

Ari Laptev

PUBLICATIONS

Journals

115. (jointly with Th.Hoffmann-Ostenhof), *Hardy inequality for antisymmetric functions*, accepted by Functional Analysis and Applications.
114. (jointly with T.Weth), *Spectral properties of the logarithmic Laplacian*, accepted by Analysis and Mathematical Physics.
113. (jointly with D.Guzu and L.Kapitanski), *Hardy inequalities for discrete magnetic Dirichlet forms*, accepted by Pure and Applied Functional Analysis.
112. *On factorization of a class of Schrödinger operators*, Complex Variables and Elliptic Equations, <https://doi.org/10.1080/17476933.2020.1833869>, Published online: 27 Oct 2020.
111. (jointly with D.Bonheure, J.Dolbeault, M.J.Esteban and M.Loss), *Inequalities involving Aharonov-Bohm magnetic potentials in dimensions 2 and 3*, Reviews in Mathematical Physics, **33**: 2150006 (2021), 1–29.
110. (jointly with A.Ilyin and S.Zelik), *On Lieb-Thirring constant on the sphere and on the torus*, JFA, **279**, n. 12 (2020) (<https://doi.org/10.1016/j.jfa.2020.108784>)
109. (jointly with L.Fanelli, D.Krejcirik and L.Vega) *On the improvement of the Hardy inequality due to singular magnetic fields*, CPDE, published on line May 13, 2020.
108. (jointly with F. Ferrulli), *Complex eigenvalue bounds for a Schrödinger operator on the half line*, Rend. Lincei Mat. Appl. **31** (2020), 1–13.
107. (jointly with D. Guzu and Th. Hoffmann-Ostenhof), *On a Class of Sharp Multiplicative Hardy Inequalities*, St. Petersburg Math. J., **32**:3 (2020), 180-190.
106. (jointly with L. Schimmer and L. Takhtajan), *Weyl asymptotics for perturbed functional difference operators*, JMPH **60**, 103505 (2019) (Special issue: XIXth International Congress on Mathematical Physics).
105. (jointly with A.Ilyin and S.Zelik), *On Lieb-Thirring constant on the torus*, Mat. Zametki, 106:6 (2019), 946-950.
104. (with A.Velicu) *Spectral inequalities for a class of integral operators*, Journal of Mathematical Sciences, 242:2 (2019), 214-226.
103. (jointly with A.Ilyin), *Lieb--Thirring inequalities on the sphere*, St. Petersburg Math. J., **31**:3 (2019), 116-135.

102. (jointly with O.Ibrogimov and D.Krejcirik), *Sharp bounds for eigenvalues of biharmonic operators with complex potentials in low dimensions*, accepted by *Mathematische Nachrichten*.
101. (jointly with D.Bonheure, J.Dolbeault, M.J.Esteban and M.Loss), *Symmetry Results in Two-Dimensional Inequalities for Aharonov–Bohm Magnetic Fields*, *CMP*, (2019) DOI 10.1007/s00220-019-03560-y.
100. (jointly A.Hassannezhad) *Eigenvalue bounds of mixed Steklov problems*, *Communications in Contemporary Mathematics*, (2019) Vol. 22, No. 02, 1950008 (2020) doi.org/10.1142/S0219199719500081.
99. (jointly with R.L.Frank), *Bound on the number of negative eigenvalues of two-dimensional Schrödinger operators on domains*, *St. Petersburg. Math. J.*, **30**:3 (2018), 573-589.
98. (jointly with A.Ilyin), *Berezin--Li--Yau inequalities on domains on the sphere*, *JMAA*, **473** (2) (2019), 1253--1269.
97. (jointly with M.Ruzhansky and N. Yessirkegenov) *Hardy inequalities for Landau Hamiltonian and for Baouendi-Grushin operator with Aharonov-Bohm type magnetic field, Part I*, *Math. Scand.*, **125**, n. 2 (2019), 239-269.
96. (jointly with F. Ferrulli and O.Safronov), *Eigenvalues of the bilayer graphene operator with a complex valued potential*, *Anal.Math.Phys.* **9**, 1535–1546 (2019) doi:10.1007/s13324-018-0262-4.
95. (jointly with J.Dolbeault, M.J.Esteban and M.Loss), *Magnetic ring*, *Journal of Mathematical Physics* **59**, 2018.
94. (jointly with J.Dolbeault, M.J.Esteban and M.Loss), *Interpolation inequalities and spectral estimates for magnetic operators*, *Annales Henri Poincaré*, **19** (5) (2018) 1439--1463.
93. (jointly with A.Velicu), *Bound States of operators with Heisenberg sub-Laplacian*, *EMS Series of Congress Reports*, 381-387 (2018).
92. (jointly with E. Korotyaev), *Trace formulae for discrete Schrödinger operators with complex-valued potentials*, *Bull. Math. Sci.* (2018) **8**:453--475.
- 91.(jointly with A.Peicheva and A.Shlapunov), *Finding eigenvalues and eigenfunctions of the Zaremba problem for the circle*, *Complex Anal. Oper. Theory*, **11**, no. 4, (2017). 895--926.
90. (jointly with S. Maad), *Perturbations of embedded eigenvalues for a magnetic Schrödinger operator on a cylinder*, *J. Math. Phys.* **58**, no. 1 (2017), 17 p.
89. (jointly with E. Korotyaev), *Trace formulas for a discrete Schrödinger operator*, *Funct. Anal. Appl.* **51**, no 3 (2017), 225--229.

- 88 (jointly with M.Ashbaugh, F.Gesztesy, M.Mitrea and S.Sukhtaiev), *A Bound for the Eigenvalue Counting for Krein--von Neumann and Friedrichs Extensions*, Adv. Math. **304** (2017), 1108--1155.
87. (jointly with L. Kapitanski), *On continuous and discrete Hardy inequalities*, J. Spectr. Theory, **6**, no. 4 (2016), 837--858.
86. (jointly with R.Frank and O. Safronov), *On the number of eigenvalues of Schrödinger operators with complex potentials*, J. Lond. Math. Soc., II. Ser. **94**, no. 2 (2016), 377--390.
85. (jointly with L. Schimmer and L. Takhtajan), *Weyl-type asymptotics and bounds for the eigenvalues of functional-difference operators for mirror curves*, Geom. Funct. Anal., **26** (2016) 288--305.
84. (jointly with A. Ilyin), *Lieb-Thirring inequalities on the torus*. (English. Russian original) Sb. Math. **207**, no. 10 (2016), 1410--1434; translation from Mat. Sb. **207**, No. 10 (2016), 56--79.
83. (jointly with A.Iljin, M.Loss and S.Zelik), *One-dimensional interpolation inequalities, Carlson—Landau inequalities and magnetic Schrödinger operators*, Int. Math. Res. Notices, 4 (2016), 1190--1222.
82. (jointly with H.Kovarik and T. Ekholm), *Hardy inequalities for p -Laplacians with Robin boundary conditions*, Nonlinear Analysis, **128** (2015), 365--379.
81. (jointly with A.Iljin and S.Zelik), *Sharp Interpolation Inequalities for Discrete Operators*, ISSN 1064-5624, Doklady Mathematics, **91**, no. 2 (2015), 215--219.
80. (jointly with Th. Hoffmann-Ostenhof), *Hardy inequalities with homogenous weights*, J. Funct.Anal., **268** (2015) 3278--3289.
79. (jointly with F.Gesztesy, M. Mitrea and S.Sukhtaev), *A bound for the eigenvalue counting function for higher-order Krein Laplacians on open sets*, Proceedings of QMATH12, Berlin, 2013.
78. (jointly with A. Ilyin and S. Zelik), *Sharp interpolation inequalities for discrete operators and applications*, Bull. Math. Sci. **5**, no. 1 (2015), 19—57.
77. (jointly with J. Dolbeault, M.J. Esteban and M. Loss), *One-dimensional Gagliardo-Nirenberg-Sobolev inequalities: Remarks on duality and flows*, J. Lond. Math. Soc., II. Ser. **90**, (2014) no. 2, 525--550.
76. (jointly with J. Dolbeault, M.J. Esteban and M. Loss), *Spectral properties of Schrödinger operators on compact manifolds: rigidity, flows, interpolation and spectral estimates*, C. R., Math., Acad. Sci. Paris, **351**, (2013) no. 11-12, 437--440.
75. (jointly with P. Exner and M. Usman), *On some sharp spectral inequalities for Schrödinger operators on semi-axis*, Commun. Math. Phys. **326**, (2014) no. 2, 531--541.

74. (jointly with J. Dolbeault and M.J. Esteban), *Spectral estimates on the sphere*, Analysis & PDE, **7**, (2014) no. 2, 435--460.
73. (jointly with J.-C. Cuenin and C. Tretter), *Eigenvalue estimates for non-selfadjoint Dirac operators on the real line*, Ann. Henri Poincaré, **15**, (2014) no. 4, 707--736.
72. (jointly with M. Solomyak), *On spectral estimates for two-dimensional Schrödinger operators*, J. Spectr. Theory, **3**, (2013) no. 4, 505-515.
71. (jointly with H. Kovarik), *Hardy inequalities for Robin Laplacians*, JFA, **262**, (2012) no. 12, 4972-4985.
70. (jointly with M. Solomyak), *On the negative spectrum of the two-dimensional Schrödinger operator with radial potential*, CMP, **314** (2012), no.1, 229-241.
69. *Spectral inequalities for Partial Differential Equations and their applications*, Proceedings of ICCM2010 in Beijing, AMS/IP Studies in Advanced Mathematics, **51**, pt.2, (2012) 629-643.
68. (jointly with L. Geisinger and T. Weidl), *Geometrical versions of improved Berezin-Li-Yau inequalities*, J. Spectr. Theory (2011), no. 1, 87-109.
67. (jointly with L. Aermak), *Hardy's inequality for the Grushin operator with a magnetic field of Aharonov-Bohm type*, Algebra i Analiz **23** (2011), no. 2, 1-8.
66. (jointly with R. Frank) *Inequalities between Dirichlet and Neumann eigenvalues on the Heisenberg group*, Int. Math. Res. Not. (2010) no.15, 2889-2902.
65. (jointly with F. Portman), *Spectral inequalities for a class non-elliptic operators*, AMS Translations, Ser. 2, **231**, (2010) 109-114.
64. (jointly with R. Frank and R. Seiringer) *A Sharp Bound on Eigenvalues of Schrödinger Operators on the Half-line with Complex-valued Potentials*, Operator Theory: Advances and Applications, Vol. 214 (2010), 39-44.
63. (jointly with F. Avkhadiev), *On a sharp Hardy inequality for convex domains*, Around the research of Vladimir Maz'ya. I. Function Spaces. Dordrecht: Springer; International Mathematical Series (New York) **12**, (2010) 1-12.
62. Nina N. Uraltseva. *On the occasion of her 75th birthday*, Problems in mathematical analysis. no. 40. J. Math. Sci. (N. Y.) **159** (2009), no. 1, 1-3.
61. (jointly with O. Safronov), *Eigenvalue estimates for Schrödinger operators with complex potentials*, Comm. Math. Phys. **292** (2009), no. 1, 29-54.
60. (jointly with R. Frank), *Spectral inequalities for Schrödinger operators with surface potentials*, Spectral theory of differential operators, Amer. Math. Soc. Transl. Ser. 2, **225**, Amer. Math. Soc., Providence, RI (2008) 91-102.

59. (jointly with M.Hoffmann-Ostenhof, Th.Hoffmann-Ostenhof and J.Tidblom), *Many-particle Hardy inequalities*, J. Lond. Math. Soc. (2) **77** (2008), no. 1, 99-114.
58. (jointly with A.Sobolev), *Hardy inequalities for simply connected planar domains*, Spectral theory of differential operators, Amer. Math. Soc. Transl. Ser. 2, **225**, Amer. Math. Soc., Providence, RI, 2008) 133-140.
57. (jointly with R.Frank and S.Molchanov), *Eigenvalue estimates for magnetic Schrödinger operators in domains*, Proc. Amer. Math. Soc. **136** (2008), no. 12, 4245-4255.
56. (jointly with A.Gordon, J.Holt and S.Molchanov), *On the Simon-Spencer Theorem*, Journal of Mathematical Physics, Analysis, Geometry, **4** (2007) no.1, 1-14.
55. (jointly with A.Hansson) *Sharp spectral inequalities for a class of hypoelliptic operators*, LMS Lecture Note Series, 354, (2008) 100-115.
54. (jointly with J.Dolbeault and M.Loss), *Lieb-Thirring inequalities with improved constants*, Journal of European Mathematical Society, **10** (2008) no 4. 1121-1126.
53. (jointly with R.Shterenberg and V.Sukhanov), *Inverse spectral problems for Schrödinger operators with energy depending potentials*, CRM Proceedings & Lecture Notes, **42** (2007), 341-352.
52. (jointly with R. Frank, E.H. Lieb and R. Seiringer), *Lieb-Thirring inequalities for Schrödinger operators with complex-valued potentials*, Letters in Math. Physics, **77** (2006), 309-316.
51. (jointly with J. Hoppe and J. Östensson), *Solutions and the removal of eigenvalues for fourth order differential operators*, IMRN, (2006), ID 85050, 1-14.
50. (jointly with R. Shterenberg, V. Sukhanov and J. Östensson), *Reflectionless potentials for an ordinary differential operator of order four*, Inverse Problems, **22** (2006), 135-153.
49. (jointly with E. Langmann and C. Paufler), *Singular factorizations, self-adjoint extensions and applications to quantum many-body physics*, J.Phys. A: Math.Gen. **39** (2006), 1057-1071.
48. Editor of the Proceedings of the 4th Congress (4ECM) in Stockholm, 2004 European Mathematical Society (EMS), Zurich, 2005, 881 pp.
47. (jointly with S.Naboko and O.Safronov), *Absolutely continuous spectrum of Schrödinger operators with slowly decaying and oscillating potentials*, Comm. Math. Ph., **253** (2005), 611-631.
46. (jointly with O.Safronov), *The negative discrete spectrum of a class of two-dimensional Schrödinger operator with magnetic fields*, Asymptotic Analysis **41** (2)(2005), 107-117.

45. (jointly with S.Naboko and O.Safronov), *A Szegő condition for a multidimensional Schrödinger operator*, J. Funct. Anal. **219** (2005), 285-305.
44. (jointly with A. Balinsky and A. V. Sobolev), *Generalized Hardy inequality for the magnetic Dirichlet forms*, Journal of Statistical Physics, **116** (2004), 507-521.
43. (jointly with S.Chanillo and B.Helffer), *Non linear eigenvalues and analytic hypoellipticity*, J. Func. Anal., **209** (2004), 425-443.
42. (jointly with S.Naboko and O.Safronov), *On new relations between spectral properties of Jacobi matrices and their coefficients*, Comm. Math. Ph., **241** (2003), 91-110.
41. (jointly with O.Safronov), *Absolutely continuous spectrum of matrix valued Schrödinger Operators*, Proc. UBA conference, Contemp. Math. **327** (2002) 215-221.
40. (jointly with S.Naboko and O.Safronov), *Absolutely continuous spectrum of Jacobi matrices*, Contemp. Math., **307**, Amer. Math. Soc., Providence, RI, (2002) 215-223.
39. (jointly with O.Safronov and T.Weidl), *Bounds states asymptotics for elliptic operators with strongly degenerated symbols*, Nonlinear Problems in Math. Physics and Related Topics, Kluwer Acad. Publ. (2002) 233-246.
38. (jointly with M.Hoffmann-Ostenhof and T.Hoffmann-Ostenhof) *A geometrical of Hardy's inequality*, J. Funct. Anal., **189**, (2002) no. 2, 539-548.
40. (jointly with D.Hundertmark and T.Weidl), *New bounds on the Lieb-Thirring constants*, Inventiones mathematicae, **140**, (2000) 693-704.
37. (jointly with T.Weidl) *Sharp Lieb-Thirring inequalities in high dimensions*, Acta Mathematica, **184**, (2000) 87-111.
36. *The negative spectrum of a class of two-dimensional Schrödinger operators with spherically symmetric potentials*, Funct. Anal. and its Appl., **34**, (2000), no. 4, 85-87.
35. (jointly with M.Birman and T.Suslina), *The discrete spectrum of a two-dimensional second-order periodic elliptic operator perturbed by a decreasing potential. I., A semi-infinite gap.*, Algebra i Analiz, **12**, (2000) no 4, 36-78.
34. (jointly with T.Weidl) *Recent results on Lieb-Thirring inequalities*, "Equations aux derivees partielles", Saint-Jean-De-Monts, 2000.
33. (jointly with I.M.Sigal) *Global Fourier integral operators and semiclassical asymptotics*, Review of Mathematical Physics, **12** (2000) no.5, 749-766.

32. *On the Lieb-Thirring conjecture for a class of potentials*, Operator Theory: Adv. and Appl., **110**, (1999) 227-234.
31. (jointly with T.Weidl), *Hardy inequalities for magnetic Dirichlet forms*, Operator Theory: Adv. and Appl., **108**, (1999) 299-305.
30. (jointly with Yu. Netrusov), *On the Negative eigenvalues of a class of Schrödinger operators*, AMS Transl. (2), **189**, (1999) 173-186.
29. (jointly with M.Sh.Birman and M.Solomyak), *On the eigenvalue behaviour for a class of differential operators on semiaxis*, Math. Nachrichten **195**, (1998) 17-46.
28. (jointly with D.Robert and Yu.Safarov) *Remarks on the paper of V.Guillemin and K.Okikiolu: "Subprincipal terms in Szegö estimates"*, Mathematical Research Letters **5**, (1998) 57-61,
27. *Dirichlet and Neumann eigenvalue problems on domains in Euclidean spaces*, Journal of Functional Analysis, **151**, (1997) 531-545.
26. (jointly with M.Birman), *Non-standard spectral asymptotics for a two-dimensional Schrödinger operator*, CRM Proceedings and Lecture Notes, **12**, (1997) 8-16.
25. (jointly with M.Sh.Birman and M.Solomyak), *The negative discrete spectrum of the operator $(-\Delta)^{1-\alpha} V$ in $L_2(\mathbb{R}^d)$ for d even and $2 \leq \alpha \leq d$* , Arkiv för Matematik, **35**, (1997) 87-126.
24. (jointly with Yu.Safarov) *A generalization of the Berezin-Lieb inequality*, Amer. Math. Soc. Transl. (2), **175**, (1996) 67-79.
23. (jointly with M.Birman) *The negative discrete spectrum of a two-dimensional Schrödinger operators*, Comm. Pure Appl. Math., **XLIX**, (1996) 967-997.
22. (jointly with Yu. Safarov), *Szegö type limit theorems*, Journal of Functional Analysis, **138**, (1996) 544-559.
21. *On inequalities for the bound states of Schrödinger operators*, Operator theory: Advances and Applications, **78**, (1995) Birkhauser Verlag Basel/Switzerland.
20. (jointly with Yu. Safarov and D.Vassiliev), *On global representation of Lagrangian distributions and solutions of Hyperbolic equations*, Comm. Pure Appl. Math. **XLVII**, (1994) 1411-1456.
19. (jointly with M.Sh.Birman), *Discrete spectrum of the perturbed Dirac operator*, Arkiv för Matematik, **32** (1994), 13-32.
18. *Asymptotics of the negative spectrum of a class of Schrödinger operators with a large coupling constant*, Proceedings of the AMS, **119**, (1993) no. 2, 481-488.
17. (jointly with Yu. Safarov and D.Vassiliev), *Global representation of Lagrangian distributions*, Operator Calculus and Spectral Theory (1992), Symposium

on Operator Calculus and Spectral Theory, Lambrecht (Germany), December 1991.

16. (jointly with D.Vassiliev), *Magnetoelasticity of thin superconducting shells*, XVIIIth International Congress of Theoretical and Applied Mechanics, Haifa, Israel, August 22-28, 1992.

15. (jointly with Yu.Safarov and D.Vassiliev), *Global oscillatory integrals and Fourier Integral Operators*, Colloque Methodes et Analyse Microlocale, 25 Feb - 1 March, 1991.

14. (jointly with Yu. Safarov), *Error estimate in the generalized Szegő theorem*, Journees "Equations aux derivees partielles", Saint-Jean-De-Monts, 1991.

13. && (jointly with M. Levitin and D. Vassiliev), *A class of non-linear variational appearing in the theory of magnetoelasticity of thin superconducting*, Nonlinearity, **4**, (1991) 821-833.

12. (jointly with Yu. Safarov), *Global solution of the wave equation*, Journees "Equations aux derivees partielles", Saint-Jean-De-Monts, 1990.

11. *Estimate of the singular numbers of a class of integral operators*, Danish-Swedish analysis seminar 1986-1987.

10. Translation into Russian (1987): Lars Hörmander "The Analysis of Linear Partial Differential Operators", v.2, Springer-Verlag, 1982.

9. (jointly with O.Titova), *On characteristic properties of a class of Fourier integral operators*, Problemy Mat. Analiza (LGU) **9**, 1983.

8. Estimate of the singular numbers for a class of pseudodifferential operators, Zap. Nauchn. Sem. LOMI, **110**, (1981) 95-99.

7. *On the resolvent for an elliptic boundary value problem on a manifold with edges*, Problemy Mat. Analiza, LGU, **8**, (1981) 62-72.

6. *Estimate of the remainder term in the formula for spectral asymptotics for a class of integral operators*, Problemy Mat. Analiza (LGU), **6**, (1977) 62-67.

5. *Spectral asymptotics of a class of Fourier integral operators*, Trudy Moskovskogo Mat. Obshch. **43**, (1981) 92-115.

4. (jointly with P.E. Hmelnitskij), *On estimates of the resolvent of general elliptic boundary value problems*, Prikladnaya matematika, Mezvuzovskij sbornik 1 (**135**), 10-15, LISI, Leningrad 1977.

3. Spectral asymptotics for composition of pseudodifferential operators and the reflections at the boundary. Dokl. AN SSSR 236:4 (1977), 800-803.\acr

2. *Spectral asymptotics of degenerate integral operators in a cylinder*, Problemy Mat. Analiza (LGU), **6**, (1977), 72-84.

1. *Spectral asymptotics of a class of integral operators*, Mat. Zametki, 16:5 \ (1974), 741-750.

Books edited

Functional analysis and operator theory for quantum physics. The Pavel Exner anniversary volume. Dedicated to Pavel Exner on the occasion of his 70th birthday; Zürich: European Mathematical Society (EMS) (with Jaroslav Dittrich and Hynek Kovarik), EMS Series of Congress Reports, v-vii (2017).

Spectral theory and analysis. Proceedings of the Conference on Operator Theory, Analysis and Mathematical Physics (OTAMP 2008) held in Bedlewo, June 15–22, 2008, (with Jan Janas, Pavel Kurasov, Sergei Naboko and Günter Stolz), Birkhäuser/Springer Basel AG, Basel, 2011, 169 pp.

Around the research of Vladimir Maz'ya. I. Function spaces. International Mathematical Series (New York), 11. Springer, New York; Tamara Rozhkovskaya Publisher, Novosibirsk, 2010, 395 pp.

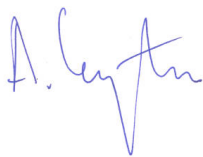
Around the research of Vladimir Maz'ya. II. Partial differential equations. International Mathematical Series (New York), 12. Springer, New York; Tamara Rozhkovskaya Publisher, Novosibirsk, 2010, 385 pp.

Around the research of Vladimir Maz'ya. III. Analysis and applications. International Mathematical Series (New York), 13. Springer, New York; Tamara Rozhkovskaya Publisher, Novosibirsk, 2010, 388 pp.

Methods of spectral analysis in mathematical physics. Proceedings of the International Conference on Operator Theory, Analysis and Mathematical Physics (OTAMP 2006) held in Lund, June 2006 (with Jan Janas, Pavel Kurasov, Sergei Naboko and Günter Stolz) Operator Theory: Advances and Applications, 186. Birkhäuser Verlag, Basel, 2009, 443 pp.

Operator theory, analysis and mathematical physics. Lectures from the International Conference on Operator Theory and its Applications in Mathematical Physics (OTAMP 2004) held in Bedlewo, July 6–11, 2004 (with Jan Janas, Pavel Kurasov, Sergei Naboko and Günter Stolz) Operator Theory: Advances and Applications, 174. Birkhäuser Verlag, Basel, 2007, 257 pp.

European Congress of Mathematics. Proceedings of the 4th Congress (4ECM) held in Stockholm, June 27–July 2, 2004. European Mathematical Society (EMS), Zürich, 2005, 881 pp.



2021-03-01

A. Laptev

