

# List of publications, as of November 2024

## a) monographs and textbooks:

1. P. Exner: *Open Quantum Systems and Feynman Integrals*; Fundamental Theories of Physics, vol. 6; *xix* + 356 p.; D. Reidel Publ. Co., Dordrecht 1985 (ISBN 90-277-1678-1).
2. J. Blank, P. Exner, M. Havlíček: *Linear Operators in Quantum Physics* (in Czech); 680p.; Karolinum, Prague 1993 (ISBN 80-7066-586-6).
3. J. Blank, P. Exner, M. Havlíček: *Hilbert–Space Operators in Quantum Physics*; *xiii* + 594 p.; American Institute of Physics, New York 1994 (ISBN 1-56396-142-3).
4. J. Blank, P. Exner, M. Havlíček: *Hilbert–Space Operators in Quantum Physics. Second edition (revised and extended)*; *xviii* + 666 p.; Springer, Dordrecht 2008 (ISBN 978-1-4020-8869-8).
5. P. Exner, H. Kovařík: *Quantum Waveguides*; *xvii* + 382 p.; Springer International, Heidelberg 2015 (ISBN 978-3-319-18575-0.)

## b) inventions:

1. P. Exner, P. Šeba: *Quantum interference transistor*, Soviet Patent Certificate No. 1562959 issued on January 8, 1990; application No. 4423188/25 registered on May 11, 1988 and accepted by the Soviet Patent Office on March 29, 1989.

## c) lecture notes:

1. J. Blank, P. Exner, M. Havlíček: *Selected Topics of Mathematical Physics: Theory of Linear Operators on Hilbert Space, vol. I* (in Czech); 324p.; State Pedagogical Publ. House, Prague 1975.
2. J. Blank, P. Exner: *Selected Topics of Mathematical Physics: Theory of Linear Operators on Hilbert Space, vol. II* (in Czech); 324p.; State Pedagogical Publ. House, Prague 1978.
3. J. Blank, P. Exner: *Selected Topics of Mathematical Physics: Theory of Linear Operators on Hilbert Space, vol. III/1* (in Czech); 268p.; State Pedagogical Publ. House, Prague 1980.
4. J. Blank, P. Exner: *Selected Topics of Mathematical Physics: Theory of Linear Operators on Hilbert Space, vol. III/2* (in Czech); 210p.; State Pedagogical Publ. House, Prague 1980.

**d) edited volumes:**

1. P. Exner, P. Šeba, eds.: *Applications of Self-Adjoint Extensions in Quantum Physics*, Proceedings of a Workshop held at Dubna, September 29 – October 1, 1987; 275p.; Lecture Notes in Physics, vol. 324, Springer, Berlin 1989.
2. P. Exner, P. Šeba, eds.: *Schrödinger Operators, Standard and Non-Standard*, Proceedings of a Workshop held at Dubna, September 6–10, 1988; 409 p.; World Scientific, Singapore 1989.
3. P. Exner, H. Neidhardt, eds.: *Order, Disorder and Chaos in Quantum Systems*, Proceedings of a Workshop held at Dubna, October 17–21, 1989; 360 p.; Operator Theory : Advances and Applications, vol. 46, Birkhäuser Verlag, Basel 1990.
4. J. Dittrich, P. Exner, eds.: *Rigorous Results in Quantum Dynamics*, Proceedings of a conference held at Liblice, June 11–15, 1990; 342p.; World Scientific, Singapore 1991.
5. M. Demuth, P. Exner, H. Neidhardt, V.A. Zagrebnov, eds.: *Mathematical Results in Quantum Mechanics*, Proceedings of a conference held at Blossin, May 17–21, 1993; 356 p.; Operator Theory: Advances and Applications, vol. 70, Birkhäuser Verlag, Basel 1994.
6. J. Dittrich, P. Exner, M. Tater, eds.: *Mathematical Results in Quantum Mechanics*, Proceedings of the QMath7 conference held in Prague, June 22–26, 1998; 393 p.; Operator Theory: Advances and Applications, vol. 108, Birkhäuser Verlag, Basel 1999
7. R. Weder, P. Exner, B. Grebert, eds.: *Mathematical Results in Quantum Mechanics*, Proceedings of the QMath8 conference held in Taxco, December 10–14, 2001; 350 p.; Contemporary Mathematics, vol. 307, AMS, Providence, R.I., 2002
8. P. Exner, J.P. Keating, P. Kuchment, T. Sunada, A. Teplyaev, eds.: *Analysis on Graphs and Applications*, Proceedings of a Isaac Newton Institute programme, January 8–June 29, 2007; 670 p.; AMS “Proceedings of Symposia in Pure Mathematics” Series, vol. 77, Providence, R.I., 2008
9. P. Exner, ed.: *XVIIth International Congress on Mathematical Physics*, Proceedings of the ICMP held in Prague, August 3–8, 2009; xvii+690 p.; World Scientific, Singapore 2010.
10. P. Exner, ed.: *Mathematical Results in Quantum Physics*, Proceedings of the QMath11 conference held in Hradec Králové, September 6–10, 2010; xi+274 p.; World Scientific, Singapore 2011.
11. P. Exner, ed.: *Mathematical Results in Quantum Mechanics*, Proceedings of the QMath12 conference held in Berlin, September 10–13, 2013; xi+383 p.; World Scientific, Singapore 2014.
12. P. Exner, R.L. Frank, F. Gesztesy, H. Holden, T. Weidl, eds.: *Partial Differential Equations, Spectral Theory, and Mathematical Physics*, the Ari Laptev Anniversary Volume, EMS Press, Berlin 2021.

e) reviews, book chapters:

1. J. Blank, P. Exner: *Remarks on tensor products and their applications in quantum theory, I. General considerations*, Acta Univ. Carolinae, Math. Phys. **17** (1976), 75–89.
2. J. Blank, P. Exner: *Remarks on tensor products and their applications in quantum theory, II. Spectral properties*, Acta Univ. Carolinae, Math. Phys. **18** (1977), 3–35.
3. P. Exner: *Unstable quantum systems and Feynman integrals* (in Russian), Sov. J. Phys. Elem. Part. Atom. Nucl. **15** (1984), 121–155.
4. P. Exner, P. Šeba: *Schrödinger operators on unusual manifolds*, in “Ideas and Methods in Quantum and Statistical Physics”, R. Høegh–Krohn’s Memorial, vol. 2, Cambridge University Press 1992; pp. 227–253.
5. P. Exner: *Seize ans après*, an appendix to the 2nd edition of the monograph “Solvable Models in Quantum Mechanics” by S. Albeverio, F. Gesztesy, R. Høegh–Krohn and H. Holden, AMS Chelsea Publishing, vol. 350, Providence, R.I., 2005; pp. 453–484.
6. P. Exner: *von Neumann way to treat systems of a mixed dimensionality*, Rep. Math. Phys. **55** (2005), 79–92.
7. P. Exner: *Unstable system dynamics: do we understand it fully?*, Rep. Math. Phys. **59** (2007), 351–363.
8. P. Exner: *Leaky quantum graphs: a review*, Proceedings of the Isaac Newton Institute programme “Analysis on Graphs and Applications”, AMS “Proceedings of Symposia in Pure Mathematics” Series, vol. 77, Providence, R.I., 2008; pp. 523–564.
9. P. Exner: *Solvable models of resonances and decays*, Proceedings of the Conference “Mathematical Physics, Spectral Theory and Stochastic Analysis” (Goslar 2011; M. Demuth, W. Kirsch, eds.), Birkhäuser, Basel 2013; pp. 165–227.
10. P. Exner: *Functional analysis*, in “Mathematical Tools for Physicists”, 2nd ed. (M. Grinfeld, ed.), Wiley, Weinheim 2015; pp. 449–474.
11. P. Exner: *Singular Schrödinger operators and Robin billiards. Spectral properties and asymptotic expansions*, Afrika Matematika **31** (2020), 71–88.
12. P. Exner: *Schrödinger operators with a switching effect*, in *Mathematical Modelling, Optimization, Analytic and Numerical Solutions* (P. Manchanda, R.P. Lozi, A.H. Siddiqi, eds.), Springer, Singapore 2020; pp. 13–31.
13. P. Exner: *Spectral optimization for singular Schrödinger operators*, Operators and Matrices **14** (2020), 705–716.
14. P. Exner: *Topologically induced spectral behavior: the example of quantum graphs*, Proceedings of the 8th International Congress of Chinese Mathematicians, to appear
15. P. Exner: *Dirac operators with a  $\delta$ -shell interaction*, Physics of Particles and Nuclei **51** (2020), 405–409.

16. P. Exner: *Leaky quantum structures*, Proceedings of the conference “Complex Analysis and Mathematical Physics”, in honor of Armen Sergeev; *Trudy MIAN* **311** (2020), 123–139; *Proc. Steklov Inst.* **311** (2020), 114–128.
17. P. Exner: *Quantum graphs with vertices violating the time reversal symmetry* (in Russian), *J. Phys. Elem. Part. Atom. Nucl.* **52** (2021), 645–657; English version **52** (2021), 330–336.
18. P. Exner: *Geometrically induced spectral properties of soft quantum waveguides and layers*, *Rev. Math. Phys.* **36** (2024), 236003

**f) research papers:**

1. P. Exner, J. Tolar: *On  $S$ -transformation in the strong coupling theory*, *Czech. J. Phys.* **B19** (1969), 1480–1485.
2. P. Exner: *Inelastic e–p scattering in the polarized case*, *Nucl. Phys.* **B19** (1970), 42–50.
3. M. Havlíček, P. Exner: *Note on the description of an unstable system*, *Czech. J. Phys.* **B23** (1973), 594–600.
4. M. Havlíček, P. Exner: *Remarks on two-component equations for massive leptons*, *Physica Scripta* **9** (1974), 161–162.
5. M. Havlíček, P. Exner: *On the minimal canonical realization of the Lie algebra  $O_{\mathbb{C}}(n)$* , *Ann. Inst. H. Poincaré* **A23** (1975), 313–333.
6. M. Havlíček, P. Exner: *Matrix canonical realizations of the Lie algebra  $o(m, n)$ , I. Basic formulae and classification*, *Ann. Inst. H. Poincaré* **A23** (1975), 335–347.
7. P. Exner: *Remark on the decay of a mixed state*, *Czech. J. Phys.* **B26** (1976), 976–982.
8. P. Exner: *Remark on the energy spectrum of a decaying system*, *Commun. Math. Phys.* **50** (1976), 1–10.
9. P. Exner, M. Havlíček, W. Lassner: *Canonical realizations of classical Lie algebras*, *Czech. J. Phys.* **B26** (1976), 1213–1228.
10. P. Exner: *Unstable systems and repeated measurements, I. General considerations*, *Czech. J. Phys.* **B27** (1977), 117–126.
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13. J. Dolejší, P. Exner: *Corrections to the exponential decay law: are they observable?*, *Czech. J. Phys.* **B27** (1977), 855–864.
14. M. Havlíček, P. Exner: *Matrix canonical realizations of the Lie algebra  $o(m, n)$ , II. Casimir operators*, *Czech. J. Phys.* **B28** (1978), 949–962.

15. J. Blank, P. Exner, M. Havlíček: *Quantum-mechanical pseudo-Hamiltonians*, Czech. J. Phys. **B29** (1979), 1325–1341.
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29. P. Exner: *Representations of the Poincaré group associated with unstable particles*, Phys. Rev. **D28** (1983), 2621–2627.
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275. K. Ando, E. Blåsten, P. Exner, H. Isozaki, E. Korotyaev, M. Lassas, J. Lu, H. Morioka: *Inverse problems for quantum graph associated with square and hexagonal lattices*, submitted to Rev. Math.Phys.
276. P. Exner, H. Kovařík: *Optimizing the ground of a Robin Laplacian: asymptotic behavior*, submitted to SIAM J. Math. Anal.
277. P. Exner, J. Pekař: *Spectral properties of hexagonal lattices with the  $-R$  coupling*, submitted to Rep. Math. Phys.
278. P. Exner, D. Spitzkopf: *Magnetic transport due to a translationally invariant potential obstacle*, submitted to J. Math. Phys.
279. P. Exner, J. Rohleder: *Optimization of quantum graph eigenvalues with preferred orientation vertex conditions*, submitted to Ann. H. Poincaré

**g) contributions to conference proceedings and other edited volumes:**

They cover mostly the same problems as the above listed articles. If a contribution appeared with a substantial time gap before the corresponding research paper(s) it is marked by an asterisk. In some cases (indicated by \*\*) there is no journal presentation.

- 1.\* P. Exner: *Decay law exponentiality as an apparatus effect* (in Czech), Proc. of the 3rd Conference of Czechoslovak Physicists (Olomouc 1973), pp. 98–100.

- 2.\* M. Havlíček, P. Exner: *Matrix canonical realizations of the Lie algebra  $o(m, n)$*  (in Russian), Proceedings of a Conference on Algebraical Methods (Varna 1974), JINR D-1,2-8405; pp. 336–340.
- 3.\* P. Exner: *Description of unstable systems and the problem of repeated measurements* (in Czech), Proceedings of the 4th Conference of Czechoslovak Physicists (Liberec 1975), pp. 269–270.
4. M. Havlíček, P. Exner: *Matrix canonical realizations of the Lie algebra  $o(m, n)$*  (in Czech), Proceedings of the 4th Conference of Czechoslovak Physicists (Liberec 1975), pp. 271–272.
- 5.\* P. Exner: *Bounded-energy approximation for an unstable system* (in Czech), Proceedings of the 5th Conference of Czechoslovak Physicists (Košice 1977), pp. 187–189.
6. P. Exner, M. Havlíček, W. Lassner: *Boson representations of classical Lie algebras* (in Czech), Proceedings of the 5th Conference of Czechoslovak Physicists (Košice 1977), pp. 189–191.
7. P. Exner, M. Havlíček, W. Lassner: *Boson representations of classical Lie algebras*, Proc. of the International Conference on Operator Algebras, Ideals and Applications in Theoretical Physics (Leipzig 1977), Teubner Verlag; pp. 277–278.
- 8.\*\* H.-P. Böhm, P. Exner, M. Havlíček, P. Kolář, W. Lassner: *A FORTRAN program for commutators of polynomials in creation and annihilation operators* (in Czech), Proceedings of the 5th Conference of Czechoslovak Physicists (Košice 1977), pp. 191–193.
- 9.\* Č. Burdík, P. Exner, M. Havlíček: *Highest-weight representations of the Lie algebras  $sl(n + 1, \mathbb{C})$  constructed by canonical realizations* (in Russian), Proceedings of the International Seminar on Group-Theoretical Methods and their Applications (Zvenigorod 1979), pp. 52–56.
- 10.\* P. Exner, G.I. Kolerov: *Propagator of a quantum-mechanical damped oscillator* (in Czech), Proceedings of the 7th Conference of Czechoslovak Physicists (Prague 1981), contribution 01–05.
- 11.\* P. Exner, G.I. Kolerov: *Dynamics of open quantum systems and rigorous Feynman integrals* (in Czech), Proceedings of the 7th Conference of Czechoslovak Physicists (Prague 1981), contribution 01–06.
- 12.\* P. Exner, G.I. Kolerov: *Polygonal-path approximations in functional integrals* (in Czech), Proceedings of the 7th Conference of Czechoslovak Physicists (Prague 1981), contribution 01–07.
13. Č. Burdík, P. Exner, M. Havlíček: *A complete set of irreducible highest-weight representations for  $sl(3, \mathbb{C})$*  (in Czech), Proceedings of the 7th Conference of Czechoslovak Physicists (Prague 1981), contribution 01–08.
- 14.\* J. Blank, P. Exner, M. Havlíček: *Boson-fermion representations of Lie superalgebras  $osp(1, 2)$  and  $osp(1, 4)$*  (in Czech), Proceedings of the 7th Conference of Czechoslovak Physicists (Prague 1981), contribution 01–09.

- 15.\* P. Exner, G.I. Kolerov: *Description of an open-system dynamics using rigorous Feynman integrals*, Proceedings of the 6th International Conference on Quantum Field Theory (Alushta 1981), JINR D2-81-543; pp. 149–152.
16. P. Exner: *Complex potentials and rigorous Feynman integrals*, Proceedings of the International Symposium on Selected Topics in Quantum Field Theory and Mathematical Physics (Bechyně 1981); Czech. J. Phys. **B32** (1982), 628–632.
17. J. Dittrich, P. Exner: *Influence of localization on the proton lifetime* (in Czech), Proc. of the 8th Conference of Czechoslovak Physicists (Bratislava 1985), pp. 34–35.
- 18.\* P. Exner, P. Šeba, P. Šťovíček: *Quantum waveguides*, Proceedings of the Workshop on Applications of Self-Adjoint Extensions in Quantum Physics (Dubna 1987); Lecture Notes in Physics, vol. 324, Springer, Heidelberg 1989; pp. 257–266.
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- 21.\* P. Exner, P. Šeba: *Bound states in classical and quantum waveguides*, Proc. of the Symposium on Partial Differential Equations (Holzhau 1988), Teubner Texte zur Mathematik, Band 112, Teubner, Leipzig 1989; pp. 131–138.
- 22.\* J. Dittrich, P. Exner, P. Šeba: *Dirac Hamiltonian with contact interaction on a sphere*, Proceedings of the Workshop on Schrödinger Operators, Standard and Nonstandard (Dubna 1988), World Scientific, Singapore 1989; pp. 133–147.
- 23.\* P. Exner, P. Šeba: *Electrons in semiconductor microstructures: a challenge to operator theorists*, Proceedings of the Workshop on Schrödinger Operators, Standard and Nonstandard (Dubna 1988), World Scientific, Singapore 1989; pp. 79–100.
24. P. Exner: *Spectral properties of bent quantum wires*, Proceedings of the Summer School on Recent Developments in Quantum Mechanics (Poiana Brasov 1989), Kluwer, Dordrecht 1991; pp. 257–264.
25. P. Exner: *Bound states and resonances in quantum wires*, Proceedings of the Workshop on Order, Disorder and Chaos in Quantum Systems (Dubna 1989), Integral Equations and Operator Theory, vol. 46; Birkhauser Verlag, Basel 1990; pp. 65–84.
- 26.\* J. Dittrich, P. Exner, P. Šeba: *Dirac Hamiltonian with Coulomb potential and contact interaction on the sphere*, Proceedings of the Workshop on Order, Disorder and Chaos in Quantum Systems (Dubna 1989), Integral Equations and Operator Theory, vol. 46; Birkhauser Verlag, Basel 1990; pp. 209–215.

27. P. Exner: *Quantum waveguides: energy bounds and critical thickness*, Proceedings of the Conference on Rigorous Results in Quantum Dynamics (Liblice 1990); World Scientific, Singapore 1991; pp. 125–142.
- 28.\*\* P. Exner, A. Truman: *Models of  $K$ -capture decay: stochastic vs. quantum mechanics*, Proceedings of the Conference on Stochastic and Quantum Mechanics (Swansea 1990); World Scientific, Singapore 1992; pp. 130–150.
- 29.\* P. Duclos, P. Exner, P. Šťovíček: *Resonances at bends of a two-dimensional quantum waveguide*, Proceedings of the Conference on Stochastic Processes, Physics and Geometry (Locarno 1991); World Scientific, Singapore 1995; pp. 199–208.
- 30.\* J.-P. Antoine, P. Exner, P. Šeba, J. Shabani: *A Fermi-type rule for contact embedded-eigenvalue perturbations*, Proceedings of the Conference on Mathematical Results in Quantum Mechanics (Blossin 1993); Birkhäuser Verlag, Basel 1994; pp. 79–87.
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- 32.\* J. Asch, P. Duclos, P. Exner: *Stark–Wannier Hamiltonians with pure point spectrum*, Proceedings of the Conference on Differential Equations, Asymptotic Analysis, and Mathematical Physics (Potsdam 1996); Akademie Verlag, Berlin 1997; pp. 10–25.
33. P. Exner, R. Gawlista, P. Šeba, M. Tater: *Point perturbations in a mesoscopic strip* (in Czech), Proceedings of the 12th Conference of Czech and Slovak Physicists (Ostrava 1996); pp. 413–417.
- 34.\* P. Exner: *Laterally coupled quantum waveguides*, Advances in Differential Equations and Mathematical Physics (Atlanta 1997); AMS “Contemporary Mathematics” Series, vol. 217, Providence, R.I., 1998; pp. 69–82.
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- 36.\* F. Bentosela, P. Exner, V.A. Zagrebnov: *Anomalous electron trapping by magnetic flux tubes and electric current vortices*, Proceedings of the Conference “Mathematical Results in Quantum Mechanics” (QMath7, Prague 1998); Operator Theory: Advances and Applications, Birkhäuser, Basel; pp. 191–196.
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- 38.\*\* P. Exner: *Point interactions in a tube*, in “Stochastic Processes: Physics and Geometry: New Interplayes II” (A volume in honor of S. Albeverio; F. Gesztesy et al., eds.); CMS Conference Proceedings, vol. 29, Providence, R.I. 2000; pp. 165–174.

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40. P. Exner: *Magneto-resonances in quantum-dot resonators*, Proceedings of the “Days on Diffraction” (Sankt Petersburg 1999), S. Petersburg State University Press 1999; pp. 40–47.
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- 44.\* P. Exner, S. Kondej: *Leaky quantum wire and dots: a resonance model*, Proceedings of the XIV International Congress on Mathematical Physics (Lisbon 2003), World Scientific, Singapore 2005; pp. 593–600.
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49. P. Exner: *Point interaction polygons: an isoperimetric problem*, in “Mathematical Physics of Quantum Mechanics, Selected and Refereed Lectures from QMath9” (proceedings, Giens 2004); Springer Lecture Notes, vol. 690, 2006; pp. 55–64.
- 50.\*\* P. Exner, T. Ichinose, S. Kondej: *On relations between stable and Zeno dynamics in a leaky graph decay model*, Proceedings of the Conference “Operator Theory and Mathematical Physics” (Będlewo 2004); Operator Theory: Advances and Applications, vol. 174, Birkhäuser, Basel 2007; pp. 21–34.
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- 56.\*\* P. Exner, O. Post: *Quantum networks modelled by graphs*, Proceedings of the Joint Physics/Mathematics Workshop on “Few-Body Quantum System” (Aarhus 2007), AIP Conf. Proc., vol. 998; Melville, NY, 2008, pp. 1–17.
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- 58.\*\* P. Exner, M. Fraas: *Interlaced dense point and absolutely continuous spectra for Hamiltonians with concentric-shell singular interactions*, Proceedings of the QMath10 Conference (Moeciu 2007; I. Beltita, G. Nenciu, R. Purice, eds.), World Scientific, Singapore 2008; pp. 48–65.
59. P. Exner: *Vertex couplings in quantum graphs: approximations by scaled Schrödinger operators*, Proceedings of the ICM Satellite Conference “Mathematics in Science and Technology” (New Delhi 2010; A.H. Siddiqi, R.C. Singh, P. Manchanda, eds.), World Scientific, Singapore 2011, pp. 71–92.
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- 61.\*\* P. Exner: *Momentum operators on graphs*, in “Spectral Analysis, Differential Equations and Mathematical Physics: A Festschrift in Honor of Fritz Gesztesy’s 60th Birthday” (H. Holden, B. Simon, G. Teschl, eds.), Proc. Symp. Pure Math., vol. 87, AMS, Providence, R.I.; pp. 105–118.
62. P. Exner, D. Barseghyan: *Spectral analysis of Schrödinger operators with unusual semiclassical behavior*, Acta Polytechnica **53** (2013), 271–279.
63. J. Behrndt, P. Exner, V. Lotoreichik: *Essential spectrum of Schrödinger operators with  $\delta$ -interactions on the union of compact Lipschitz hypersurfaces*, Proc. Appl. Math. Mech. (2013), 523–524.

64. P. Exner: *Resonances in quantum networks and their generalizations*, in “Non-linear Phenomena in Complex Systems: From Nano to Macro Scale”, Proceedings of the NATO Advanced Research Workshop “New Challenges in Complex System Physics: Disaster Forecasting, Crisis Modeling and Sustainable Development” (Samarkand 2013), Springer 2014; pp. 159–178.
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- 67.\*\* P. Exner, V. Lotoreichik: *Optimization of the lowest eigenvalue for leaky star graphs*, in Proceedings of the conference “Mathematical Results in Quantum Physics” (QMath13, Atlanta 2016; F. Bonetto, D. Borthwick, E. Harrell, M. Loss, eds.), *Contemporary Math.*, vol 717, AMS, Providence, R.I., 2018; pp. 187-196.
68. P. Exner: *Singular Schrödinger operators and Robin billiards: spectral properties and asymptotic expansions*, Proceedings of the Pan African Congress of Mathematics (Rabat 2017) – see the review paper [11]
- 69.\*\* P. Exner, S. Kondej: *Scattering on leaky wires in dimension three*, written for “Analysis and Operator Theory – In Honor of Tosio Kato’s 100th Birthday” (Th. Rassias and V. Zagrebnov, eds.), Springer Optimization and Its Applications, vol. 146, Cham 2019; pp. 81-91.
70. P. Exner: *Schrödinger operators with a switching effect*, in proceedings of the “International Conference in conjunction with 14th Biennial Conference of ISIAM” (Amritsar 2018)– see the review paper [12]
71. P. Exner: *Spectral optimization for singular Schrödinger operators*, Proceedings of the conference “Differential Operators on Graphs and Waveguides” (Graz 2019) – see the review paper [13]
72. P. Exner: *Topologically induced spectral behavior: the example of quantum graphs*, Proceedings of the 8th International Congress of Chinese Mathematicians (Beijing 2019) – see the review paper [14]
73. P. Exner: *Dirac operators with a  $\delta$ -shell interaction*, Proceedings of the International Bogolyubov Conference “Problem of Theoretical and Mathematical Physics” (Moscow and Dubna 2019) – see the review paper [15]
74. P. Exner: *Leaky quantum structures*, Proceedings of conference “Complex Analysis and Mathematical Physics”, in honor of Armen Sergeev – see the review paper [16]
- 75.\*\* P. Exner, J. Lipovský: *Spectral transition model with the general contact interaction*, in “From Complex Analysis to Operator Theory: A Panorama. In Memory of Sergey Naboko” (M. Brown, F. Gesztesy, P. Kurasov, A. Laptev, B. Simon, G. Stolz, and I. Wood, eds.), Operator Theory: Advances and Applications, vol. 291, Birkhäuser 2023; pp. 523–547.



76. P. Exner: *Geometrically induced spectral properties of soft quantum waveguides and layers*, Proceedings of the QMath15 conference (UC Davis 2022) – see the review paper [18]
- 77.\*\* J. Behrndt, P. Exner, M. Holzmann, M. Tušek: *On two-dimensional Dirac operators with  $\delta$ -shell interactions supported on unbounded curves with straight ends*, Proceedings of “Puglia Summer Trimester 2023”, to appear

**h) theses and other unpublished works:**

1. P. Exner: *Inelastic ep scattering with production of the  $\Delta_{33}$  resonance* (in Czech), 64p.; Charles University, Prague 1969.
2. P. Exner: *Description of unstable systems and the problem of repeated measurements* (in Czech), 75p.; Charles University, Prague 1974.
3. P. Exner: *Unstable quantum systems* (in Czech), 126p.; Charles University, Prague 1977.
4. P. Exner: *Unstable quantum systems and Feynman integrals* (in Russian), 146p.; JINR, Dubna 1982.
5. P. Exner: *Quantum systems with a reducible state space* (in Russian), 215p.; JINR, Dubna 1989.
6. P. Exner: *Bound states in quantum waveguides* (in Czech), 83p.; Dubna 1990.

**i) invited talks:**

1. *Quantum waveguides modelled by graphs*, at the “24th Winter School on Stochastic Methods in Mathematics and Physics” (Karpacz, February 11–23, 1988 – see the proceedings contribution [20])
2. *Bound states in classical and quantum waveguides*, at the conference “Partial Differential Equations” (Holzhau, April 23–28, 1988 – see the proceedings contribution [21])
3. *Bound states and resonances in quantum wires*, at the summer school “Recent Developments in Quantum Mechanics” (Poiana Brasov, August 27 – September 12, 1989 – see the proceedings contribution [24])
4. *Geometrically induced spectral properties: example of quantum waveguides*, at the conference “Stochastic Processes, Physics, and Geometry” (Locarno, June 24–29, 1991 – see the proceedings contribution [29])
5. *Spectral and resonance properties of Dirichlet tubes*, at the “Operator Theory School” (Nizhni Novgorod, September 13–19, 1991)
6. *Contact interaction models of decays and resonances*, at the workshop “Contact Interactions” (Trieste, December 20–22, 1992)
7. *Resonance coupling of one-dimensional Schrödinger operators*, at the workshop “Schrödinger operators” (Vienna, December 8–12, 1993)

8. *Irregular spectra of point interaction systems*, at the conference “Chaos, Time and Resonance” (Les Treilles, June 18–July 3, 1994)
9. *Wannier–ladder slopes and hills have no absolutely continuous spectrum*, a contributed talk at the XIth International Congress of Mathematical Physics (Paris, July 18–23, 1994)
10. *Resonances in quantum wires*, at the conference “Nonlinear, Dissipative, Irreversible Quantum Systems — Foundations, Examples and Experiments” (Clausthal, August 15–19, 1994)
11. *Wannier–Stark systems with singular interactions*, at the workshop “Point Interactions” (Trieste, September 29 – October 1, 1994 – see the proceedings contribution [31])
12. *Irregular spectra of rectangular superlattices*, at the conference “Disordered Systems, Random Matrices, and Quantum Chaos” (Bad Honnef, May 14–17, 1995)
13. *Wannier–Stark systems with singular interactions*, at the conference “Schrödinger operators” (Oberwolfach, May 10–14, 1995)
14. *Band spectra of rectangular superlattices*, at the workshop “Transport Theory and Chaos” (Vienna, August 13–27, 1995)
15. *Discrete and continuous Schrödinger operators on graphs*, at the workshop “Discrete Geometry” (Vienna, October 23–27, 1995)
16. *Laterally coupled waveguides*, at the conference “Partial Differential Equations and Mathematical Physics” (Atlanta, March 23–28, 1997 – see the proceedings contribution [35])
17. *Narrow window coupling of quantum waveguides*, at the conference “Functional Analysis in Quantum Physics” (Clausthal, June 16–20, 1997)
18. *Spectra of quantum mechanical superlattices*, at the conference “Frontiers in Quantum Physics” (Kuala Lumpur, July 8–11, 1997 – see the proceedings contribution [35])
19. *Point interactions, small scatterers and probability current singularities*, at the “Workshop on Schrödinger Operators” (Bonn, September 21–25, 1998)
20. *Schrödinger operators on graphs*, at the conference “Problems in spectral geometry” (Okayama, February 4–6, 1999)
21. *Magneto-resonances in open quantum dots*, at the conference “Days on Diffraction 99” (Sankt Petersburg, June 1–3, 1999 – see the proc. paper [40])
22. *Wannier–Stark systems with singular interactions*, at the “13th Conference of Slovak and Czech Physicists” (Zvolen, August 23–28, 1999 – see the proceedings contribution [39])
23. *Magnetic transport along one-dimensional perturbations in the plane*, at the “Bogoliubov 90” conference (Moscow, Dubna, and Kiev, September 27 – October 7, 1999 – see the proceedings contribution [41])
24. *Discrete spectrum of curved Dirichlet tubes and layers*, at the “Workshop in Spectral Geometry” (Bristol, July 11–15, 2000)

25. *Magneto-resonances in quantum-waveguide resonators*, at the conference “Partial Differential Equations” (Clausthal, July 24–28, 2000)
26. *Leaky quantum wires*, at the conference “Spectral and Transport Properties of Random Network Models” (Göttingen, December 4–8, 2000)
27. *Magnetic quantum transport without a classical analog*, at the conference “Days on Diffraction 01” (Sankt Petersburg, May 29–31, 2001)
28. *Curvature-induced discrete spectrum of quantum layers*, at the conference “Geometry, Integrability, and Quantization” (Varna, June 14–23, 2001)
29. *Discrete spectra of leaky quantum wires*, at XV Max Born Symposium “Schrödinger Operators, (Random) Potentials and Singular Perturbations” (Wrocław, June 26–30, 2001)
30. *Wannier, Stark, and inverse Klauder*, at the conference “Operator Algebras and Mathematical Physics” (Constanta, July 2–7, 2001)
31. *Generalized Schrödinger operators of the graph type*, at the conference “Mathematical Analysis of Quantum Systems” (Dublin, September 19–22, 2001)
32. *Generalized Schrödinger operators of the graph type*, at the “International Conference on Differential Equations and Mathematical Physics” (Birmingham, Alabama, March 26–30, 2002)
33. *Two strongly singular point-interaction problems*, at the “Conference on Operator Theory and its Applications in Mathematical Physics” (Będlewo, Poland, May 11–17, 2002)
34. *Magnetic transport in presence of perturbations*, at the conference “Waves in Periodic and Random Media” (Mt. Holyoke, Mass., June 23–27, 2002 – see the proceedings contribution [43])
35. *Transport in two-dimensional magnetic systems*, at the workshop “Quantum Hamiltonians with magnetic fields” (Bucharest, September 8–14, 2002)
36. *Curvature induced discrete spectrum in Dirichlet layers*, at the conference “Mathematical Analysis of Quantum Systems II” (Dublin, September 18–21, 2002)
37. *Semiclassical behaviour of the discrete spectrum for Schrödinger operators with interaction supported by manifolds of a lower dimension*, at the Conference “Semiclassical Meeting” (Nantes, January 8–10, 2003)
38. *Schrödinger operators with a graph-type singular interaction*, at the conference “Operator Algebras and Mathematical Physics 2” (Sinaia, June 26–July 4, 2003)
39. *Resonance effects in leaky quantum wires*, at the workshop “Time Asymmetric Quantum Theory: the Theory of Resonances” (Lisbon, July 23–26, 2003)
40. *Schrödinger operators with graph-type interactions*, an invited talk in the session “Quantum Mechanics and Spectral Theory” at the XIVth International Congress of Mathematical Physics (Lisbon, July 28–August 1, 2003 – see the proceedings contribution [44])
41. *Resonance effects in leaky nanostructures*, at the conference “Mathematical Analysis of Quantum Systems III” (Dublin, October 2–4, 2003)

42. *von Neumann way to treat quantum systems of a mixed dimensionality*, at the “von Neumann Centennial Conference” (Budapest, October 15–20, 2003 – see the the review paper [6])
43. *Resonance effects for Schrödinger operators with infinitely extended singular perturbations*, at the conference “Differential Equations and Mathematical Physics”, in honor of Professor Kuroda 70th birthday (Tokyo, October 22–24, 2003)
44. *Spectral properties of Schrödinger operators with strongly attractive graph-type singular perturbations*, at the workshop “Spectral and Scattering Theory and Related Topics” (Kyoto, October 27–29, 2003 – see the proceedings contribution [46])
45. *Resonance effects in leaky nanostructures*, at the conference “Quantum Information 2003” (Tokyo, November 1–3, 2003)
46. *Resonance effects in transport through leaky graphs*, at the international workshop “Resonances – from Physics to Mathematics and back” (Dresden, January 26–30, 2004)
47. *Approximations of graphs vertices*, at the conference “Operator Theory and its Applications in Mathematical Physics” (OTAMP2004) (Będlewo Poland, July 6–11, 2004)
48. *Quantum waveguides: mathematical problems*, at the conference “Mathematical Results in Quantum Mechanics” (QMath9) (Presque’Ile de Giens, France, September 12–16, 2004 – see the proceedings contribution [48])
49. *On the meaning of quantum graph models*, at the conference “Mathematical Analysis of Quantum Systems IV” (Dublin, September 29–October 1, 2004)
50. *Approximations for and by quantum graph Hamiltonians*, at the conference “Quantum Graphs and Their Applications” (Snowbird, Utah, June 18–24, 2005 – see the proceedings contribution [53])
51. *Isoperimetric problems for  $\delta$  interactions and mean-chord inequalities*, at the workshop “Spectral Properties of Schrödinger Operators” (Sankt Petersburg, June 30, 2005)
52. *Scattering and resonances in leaky quantum wires*, at the conference “Days on Diffraction 05” (Sankt Petersburg, June 28–July 1, 2005)
53. *Reflections on Zeno and anti-Zeno*, at the conference “Operator Semigroups, Evolution Equations and Spectral Theory in Mathematical Physics” (Marseille–Luminy, October 3–7, 2005)
54. *Inequalities for means of chords, with applications to isoperimetric problems*, at the conference “Dynamics of Complex Quantum Systems” (Rehovot & Haifa, December 18–22, 2005)
55. *Quantum graphs: local and global approximation*, at the walkshop “Operators, Spectra, and Mathematical Physics” (Chemnitz, May 12, 2006)
56. *Spectra of Laplacians in twisted tubes*, at the conference “Spectral Theory of Differential Operators”, in honour of Professor Mikhail Solomyak (Rehovot, May 29 – June 1, 2006)

57. *Unstable system dynamics: do we understand it fully?*, at the XXI Max Born Symposium “Mathematical Problems in Nonrelativistic Quantum Dynamics” (Wrocław, June 16–28, 2006)
58. *There are many ways to decay*, at the “International Workshop on Analysis and Probability in Quantum Physics” (Santiago de Chile, July 25 – August 4, 2006)
59. *Approximation results for quantum graphs*, at the conference “Transport and Spectral Problems in Quantum Mechanics Physics”, in honor of Jean-Michel Combes (Cergy–Pontoise, September 3–6, 2006 – see the proceedings contribution [55])
60. *Quantum waveguides: localized modes in twisted tubes*, at the “Second Czech-Catalan Conference in Mathematics” (Barcelona, September 21–23, 2006)
61. *Lectures on quantum graphs, ideal, leaky, and generalized*, a series of three lectures in the “New Zealand Institute of Mathematics” (University of Auckland, November 3–8, 2006)
62. *Quantum graphs and their applications*, a two-lecture part of a minicourse given, together with P. Kuchment, at the LMS short course, a satellite meeting of the INI “Analysis on Graphs and its Applications” Programme (Gregynog Hall, Wales, January 14–15, 2007)
63. *Quantum networks modelled by graphs*, at the workshop “Quantum Few-Body System” (Aarhus University, March 19–20, 2007)
64. *Inequalities for means of chords and related isoperimetric problems*, at “6th Congress of Romanian Mathematicians” (Bucharest, June 28 – July 4, 2007)
65. *Scattering and resonances in leaky quantum-wire systems*, at “4th Workshop Mathematical Models for Transport in Macroscopic and Mesoscopic Systems” (Berlin, February 7–10, 2008)
66. *Isoperimetric problems solved using inequalities for means of chords*, at “LUMS 2nd International Conference on Mathematics and its Applications in Information Technology” (Lahore, March 10–12, 2008)
67. *On quantum particles which change dimension*, at “Mathematical Physics and Spectral Theory, a Workshop in Memory of Vladimir Geyler” (Berlin, April 24–26, 2008)
68. *Quantum graphs modelling networks*, at “8ème Journée Equations aux Dérivées Partielles” (Monastir, May 14, 2008)
69. *Squeezing of tube networks and coupling in vertices of quantum graphs*, at “Spring Symposium 2008 in Honor of Ruedi Seiler” (Berlin, June 6, 2008)
70. *Nontrivial coupling from squeezing of Dirichlet networks: a bent tube example*, at ESF Research Conference “Operator Theory, Analysis and Mathematical Physics” (Będlewo, Poland, June 15–22, 2008)
71. *Quantum graphs and their vertex couplings*, at XXVII International Colloquium on Group Theoretical Methods in Physics (Yerevan, Armenia, August 13–19, 2008)

72. *On the spectrum coming from “bending” a chain quantum graph*, at the conference “A Canonical Realization”, in honor of M. Havlíček’s 70th birthday (Villa Lanna, Prague, October 21, 2008)
73. *Approximation of nontrivial quantum graphs by Schrödinger operators on Neumann networks*, at the workshop “Mathematical Aspects of Transport in Mesoscopic Systems” (Dublin, December 4–7, 2008)
74. *Approximation of quantum graphs by Schrödinger operators on Neumann networks*, at the conference “Disorder Effects on Quantum Dynamics: Some Recent Results” – in honor of Michael Aizenman (Université Cergy–Pontoise, January 26–27, 2009)
75. *Approximations by Schrödinger operators on networks collapsing to graphs*, at the “Fifth Wales Analysis Workshop” (University of Cardiff, February 11, 2009)
76. *Approximations of graph vertex coupling by scaled Schrödinger operators on manifolds*, at the conference “Quantization day 2”, in honor of J. Tolar’s 70th birthday (Masarykova kolej, Prague, March 24, 2009)
77. *Quantum graphs with general vertex coupling: approximation by scaled Schrödinger operators on manifolds*, at the Bogoliubov centenary conference (JINR Dubna, August 21–28, 2009)
78. *Quantum graphs with general vertex coupling: approximation by scaled Schrödinger operators on manifolds*, at the conference “Probabilistic and Analytical Methods in Mathematical Physics”, (Tsaghkadzor, Armenia, September 7–14, 2009)
79. *On the meaning of quantum graph Hamiltonians: approximations by Schrödinger operators on manifolds*, at the conference “Spectral Problems and Related Topics” (Moscow State University, November 18–21, 2009)
80. *Schrödinger operators on network manifolds approximating quantum graphs*, at the conference “Spectral and Dynamical Properties of Quantum Hamiltonians”, a conference dedicated to Arne Jensen’s 60th birthday (EPFL Lausanne, February 22–26, 2010)
81. *Loops and trees: spectral properties of quantum graphs*, at the “2nd St. Petersburg Conference in Spectral Theory”, dedicated to the memory of M.Sh. Birman (Euler Institute, St. Petersburg, July 12–16, 2010)
82. *Quantum graphs: geometric perturbations, resonances, and Weyl asymptotics*, at the “Fifth International Conference on Operator Theory Analysis and Mathematical Physics” (Będlewo, August 5–12, 2010)
83. *Vertex coupling in quantum graphs: approximation by Schrödinger operators on manifolds*, at the conference “Mathematics in Science and Technology” (Delhi, August 15–17, 2010 – see the proceedings contribution [59])
84. *Geometric perturbations and unusual spectral behavior of quantum graphs*, at the symposium dedicated to Takashi Ichinose 70th birthday (Kanazawa University, September 17, 2010)

85. *On the physical contents of quantum graph models*, at “Perspectives in Physics: a JPhysA showcase meeting” (Chongqing University, October 18–22, 2010)
86. *Resonances in quantum graphs*, at “Quantum Dynamics: a conference in memory of Pierre Duclos (1948-2010)” (CIRM, Marseille, November 25–27, 2010)
87. *Spectra of periodic quantum graphs*, at the workshop “Mathematical Challenges of Quantum Transport in Nano-Optoelectronic Systems” (WIAS Berlin, February 4–5, 2011)
88. *Periodic quantum graphs and their local perturbations*, at the workshop “Spectral and Scattering Theory and Related Topics” (RIMS Kyoto, February 16–18, 2011)
89. *On approximations of vertex coupling of quantum graphs*, at the workshop “Analysis on Graphs in Sendai 2011” (Tohoku University, February 21, 2011)
90. *Resonances in quantum graphs and their high-energy behaviour*, at the conference “Operator Theory & Boundary Value Problems” (Université Paris-Sud Orsay, May 25–27, 2011)
91. *Approximations of vertex couplings in quantum graph models*, at the minisymposium “Differential Operators on Graphs and their Applications” within the ICIAM Congress (Vancouver, July 18–22, 2011)
92. *New thoughts on an old topic: unstable system dynamics*, at the conference “Mathematical Physics, Spectral Theory and Stochastic Analysis” (Goslar, September 11–16, 2011)
93. *Resonances in quantum graphs and their semiclassical behaviour*, at the conference “Bogoliubov Readings” (Dubna, October 12–15, 2011)
94. *Properties of resonances in quantum graphs and their generalizations*, at the workshop “Quantum Transport Days” (CPT Luminy, November 14–15, 2011)
95. *Resonances in quantum graphs and their generalizations*, at the conference “Spectral Analysis of Non-selfadjoint Operators” (CIRM, Luminy, December 12–16, 2011)
96. *Geometric properties of point-interaction Hamiltonians ground state*, at the workshop “Boundary Value Problems and Spectral Geometry” (Oberwolfach, January 1–7, 2012)
97. *Resonances in quantum graphs, their behavior and generalizations*, at the workshop “Mathematical Approach to Emerging Topics in Material Science 2012” (Tohoku University, February 18, 2012)
98. *There is more in quantum mechanics*, at the WPI-AIMR Annual Workshop “Cutting-edge Functional Materials for Green Innovation” (Tohoku University, February 21–23, 2012)
99. *Resonances in quantum graphs, their generalizations and magnetic field effects*, at the Leverulme Conference “Dissipative Spectral Theory: Operator Theory, PDEs and Numerics” (Cardiff University, May 8–11, 2012)
100. *Geometric properties of the ground state for Hamiltonians with singular interactions*, at the conference “Operator Theory, Analysis and Mathematical Physics” (OTAMP2012) (Barcelona, June 11–14, 2012)

101. *Spectral estimates for Schrödinger operators with unusual semiclassical behaviour*, at the conference “Spectral Theory and Differential Operators” (Graz, August 27–31, 2012)
102. *Squeezing networks to graphs*, at the conference “Trails in Quantum Mechanics and Surroundings”, on the occasion of Gianfausto Del’Antonio’s 80th birthday (Frascati, January 29 – February 2, 2013)
103. *Control of vertex coupling in quantum graphs*, at the conference “Mathematical Challenge of Quantum Transport in Nanosystems” (Sankt Petersburg, March 12–15, 2013)
104. *Resonances in quantum networks*, at the NATO Advanced Research Workshop “New Challenges in Complex System Physics: Disaster Forecasting, Crisis Modeling and Sustainable Development” (Samarkand, May 20–24, 2013 – see the proceedings contribution [64])
105. *The intriguing  $\delta'$* , at the conference “Quantum Spectra and Transport” (AvronFest, Hebrew University of Jerusalem, June 30 – July 4, 2013)
106. *Resonances in quantum graphs*, at the conference “Equadiff 13” (Prague, August 26–30, 2013)
107. *Resonances in quantum graphs and their generalizations*, at a conference in honor of M. Havlíček’s 75th birthday (Villa Lanna, Prague, November 2, 2013)
108. *Strong coupling asymptotics in leaky graphs*, at the conference “Mathematical Technology of Networks – QGraphs 2013” (Bielefeld, December 4–7, 2013)
109. *Understanding quantum graph vertices through network approximations*, at the workshop “Analysis on Graphs and Applications” (Royal Holloway, January 9–10, 2014)
110. *A regular version of Smilansky model*, at the 85. GAMM Jahrestagung, section “Applied Operator Theory” (Friedrich-Alexander Universität Erlangen, March 10–14, 2014)
111. *Spectral asymptotics of singular Schrödinger operators with strong attractive coupling*, at the workshop “Spectral Problems on Shrinking Domains” (Gregynog Hall, Wales, May 26–30, 2014)
112. *Narrowing channels, or Schrödinger operators mixing different dimensions*, at the conference “Mathematical Aspects of Solid State Physics, Quantum Transport and Spectral Analysis”, in honor of Gheorghe Nenciu’s 70th birthday (Bucharest, July 1–3, 2014)
113. *Spectral properties of Schrödinger operators with narrowing channels*, at the conference “Operator Theory, Analysis and Mathematical Physics” (Stockholm, July 7–11, 2014)
114. *Strong coupling asymptotics for singular Schrödinger operators and Robin billiards*, at the conference “Mathematical Challenge of Quantum Transport in Nanosystems” (Sankt Petersburg, September 23–26, 2014)
115. *Strong coupling in leaky graphs and Robin billiards*, at the workshop “Spectral Theory and Weyl Functions” (Oberwolfach, January 4–10, 2015)



116. *Strong coupling in models of leaky wires and Robin domains*, at the conference “Waveguides: Asymptotic Methods and Numerical Analysis” (Naples, May 21–23, 2015)
117. *Strongly singular Schrödinger operators: geometry, spectra, time evolution*, at the conference “Topics in Analysis and Mathematical Physics” (Aalborg, May 29–30, 2015)
118. *Approximating quantum graphs by Schrödinger operators on thin networks*, at “8th Congress of Romanian Mathematicians” (Iași, June 26 – July 1, 2015)
119. *Spectral transitions of Schrödinger operators with below unbounded potential*, at the “7th St. Petersburg Conference in Spectral Theory”, dedicated to the memory of M.Sh. Birman (Euler Institute, St. Petersburg, July 3–6, 2015)
120. *Schrödinger operators exhibiting parameter-dependent spectral transitions*, at “The fourth Najman Conference on Spectral Problems for Operators and Matrices” (Opatija, September 20–25, 2015)
121. *Quantum systems exhibiting parameter-dependent spectral transitions*, at “Kochi Quantum Week” (Tosa Yamada, October 12–14, 2015)
122. *Quantum systems changing abruptly their spectral properties*, at the winter school “Mathematical Challenges in Quantum Mechanics” (Bressanone, February 8–13, 2016)
123. *Asymptotic expansions for singular Schrödinger operators*, at the Nordic Mathematical Congress session “Spectral Theory and Applications” (Stockholm, March 16–20, 2016)
124. *Singular Schrödinger operators and Robin billiards: geometry, spectra and asymptotic expansions*, at the conference “Operators, Operator Families and Asymptotics” (Bath, May 16–19, 2016)
125. *Asymptotic expansions for singular Schrödinger operators and Robin billiards*, at the DI-CRM Workshop of the occasion of the 80th birthdays of Jiří Patera and Pavel Winternitz (Prague, May 30 – June 3, 2016)
126. *A small step for the coupling constant but a giant leap for the spectrum*, at the conference “Analytic and Algebraic Methods in Physics XIII”, in honor of Miloslav Znojil 70th birthday (Prague, June 6–9, 2016)
127. *Schrödinger operators with singular interactions on hypersurfaces*, at the conference “Non-linear PDEs, mathematical physics, and stochastic analysis”, in honor of Helge Holden 60th birthday (Trondheim, July 4–7, 2016)
128. *Singular Schrödinger operators and Robin billiards: spectral properties and strong coupling expansions*, at the workshop “New Methods in Extension Theory applied to Quantum Mechanics” (Berlin, July 14–15, 2016)
129. *Schrödinger operators with singular interactions on sets of codimension one*, at the conference “Operator Theory, Analysis and Mathematical Physics” (Sankt Petersburg, August 2–7, 2016)
130. *Spectral properties of Schrödinger operators with singular interactions on hypersurfaces*, at the conference “Stochastic and Analytic Methods in Mathematical Physics” (Yerevan, September 4–11, 2016)

131. *Reflections on Smilansky model*, at the conference “From Quantum Chaos to Graphs and Spectral Patterns”, in honor of Prof. Uzy Smilansky’s 75th Anniversary (Rehovot, September 11–15, 2016)
132. *Singular Schrödinger operators with interactions supported by sets of codimension one*, at the QMath13 conference “Mathematical Results in Quantum Physics” (Atlanta, October 8–11, 2016)
133. *Singular Schrödinger operators with interactions supported by sets of codimension one*, at the workshop “Nonlinear and Geometric Partial Differential Equations” (Canberra and Kioloa, December 9–13, 2016)
134. *Spectra of magnetic chain graphs*, at the workshop “Operator Theory and Indefinite Inner Product Spaces” (Vienna, December 17–20, 2016)
135. *Leaky graphs and Robin billiards: some open problems*, at the workshop “Schrödinger Operators and Boundary Value Problems” (Graz, April 24–28, 2017)
136. *Some unusual spectra of periodic quantum graphs*, at the conference “Chaos, and what it can reveal”, in honor of Petr Šeba 60th birthday (Hradec Králové, May 9–11, 2017)
137. *Singular Schrödinger operators and Robin billiards: discrete spectrum and asymptotic expansions*, at the conference “Spectral Theory and Applications” (Kraków, May 30 – June 3, 2017)
138. *Unusual bandgap spectra of periodic quantum graphs*, at the workshop “Nonlinear Partial Differential Equations on Graphs” (Oberwolfach, June 18–24, 2017)
139. *Singular Schrödinger operators and Robin billiards: spectral properties and asymptotic expansions*, a keynote talk at the “Pan African Congress of Mathematicians” (Rabat, July 2–7, 2017)
140. *Schrödinger operators changing abruptly their spectral character*, at the “Second Caucasian Mathematical Conference” (Van, August 22–24, 2017)
141. *Leaky quantum graphs and Robin billiards: discrete spectrum and asymptotic expansions*, at the conference “Aspect 17: Asymptotic Analysis and Spectral Theory” (Trier, September 25–29, 2017)
142. *Coupling constant triggered spectral transitions*, at the workshop “Current Problems in Physics” (Zielona Góra, October 17–18, 2017)
143. *Schrödinger operators with a switching effect*, at the “International Conference in conjunction with 14th Biennial Conference of ISIAM” (Amritsar, February 1–4, 2018)
144. *Uncommon spectra of periodic quantum graphs*, at the “International Symposium on Computational Mathematics and its Applications” (Sharda University, New Delhi, February 5–6, 2018)
145. *Uncommon spectral properties of periodic quantum graphs*, at the “ICIAM Workshop on Industrial and Applied Mathematics” (Philadelphia, May 10–11, 2018)

146. *Schrödinger operators exhibiting a sudden change of the spectral character*, at the IML workshop “Eigenvalues and Inequalities” (Djursholm, May 14–18, 2018)
147. *Sometimes the graphs are not what they seem*, at the workshop “Nonlinear PDEs on Metric Graphs and Branched Networks” (Leiden, August 27–31, 2018)
148. *Quantum Hamiltonians exhibiting a spectral transition*, at the Third International Conference “Modern Problems in Applied Mathematics” (Tbilisi, September 19–21, 2018)
149. *Schrödinger operators exhibiting an abrupt spectral transition*, at the conference “Spectral Theory and Related Questions” (Ufa, October 1–4, 2018)
150. *On loops, cones and stars: striving for the optimal shape*, at the conference “Results in Contemporary Mathematical Physics”, in honor of Rafel Benguria (Santiago de Chile, December 17–21, 2018)
151. *Leaky quantum graphs: asymptotic expansions, magnetic effects, and spectral optimization*, at the kick-off conference of the programme “Spectral Methods in Mathematical Physics” (Djursholm, January 14–18, 2019)
152. *Schrödinger operators exhibiting an abrupt change of spectral character*, at the 90. GAMM Jahrestagung, section “Applied Operator Theory” (Vienna, February 18–22, 2019)
153. *Spectra of periodic quantum graphs: more than one would expect*, at the conference “Differential Operators on Graphs and Waveguides” (Graz, February 25–March 1, 2019)
154. *Optimization of the principal eigenvalue in various geometries*, at the conference “Complex Analysis and Mathematical Physics”, in honor of Armen Sergeev (Moscow, March 18–22, 2019)
155. *On Schrödinger operators exhibiting a parameter-dependent spectral transition*, at the “International Conference on Mathematical Methods in Physics” (Marrakech, April 1–5, 2019)
156. *Topologically induced spectral behavior: the example of quantum graphs*, a distinguished lecture at the “8th International Congress of Chinese Mathematicians” (Beijing, June 9–14, 2019)
157. *Leaky quantum structures*, a lecture at the workshop “Small Scales and Homogenisation (SmaSH)” (Cardiff, June 24–26, 2019)
158. *Leaky quantum structures: asymptotic expansions and magnetic effects*, at the “Ninth Congress of Romanian Mathematicians” (Galați, June 28 – July 3, 2019)
159. *Spectra of periodic quantum graphs*, at the colloquium ‘Sibe Mardešić’ (Zagreb, July 10, 2019)
160. *Dirac operators with electrostatic  $\delta$ -shell interactions: spectral and scattering properties*, at the minisymposium “Dirac operators with critical singularities” within the “9th International Congress of Industrial and Applied Mathematics” (Valencia, July 15–19, 2019)

161. *Spectral optimization for singular Schrödinger operators*, at the QMath14 conference “Mathematical Results in Quantum Physics” (Aarhus, August 12–16, 2019)
162. *Leaky quantum structures: spectral properties and asymptotic expansions*, at the “Third Caucasian Mathematical Conference” (Rostov na Donu, August 26–29, 2019)
163. *Topology makes the spectral picture richer: quantum graph examples*, at the conference “Stochastic and Analytic Methods in Mathematical Physics” (Yerevan, September 2–7, 2019)
164. *Dirac operators with  $\delta$ -shell interactions: spectral and scattering properties*, at the conference “Problems of Theoretical and Mathematical Physics”, on the occasion of N.N. Bogoliubov’s 110th anniversary (Moscow & Dubna, September 9–14, 2019)
165. *Isoperimetric type inequalities for singular Schrödinger operators*, at the memorial seminar “Search for beauty: from condensed matter to integrable systems”, dedicated to V.B. Priezhev (Dubna, September 10, 2019)
166. *Uncommon spectral properties of periodic quantum graphs*, at the workshop “Kochi Autumn Quantum Week 2019” (Tosa Yamada, October 13–15, 2019)
167. *Spectral gaps of periodic quantum graphs*, at the conference “Operator Theory and Krein Spaces”, dedicated to the memory of Hagen Neidhardt (Vienna, December 19–22, 2019)
168. *Rich spectral properties of periodic quantum graphs*, at the conference “Operator Theory and Mathematical Physics (OTAMP 2020)”, dedicated to the 70th birthday of Ricardo Weder (Mexico City, January 8–14, 2020)
169. *Spectral optimization for singular Schrödinger operators*, at the workshop “Quantum Mechanics of Artificial Material Structures” (Sochi, February 17–21, 2020)
170. *Discrete spectrum of soft quantum waveguides*, at the online workshop “Mathematical Challenge of Quantum Transport in Nanosystems” (Sankt Petersburg, September 14–16, 2020)
171. *On the discrete spectrum of soft quantum waveguides*, at the online conference “International Conference on Mathematical Physics in Memory of Academician V.S. Vladimirov” (Moscow, November 23–27, 2020)
172. *On the spectrum of spiral quantum waveguides*, at the online conference “Mathematics of Condensed Matter and Beyond” (Beirut, February 22–25, 2021)
173. *Effects of time-reversal asymmetry in the vertex coupling of quantum graphs*, an online talk at the minisymposium “Analysis on graphs”, a part of the 8th European Congress of Mathematics (Portorož, June 20–25, 2021)
174. *On violations of time-reversal symmetry in quantum graphs*, an online talk at the “International Workshop on Operator Theory and Applications” (Lancaster, August 16–20, 2021)

175. *Quantum graphs with vertices of a preferred orientation* at the online workshop “Mathematical Challenge of Quantum Transport in Nanosystems” (Sankt Petersburg, September 20–22, 2021)
176. *Discrete spectrum of soft quantum waveguides* at the GAMM workshop “Applied Operator Theory” (Stockholm, May 19–21, 2022)
177. *Vertex coupling effects in quantum graph spectra* at the workshop “Ergodic Operators and Quantum Graphs” (Stony Brook, June 6–10, 2022)
178. *Quantum mechanics on graphs: why is it interesting?*, a “Della Pietra Lecture” (Simons Center for Geometry and Physics, June 7, 2022)
179. *Quantum graphs:  $\mathcal{T}$ -asymmetry and  $\mathcal{PT}$ -symmetry*, at the online conference “Operator Theory, Analysis and Mathematical Physics” (OTAMP2022) (Stockholm, June 27–30, 2022)
180. *Leaky quantum structures: geometry imprints in the spectrum*, an online talk at the “Olga Rossi commemorative meeting” (Ostrava, August 22, 2022)
181. *Spectral properties of quantum graphs violating the time-reversal invariance*, at the conference “Asymptotic Analysis & Spectral Theory” (Aspect’22) (Oldenburg, September 26–30, 2022)
182. *Spectral properties of soft quantum waveguides*, at the ESI workshop “Spectral Theory of Differential Operators in Quantum Theory” (Vienna, November 7–11, 2022)
183. *Magnetic transport in quantum layers*, at the conference “Advances in Operator Theory with Applications to Mathematical Physics” (Chapman University, November 14–18, 2022)
184. *Some problems in magnetic transport*, at the workshop “Challenges in Spectral Theory of Differential Operators” (TU Graz, December 18–22, 2022)
185. *Geometrically induced magnetic transport*, at the workshop “Geometric Aspects of Evolution and Control” (FernUniversität Hagen, April 17–21, 2023)
186. *Geometry effects in the spectrum of soft quantum waveguides*, at the conference “Spectral Geometry and Applications” on the occasion of Michael Levitin’s 60th birthday (Université Laval, Québec Cité, May 8–12, 2023)
187. *Time-reversal asymmetric quantum graphs:  $\mathcal{PT}$ -symmetry and magnetic fields*, an online talk at the 11th workshop “Quantum Chaos and Localisation Phenomena” (Warsaw, May 25–26, 2023)
188. *A product formula related to Zeno dynamics*, at the Marcus Wallenberg Symposium “Analysis and Mathematical Physics” devoted to the memory of Sergey Naboko (Stockholm University, June 19–21, 2023)
189. *Quantum graphs violating the time-reversal invariance: spectral and transport properties,  $\mathcal{PT}$ -symmetry, and magnetic fields*, at the conference “Singularities, Asymptotics and Limiting Models” within the *Puglia Summer Trimester* (Università degli Studi di Bari, June 26–30, 2023)
190. *Geometrically induced discrete spectrum of soft quantum waveguides*, at the conference “IWOTA 2023”, section “Operator Theory in Elliptic Partial Differential Equations” (Helsinki, July 31–August 4, 2023)

191. *Geometrically induced spectrum in soft waveguides and potential well arrays*, at the “Tbilisi Analysis & PDE Workshop” (August 30 – September 2, 2023)
192. *Curvature-induced discrete spectrum in soft quantum waveguides and dot arrays*, at the SOMPATY conference “Mathematics for the Micro/Nano-World: From soliton dynamics, nonlinear optics to quantum science and technology” (Samarkand, September 18–22, 2023)
193. *Quantum graphs: approximations of them and by them*, at the COST workshop “Networks and Similar Structures” (Valenciennes, September 27–29, 2023)
194. *Geometry effects in the spectrum of soft waveguides*, at the “International Conference on Operator Theory” (Hammam Sousse, December 18–20, 2023)
195. *Magnetic transport in Dirichlet layers*, at the workshop of the GAMM Activity Group “Applied Operator Theory” (TU Hamburg, May 22–24, 2024)
196. *Geometrically induced discrete spectrum in soft quantum waveguides*, at the conference “Quantum Dynamics and Spectral Theory” (Institut Mittag-Leffler, Stockholm, June 10–14, 2024)
197. *On time-reversal invariance violation in quantum graphs*, at the conference “Operator Theory and Approximation” (TU Wien, July 8–12, 2024)
198. *Schrödinger operators with channel-type potentials*, at the online conference “Analysis and Mathematical Physics” (UNAM Mexico City, August 5–17, 2024)
199. *Spectral properties of quantum lattices*, at the SOMPATY conference “Evolution Equations, Approximation and Spectral Optimization” (Almaty, September 16–18, 2024)
200. *A magnetic way of moving things*, at the conference “150 Years” dedicated to the 80th birthday of Gheorge Nenciu and 70th birthday of Radu Purice (Bucharest, October 3–4, 2024)
201. *Schrödinger operators with potentials of the channel type*, at the conference “Spectral Theory and Differential Operators” (Hradec Králové, November 4–7, 2024)

**j) minicourses:**

1. *Lectures on quantum graph models*, a three-lecture minicourse given at the Student Colloquium and School on Mathematical Physics (Stará Lesná, August 23–29, 2008)
2. *Lectures on quantum graphs, standard, leaky, and generalized*, a three-lecture minicourse given at Université de Monastir (June 8–11, 2010)
3. *Quantum graphs and their generalizations*, a six-lecture minicourse given at the summer school “Mathematical Theory of Quantum Networks” (Les Diablerets, June 6–10, 2011)
4. *Quantum graphs and waveguides*, a six-lecture minicourse at the online summer school “Équations aux dérivées partielles non-linéaires, théorie spectrale et applications” (Nador, May 31–June 7, 2021)

5. *Constrained quantum dynamics*, a six-lecture minicourse at the summer school “2nd International Summer School on Advanced Quantum Mechanics” (Prague, September 2–11, 2021)
6. *Guided quantum dynamics*, a five-lecture minicourse at the SOMPATY summer school “Mathematics for the Micro/Nano-World: From soliton dynamics, nonlinear optics to quantum science and technology” (Samarkand, September 11–16, 2023)

**k) preprint versions of the above listed papers, hardcopy and electronic:**

- ad 2: the same title, MFF/TF/69/3, Prague 1969.  
ad 5: the same title, JINR E2–8089, Dubna 1974.  
ad 6: the same title, JINR E2–8533, Dubna 1975.  
ad 9: the same title in Russian, two parts, JINR P2–10263,10264, Dubna 1977.  
ad 14: the same title, JINR E2–8700, Dubna 1975.  
ad 15: the same title, JINR E2–12826, Dubna 1979.  
ad 16: the same title, JINR E2–12100, Dubna 1979.  
ad 17: the same title, JINR E2–13022, Dubna 1980.  
ad 18: the same title, JINR E2–80–71, Dubna 1980.  
ad 19: the same title, JINR E2–81–604, Dubna 1981.  
ad 20: the same title, JINR E2–80–257, Dubna 1980.  
ad 21: the same title, JINR E2–80–636, Dubna 1980.  
ad 22: the same title, JINR E2–81–37, Dubna 1981.  
ad 23: the same title, JINR E2–12926, Dubna 1979.  
ad 24: the same title, JINR E2–81–186, Dubna 1981.  
ad 25: the same title in two parts, *I. Properties of polygonal paths, II. Extended Feynman maps*, JINR E2–81–110,111; Dubna 1981.  
ad 26: the same title, JINR E2–81–787, Dubna 1981.  
ad 27: the same title in two parts, *I. The propagator, II. The one-dimensional case*, JINR E2–81–608,609; Dubna 1981.  
ad 28: the same title, JINR E2–81–605, Dubna 1981.  
ad 29: the same title, JINR E2–83–1, Dubna 1983.  
ad 30: the same title, JINR E2–12373, Dubna 1979.  
ad 31: the same title, JINR E2–83–671, Dubna 1983.  
ad 32: the same title, JINR E2–84–51, Dubna 1984.  
ad 33: the same title, JINR E2–84–244, Dubna 1984.  
ad 34: the same title in two parts, *I. The main results, II. An example:  $V(x) = gx^{-2}$* , JINR E2–84–352,353, Dubna 1984.  
ad 35: the same title, JINR E2–84–809, Dubna 1984.  
ad 36: the same title, JINR E2–85–683, Dubna 1985.  
ad 37: the same title, JINR E2–85–468, Dubna 1985.  
ad 38: the same title, JINR E2–86–268, Dubna 1986.  
ad 39: the same title, JINR E2–86–15, Dubna 1986.  
ad 40,41: under the same general title, the material was published in two parts, *I. Formulation of the problem, II. Galilean invariance revisited*, JINR E2–86–209,709; Dubna 1986.  
ad 42: the same title, JINR E2–86–746, Dubna 1986.  
ad 43: the same title, JINR E2–87–18, Dubna 1987.  
ad 44: *On feasibility of quantum interference transistors*, JINR E2–87–346, Dubna 1987.  
ad 45: the same title, JINR E5–86–693, Dubna 1986.  
ad 46: the same title, JINR E2–86–750, Dubna 1986.  
ad 47: the same title, JINR E2–87–707, Dubna 1987.

ad 48: the same title, JINR E2-87-599, Dubna 1987.  
 ad 49: the same title, JINR E5-85-73, Dubna 1989.  
 ad 50: the same title, SFB 237, Bochum 1989.  
 ad 51: the same title, BiBoS 298/87, Bielefeld 1987.  
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2. J. Pišút, L. Gomolčák: *Introduction to Quantum Mechanics* (in Slovak), Alfa, Bratislava 1975; Czech. J. Phys. **A26** (1976), 555–556.
3. E.B. Davies: *Quantum Theory of Open Systems*, Academic Press 1976; Czech. J. Phys. **A28** (1978), 647–648.
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12. L. Streit, ed.: *Mathematics + Physics: Lectures on Recent Results*, World Scientific; Czech. J. Phys. **A37** (1987), 404–405.
13. J.–R. Klauder, B.–S. Skagerstam : *Coherent States. Applications in Mathematics and Physics*, World Scientific 1985; Czech. J. Phys. **A39** (1989), 206.
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16. B. Helffer: *Semi–Classical Analysis for the Schrödinger Operators and Applications*, Lecture Notes in Mathematics, vol. 1336, Springer 1988; Czech. J. Phys. **A40** (1990), 527.
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5. B. Simon: *Fifteen problems in mathematical physics* (English to Czech, problems 1–4,9,10 + introductory remarks), Czech. J. Phys. **A37** (1987), 157–161, 284–286, **A38** (1988), 69–75.
6. A. Jaffe, R.L. Quinn: *“Theoretical mathematics”: towards a cultural synthesis of mathematics and theoretical physics* (English to Czech) Adv. Math. Phys. Astr. (PMFA) **41** (1996), 25–37.
7. W.P. Thurston: *On proof and progress of mathematics* (English to Czech, together with excerpts of the discussion on Jaffe and Quinn paper) Adv. Math. Phys. Astr. (PMFA) **41** (1996), 57–81.

## Some statistics

a) **Coauthors:** 342 coauthors in 265 research papers, which means the average 1.29 coauthor per paper

b) **Journals:** the 267 research papers, together with 6 reviews and 3 proceedings contributions published in journals are distributed as follows:

<i>Journal of Physics A: Mathematical and Theoretical</i>	55
<i>Journal of Mathematical Physics</i>	38
<i>Czechoslovak Journal of Physics</i>	29
<i>Physics Letters A</i>	27
<i>Letters in Mathematical Physics</i>	20
<i>Reports on Mathematical Physics</i>	14
<i>Annales Henri Poincaré</i>	9
<i>Reviews in Mathematical Physics</i>	9
<i>Annales d'Institut Henri Poincaré: Physique Théorique</i>	5
<i>Annals of Physics</i>	5
<i>Communications in Mathematical Physics</i>	5
<i>Integral Equations and Operator Theory</i>	5
<i>Physical Review Letters</i>	4
<i>Physical Review B</i>	4
<i>Elementary Particles and Atomic Nuclei</i>	3
<i>Journal of Geometry and Physics</i>	3
<i>Journal of Spectral Theory</i>	3
<i>Acta Polytechnica</i>	2
<i>Acta Universitatis Carolinae</i>	2
<i>Asymptotic Analysis</i>	2
<i>Helvetica Physica Acta</i>	2
<i>Journal of Mathematical Analysis and Applications</i>	2
<i>Journal of Physical Society of Japan</i>	2
<i>Mathematische Nachrichten</i>	2
<i>Nanosystems: Physics, Chemistry, Mathematics</i>	2
<i>Operators and Matrices</i>	2
<i>Physica A</i>	2
<i>Physica Scripta</i>	2
<i>Physical Review D</i>	2

and a single paper in each of the following:

*Acta Physica Polonica A; Annalen der Physik; Annales H. Lebesgue; Bull. Math. Sci.; Communications in Contemporary Mathematics; Communications in PDE, Doklady RAN; Foundations of Physics; International Journal of Theoretical Physics; Journal de Mathématiques Pures et Appliquées; Journal of Mathematical Physics, Analysis and Geometry; Journal of Mathematical Society of Japan; Journal of Statistical Physics; Nuclear Physics B; Physical Review A; Portugal Mathematical Journal; Proceedings of the Royal Society A; Pure and Applied Functional Analysis, Quantum Studies: Mathematics and Foundations; Russian Journal of Mathematical Physics; Ukrainian Journal of Physics; Waves in Random Media*