Appl. **15** (1981), 157–164.
- [BaHilf] H. P. Baltes and E. R. Hilf, *Spectra of finite systems: a review of Weyl's problem*, Bibliographisches Institut, Zurich, 1976.
- [Be] A. Besse, *Manifolds all of whose geodesics are closed*, Springer, New York, 1978.
- [Big] N. L. Biggs, *Discrete mathematics*, Clarendon Press, Oxford, 1990.
- [BirSo] M. Birman and M. Solomyak, *Spectral theory of self-adjoint operators in Hilbert space*, Leningrad Univ., Leningrad, 1980 (Russian); English transl., D. Reidel Publ. Co., Dordrecht, 1987.
- [BdM] L. Boutet de Monvel, *Boundary problems for pseudodifferential operators*, Acta Math. **126** (1971), 11–51.
- [Br] J. Brüning, *Zur Abschätzung der Spektralfunktion elliptischer Operatoren*, Math. Zeitschr. **137** (1974), 75–85.
- [CodLson] E. A. Coddington and N. Levinson, *Theory of Ordinary Differential Equations*, Krieger Publishing Company, Malabar, Florida, 1984.
- [CorFomSin] I. P. Cornfeld, S. V. Fomin, and Ya. G. Sinai, *Ergodic theory*, “Nauka”, Moscow, 1980 (Russian); English transl., Springer, New York, 1982.
- [Cou] R. Courant, *Über die Schwingungen eigenspannter Platten*, Math. Zeitschr. **15** (1922), 195–200.
- [CouHilb] R. Courant and D. Hilbert, *Methods of mathematical physics*, vol. 1, Wiley, New York, 1989.
- [De] P. Debye, *Zur Theorie der spezifischen Wärmen*, Ann. Phys. **39**, H. 4, no. 14 (1912), 789–839.
- [DuiGui] J. J. Duistermaat and V. W. Guillemin, *The spectrum of positive elliptic operators and periodic bicharacteristics*, Invent. Math. **25** (1975), 39–79.
- [DuiGuiHö] J. J. Duistermaat, V. W. Guillemin, and L. Hörmander, *Fourier integral operators: selected classical articles* (J. Brüning and V. W. Guillemin, eds.), Springer, New York, 1994.
- [DupMazOn] M. Dupuis, R. Mazo, and L. Onsager, *Surface specific heat of an isotropic solid at low temperatures*, J. Chem. Phys. **33**, no. 5 (1960), 1452–1461.
- [FLtinVa1] J. Fleckinger, M. Levitin, and D. Vassiliev, *Heat equation on the triadic von Koch snowflake: asymptotic and numerical analysis*, Proc. London Math. Soc. **71** (1995), 372–396.
- [FLtinVa2] J. Fleckinger, M. Levitin, and D. Vassiliev, *Heat content of the triadic von Koch snowflake*, International Journal of Applied Science and Computations **2**, no. 2 (1995), 289–305.

- [FlVa1] J. Fleckinger and D. Vassiliev, *Tambour fractal: exemple d'une formule asymptotique a deux termes pour la "fonction de comptage"*, Comptes Rendus Acad. Sc. Paris **311**, Série I (1990), 867–872.
- [FlVa2] ———, *An example of a two-term asymptotic formula for the "counting function" of a fractal drum*, Trans. American Math. Soc. **337**, no. 1 (1993), 99–116.
- [Ga] T.H.Ganelius, *Tauberian remainder theorems*, Lecture Notes in Math., vol. 232, Springer-Verlag, Berlin and New York, 1971.
- [GnKo] B.V.Gnedenko and A.N.Kolmogorov, *Limit distributions for sums of independent random variables*, "Nauka", Moscow, 1949 (Russian); English transl., Addison-Wesley, Reading (Massachusetts), 1968.
- [GolLidTo] A. L. Gol'denveizer, V. B. Lidskii, and P. E. Tovstik, *Free vibrations of thin elastic shells*, "Nauka", Moscow, 1979. (Russian)
- [GolVa] A. L. Gol'denveizer and D. Vassiliev, *Distribution of free vibration frequencies in two- and three-dimensional elastic bodies*, Mekhanika i nauchno-tekhnicheskii progress, vol. 3, Mekhanika deformiruemogo tverdogo tela, "Nauka", Moscow, 1988, pp. 223–236 (Russian); English transl. in Mechanical Engineering and Applied Mechanics, vol. 3, Mechanics of Deformable Solids (N. Kh. Arutiunian, I. F. Obraztsov, and V. Z. Parton, eds.), Hemisphere Publ., New York, 1991, pp. 227–242.
- [Gon] V. S. Gontkevich, *Natural oscillations of plates and shells*, "Naukova Dumka", Kiev, 1964 (Russian); German transl., VEB Fachbuchverlag, Leipzig, 1967.
- [Gui] V. W. Guillemin, *The Radon Transform on Zoll Surfaces*, Advances in Mathematics **22** (1976), 85–119.
- [GuiSt] V. W. Guillemin and S. Sternberg, *Geometric asymptotics*, Mathematical Surveys no. 14, Amer. Math. Soc., Providence, R.I., 1977.
- [Gur] T. E. Gurejev, *Asymptotics of the spectrum of a biharmonic operator on a hemisphere*, Vestnik Leningrad. Univ. Math. Mech. Astronom. (Ser. 1) issue 3 (1988), 94–95 (Russian); English transl. in Vestnik Leningrad. Univ. Math. **21**, no. 3 (1988), 59–61.
- [Hö1] L. Hörmander, *The spectral function of an elliptic operator*, Acta Math. **121** (1968), 193–218.
- [Hö2] ———, *Fourier integral operators I*, Acta Math. **127** (1971), 79–183.
- [Hö3] ———, *The analysis of linear partial differential operators*, vols. 1, 2, Springer, Berlin, 1983; vols. 3, 4, 1985.
- [Iv1] V. Ya. Ivrii, *On the second term of the spectral asymptotics for the Laplace-Beltrami operator on manifolds with boundary*, Funktsional. Anal. i Prilozhen. **14**, no. 2 (1980), 25–34; English transl. in Functional Anal. Appl. **14** (1980), 98–106.
- [Iv2] ———, *Precise spectral asymptotics for elliptic operators acting in fiberings over manifolds with boundary*, Lecture Notes in Math., vol. 1100, Springer, New York, 1984.
- [Iv3] ———, *Semiclassical microlocal analysis and precise spectral asymptotics*, 9 preprints Centre de Mathematiques, École Polytechnique, Palaiseau (France), 1990–1992.
- [Iv4] ———, *Semiclassical microlocal analysis and spectral asymptotics*, Springer, New York (to appear).
- [Ja] M. Jammer, *The conceptual development of quantum mechanics*, The History of Modern Physics 1800–1950, vol. 12, American Institute of Physics, New York, 1989.
- [Je] J. H. Jeans, *On the partition of energy between matter and ether*, Philosophical Magazine **10**, 6th series (1905), 91–98.
- [LanLif] L. D. Landau and E. M. Lifshits, *Theory of elasticity*, Course of theoretical physics, vol. 7, "Nauka", Moscow, 1965 (Russian); English transl., Pergamon Press, Oxford, 1986.
- [LapSaVa] A. Laptev, Yu. Safarov, and D. Vassiliev, *On global representation of Lagrangian distributions and solutions of hyperbolic equations*, Comm. Pure Appl. Math. **47**, no. 11 (1994), 1411–1456.
- [Ltan] B. M. Levitan, *On the asymptotic behavior of the spectral function of a self-adjoint differential second order equation*, Izv. Akad. Nauk SSSR Ser. Mat. **16** (1952), 325–352. (Russian)
- [LtanSar] B. M. Levitan and I. S. Sargsjan, *Introduction to spectral theory: selfadjoint ordinary differential operators*, "Nauka", Moscow, 1970 (Russian); English transl. in

- series *Translations of Mathematical Monographs*, vol. 39, Amer. Math. Soc., Providence, R.I., 1991
- [LtinSu] M. Levitin and A. G. Sudakov, *Eigenvalues of a problem on the semi-axis with constant coefficients*, *Mathematical Methods of Control and Data-Processing*, Moscow Institute of Physics and Technology Publishing House, Moscow, 1985, pp. 48–53. (Russian)
- [LtinVa1] M. Levitin and D. Vassiliev, *Some examples of two-term spectral asymptotics for sets with fractal boundary*, *Operator Theory: Advances and Applications* (M. Demuth and B.-W. Schulze, eds.), vol. 78, Birkhäuser, Basel, Boston, and Berlin, 1995, pp. 227–233.
- [LtinVa2] ———, *Spectral asymptotics, renewal theorem, and the Berry conjecture for a class of fractals*, *Proc. London Math. Soc.* **72** (1996), 188–214.
- [LtinVa3] ———, *Vibrations of shells contacting fluid: asymptotic analysis*, *Acoustic Interaction with Submerged Elastic Structures, Part I: Acoustic Scattering and Resonances* (A. Guran, ed.), series on Stability, Vibration and Control of Structures, vol. 5, World Scientific (to appear).
- [LioMag] J.-L. Lions and E. Magenes, *Non-homogeneous boundary value problems and their applications*, vol. 1, Springer-Verlag, Berlin Heidelberg New York, 1972.
- [Me] R. Melrose, *Weyl's conjecture for manifolds with concave boundary*, *Proc. Sympos. Pure Math.*, vol. 36, Amer. Math. Soc., Providence, R.I., 1980, pp. 257–274.
- [Nio] F. I. Niordson, *The spectrum of free vibrations of a thin elastic spherical shell*, *International Journal of Solids and Structures* **24**, no. 9 (1988), 947–961.
- [Pl] Å. Pleijel, *On a theorem by P. Malliavin*, *Israel Journal of Mathematics* **1**, no. 3 (1963), 166–168.
- [Ra] Lord Rayleigh, *The dynamical theory of gases and of radiation*, *Nature* **72** (1905), 54–55, 243–244.
- [ReSim] M. Reed and B. Simon, *Methods of modern mathematical physics*, vol. 1, Academic Press, New York, 1972; vol. 2, 1975; vol. 3, 1979; vol. 4, 1978.
- [RoShSo] G. V. Rozenblum, M. A. Shubin, and M. Z. Solomyak, *Spectral theory of differential operators*, series *Current problems in mathematics: fundamental directions*, *Partial Differential Equations VII*, vol. 64, Vsesoyuz. Inst. Nauchn. i Tekhn. Inform., Moscow, 1989 (Russian); English transl., *Spectral Theory of Differential Operators*, series *Encyclopedia of Mathematical Sciences, Partial Differential Equations VII*, vol. 64, Springer, New York, 1994.
- [Sa1] Yu. Safarov, *On the asymptotics of the eigenvalues of diffraction problems*, *Dokl. AN SSSR* **281**, no. 5 (1985), 1058–1061 (Russian); English transl. in *Soviet Math. Dokl.* **31**, no. 2 (1985), 392–395.
- [Sa2] ———, *Asymptotics of the spectrum of a pseudodifferential operator with periodic bicharacteristics*, *Zapiski Nauch. Seminarov LOMI* **152** (1986), 94–104. (Russian)
- [Sa3] ———, *On the second term of the spectral asymptotics of the transmission problem*, *Acta Appl. Math.* **10**, no. 2 (1987), 101–130.
- [Sa4] ———, *Asymptotics of the spectrum of a boundary value problem with periodic billiard trajectories*, *Funktsional. Anal. i Prilozhen.* **21**, no. 3 (1987), 88–90 (Russian); English transl. in *Functional Anal. Appl.* **21** (1987), 337–339.
- [Sa5] ———, *Exact asymptotics of the spectrum of a boundary value problem, and periodic billiards*, *Izv. Akad. Nauk. SSSR Ser. Mat.* **52** (1988), 1230–1251 (Russian); English transl. in *Math. USSR-Izv.* **33** (1989), 553–573.
- [Sa6] ———, *Asymptotics of the spectral function of a positive elliptic operator without the non-trapping condition*, *Funktsional. Anal. i Prilozhen.* **22**, no. 3 (1988), 53–65 (Russian); English transl. in *Functional Anal. Appl.* **22** (1988), 213–223.
- [Sa7] ———, *Non-classical two-term spectral asymptotics*, *Teubner Texte zur Math.* **112** (1989), 250–258.
- [Sa8] ———, *Precise spectral asymptotics and inverse problems*, *Integral Equation and Inverse Problems* (V. Petkov and R. Lazarov, eds.), Longman Scientific and Technical, New York, 1991, pp. 239–240.
- [Sa9] ———, *Pseudodifferential operators and linear connections*, *Proc. London Math. Soc.* (to appear).

- [SaVa1] Yu. Safarov and D. Vassiliev, *Branching Hamiltonian billiards*, Dokl. AN SSSR **301** (1988), 271–275 (Russian); English transl. in Soviet Math. Dokl. **38** (1989), 64–68.
- [SaVa2] ———, *The asymptotic distribution of eigenvalues of differential operators*, Spectral theory of operators (S. Gindikin, ed.), Amer. Math. Soc. Transl., ser. 2, vol. 150, Amer. Math. Soc., Providence, R.I., 1992, pp. 55–111.
- [S.-HuS.-Pa] J. Sanchez-Hubert and E. Sanchez-Palencia, *Vibration and coupling of continuous systems: asymptotic methods*, Springer-Verlag, Berlin, 1989.
- [S.-PaVa] E. Sanchez-Palencia and D. Vassiliev, *Remarks on the vibration of thin elastic shells and their numerical computation*, Comptes Rendus Acad. Sc. Paris **314**, Série II (1992), 445–452.
- [Se1] R. Seeley, *A sharp asymptotic remainder estimate for the eigenvalues of the Laplacian in a domain of  $\mathbb{R}^3$* , Adv. Math. **29** (1978), 244–269.
- [Se2] ———, *An estimate near the boundary for the spectral function of the Laplace operator*, Amer. J. Math. **102** (1980), 869–902.
- [Sh] M. A. Shubin, *Pseudodifferential operators and spectral theory*, “Nauka”, Moscow, 1978 (Russian); English transl., Springer-Verlag, Berlin, 1986.
- [Sz.-NaFoi] B. Sz.-Nagy and C. Foias, *Analyse harmonique des opérateurs de l’espace de Hilbert*, Akadémiai Kiadó, Budapest, 1967.
- [Tr] F. Trèves, *Introduction to pseudodifferential and Fourier integral operators*, vols. 1, 2, Plenum Press, N.Y., 1982.
- [Va1] D. Vassiliev, *Asymptotics of the distribution function of the spectrum of pseudodifferential operators with parameters*, Funktsional. Anal. i Prilozhen. **14**, no. 3 (1980), 65–66 (Russian); English transl. in Functional Anal. Appl. **14** (1980), 217–219.
- [Va2] ———, *The distribution of eigenfrequencies of a thin elastic shell interacting with fluid*, Ph.D. Thesis, Moscow Institute of Physics and Technology, 1981. (Russian)
- [Va3] ———, *Binomial asymptotics of the spectrum of a boundary value problem*, Funktsional. Anal. i Prilozhen. **17**, no. 4 (1983), 79–81 (Russian); English transl. in Functional Anal. Appl. **17** (1983), 309–311.
- [Va4] ———, *Two-term asymptotics of the spectrum of a boundary value problem under an interior reflection of general form*, Funktsional. Anal. i Prilozhen. **18**, no. 4 (1984), 1–13 (Russian); English transl. in Functional Anal. Appl. **18** (1984), 267–277.
- [Va5] ———, *Asymptotics of the spectrum of pseudodifferential operators with small parameters*, Matematicheskii Sbornik **121**, no. 1 (1983), 60–71 (Russian); English transl. in Math. U.S.S.R. Sbornik **49**, no. 1 (1984), 61–72.
- [Va6] ———, *Two-term asymptotics of the spectrum of a boundary value problem in the case of a piecewise smooth boundary*, Dokl. AN SSSR **286**, no. 5 (1986), 1043–1046 (Russian); English transl. in Soviet Math. Dokl. **33**, no. 1 (1986), 227–230.
- [Va7] ———, *Asymptotics of the spectrum of a boundary value problem*, Trudy Moskov. Mat. Obshch. **49** (1986), 167–237 (Russian); English transl. in Trans. Moscow Math. Soc. (1987), 173–245.
- [Va8] ———, *Resonance phenomena in elasticity and hydroelasticity*, Doctor of Sciences Thesis, Institute for Problems in Mechanics USSR Academy of Sciences, Moscow, 1988. (Russian)
- [Va9] ———, *Two-term asymptotics of the spectrum of natural frequencies of a thin elastic shell*, Dokl. AN SSSR **310**, no. 4 (1990), 777–780 (Russian); English transl. in Soviet Math. Dokl. **41**, no. 1 (1990), 108–112.
- [Va10] ———, *One can hear the dimension of a connected fractal in  $\mathbb{R}^2$* , Integral Equations and Inverse Problems (V. Petkov and R. Lazarov, eds.), Longman Scientific and Technical, New York, 1991, pp. 270–273.
- [Va11] ———, *The distribution of eigenvalues of partial differential operators*, Équations aux Dérivées Partielles, Séminaire 1991–1992, École Polytechnique, Palaiseau (France), 1992, pp. XVII-1 – XVII-17.
- [Va12] ———, *Characteristic properties of distributions associated with the wave group*, Journées Équations aux Dérivées Partielles, Saint-Jean-De-Monts, École Polytechnique, Palaiseau (France), 1992, pp. XV-1 – XV-14.
- [Va13] ———, *Construction of the wave group for higher order partial differential operators*, Équations aux Dérivées Partielles, Séminaire 1994–1995, École Polytechnique,

- Palaiseau (France), 1995, pp. IX-1 – IX-14.
- [Va14] ———, *The symbol of a Lagrangian distribution*, Journées Équations aux Dérivées Partielles, Saint-Jean-De-Monts, École Polytechnique, Palaiseau (France), 1995, pp. V.1 – V.12.
- [We1] H. Weyl, *Über die Abhängigkeit der Eigenschwingungen einer Membran von der Begrenzung*, J. Reine Angew. **141** (1912), 1–11.
- [We2] ———, *Über die Randwertaufgabe der Strahlungstheorie und asymptotische Spektralgesetze*, J. Reine Angew. **143**, no. 3 (1913), 177–202.
- [We3] ———, *Das asymptotische Verteilungsgesetz der Eigenschwingungen eines beliebig gestalteten elastischen Körpers*, Rend. Circ. Math., Palermo **39** (1915), 1–50.
- [Wo] M. Wojtkowski, *Principles for the design of billiards with nonvanishing Lyapunov exponents*, Comm. Math. Phys. **105**, no. 3 (1986), 391–414.
- [Ya] D. R. Yafaev, *Mathematical Scattering Theory: general theory*, Translations of Mathematical Monographs, vol. 105, Amer. Math. Soc., Providence, R.I., 1992.
- [Zo] O. Zoll, *Über Flächen mit Scharen geschlossener geodätischer Linien*, Math. Ann. **57** (1903), 108–133.