

Doppler Institute

for Mathematical Physics and Applied Mathematics

2006 List of Publications

(a) Research papers in journals

1. Jaroslav Novotný, Gerd Alber, Igor Jex: Completely positive covariant two-qubit quantum processes and optimal quantum NOT operations for entangled qubit pairs, *Phys. Rev.* **A73** (2006), 062311
2. Pavel Exner, Pavel Hejčík, Petr Šeba: Approximations by graphs and emergence of global structures, *Rep. Math. Phys.* **57** (2006), 445-455
3. Erika Andersson, Marcos Curty, Igor Jex: Experimentally realizable quantum comparison of coherent states and its applications, *Phys. Rev.* **A74** (2006), 022304
4. T. Kiss, I. Jex, G. Alber, S. Vymětal: Complex chaos in the conditional dynamics of qubits, *Phys. Rev.* **A74** (2006), 040301
5. Miloslav Znojil: Quasi-exact minus-quartic oscillators in strong-core regime, *Phys. Lett.* **A359** (2006), 21-25
6. Miloslav Znojil: Matching method and exact solvability of discrete \mathcal{PT} -symmetric square wells, *J. Phys. A: Math. Gen.* **39** (2006), 10247-10261
7. David Krejčířík, Hynek Bíla, Miloslav Znojil: Closed formula for the metric in the Hilbert space of a \mathcal{PT} -symmetric model, *J. Phys. A: Math. Gen.* **39** (2006), 10143-10153
8. Pavel Exner, Martin Fraas: Resonance asymptotics in the generalized Winter model, *Phys. Lett.* **A360** (2006), 57-61
9. Denis Borisov, Pavel Exner: Distant perturbation asymptotics in window-coupled waveguides. I. The non-threshold case, *J. Math. Phys.* **47** (2006), 113502
10. Frieder Kleefeld: On some meaningful inner product for real Klein-Gordon fields with positive semi-definite norm, *Czech. J. Phys.* **56** (2006), 999-1006
11. M. Štefaňák, T. Kiss, I. Jex, G. Mohring: The meeting problem in the quantum random walk, *J. Phys. A: Math. Gen.* **39** (2006), 14965-14983
12. Jeremy M. Hutson, Pavel Soldán: Molecular formation in ultracold atomic gases, *Int. Rev. Phys. Chem.* **25** (2006), 497-596

13. Manuel Lara, John L. Bohn, Daniel E. Potter, Pavel Soldán, Jeremy M. Hutson: Ultracold Rb-OH collisions and prospects for sympathetic cooling, *Phys. Rev. Lett.* **97** (2006), 183201
14. Vít Jakubský, Jaroslav Smejkal: A positive-definite scalar product for free Proca particle, *Czech. J. Phys.* **56** (2006), 985-998
15. Čestmír Burdík, Severín Pošta, Ondřej Navrátil: On the matrix 3×3 exactly solvable models of the type G_2 , *J. Nonlin. Math. Phys.* **13**, **Suppl.** (2006), 27-36
16. Miloslav Znojil: Spiked potentials and quantum toboggans, *J. Phys. A: Math. Gen.* **39** (2006), 13325-13336
17. M. Znojil, H.B. Geyer: Construction of a unique metric in quasi-Hermitian quantum mechanics: non-existence of the charge operator in a 2×2 matrix model, *Phys. Lett.* **B640** (2006), 52-56
18. Miloslav Znojil: On a few new quantization recipes using \mathcal{PT} -symmetry, *Czech. J. Phys.* **56** (2006), 977-984
19. R.D. Benguria, R. Brummelhuis, P. Duclos, S. Perez-Oyarzun, P. Vytřas: Asymptotic behaviour of the equilibrium nuclear separation for the H_2^+ molecule in a strong magnetic field, *J. Phys. A: Math. Gen.* **39** (2006), 13325-13336

(b) Accepted for publication

1. Pavel Exner, Takashi Ichinose, Hagen Neidhardt, Valentin Zagrebnov: Zeno product formula revisited, *Integral Equations and Operator Theory*, to appear; `math-ph/0411036v2`
2. Petr Ambrož, Christiane Frougny, Zuzana Masáková, Edita Pelantová: Palindromic complexity of infinite words associated with simple Parry numbers, *Annales de l'Institut Fourier*, to appear; `math.CO/0603608`
3. Petr Ambrož, Christiane Frougny: On α -adic expansions in Pisot bases, *Theoret. Comp. Sci.*, to appear; `math.NT/0603650`
4. Petr Baláži, Zuzana Masáková, Edita Pelantová: Factor versus palindromic complexity of uniformly recurrent infinite words, *Theoret. Comp. Sci.*, to appear; `math.CO/0603607`
5. Ľubomira Balková, Edita Pelantová, Ondřej Turek: Combinatorial and arithmetical properties of infinite words associated with non-simple quadratic Parry numbers, *RAIRO: Theoretical Informatics and Applications*, to appear; `cs.DM/0608065`

6. Manuel Lara, John L. Bohn, Daniel E. Potter, Pavel Soldán, Jeremy M. Hutson: Cold collisions of OH and Rb. I: the free collision, *Phys. Rev. A*, to appear; `physics/0608200`
7. David Krejčířík, Hynek Kovařík: A Hardy inequality in a twisted Dirichlet-Neumann waveguide, *Math. Nachr.*, to appear; `math-ph/0603076`
8. Pedro Freitas, David Krejčířík: Waveguides with combined Dirichlet and Robin boundary conditions, *Mathematical Physics, Analysis and Geometry*, to appear
9. Jeremy M. Hutson, Pavel Soldán: Molecular collisions in ultracold atomic gases, *Int. Rev. Phys. Chem.*, to appear; `physics/0610219`
10. Tomas Ekholm, Hynek Kovařík, David Krejčířík: A Hardy inequality in twisted waveguides, *Arch. Rat. Mech. Anal.*; `math-ph/0512050`
11. Pedro Freitas, David Krejčířík: Unbounded planar domains whose second nodal line does not touch the boundary, *Math. Res. Lett.*, to appear

(c) Submitted papers and other publications

1. Pavel Exner, Martin Fraas: The decay law can have an irregular character, *submitted*; `quant-ph/0603067`
2. Zuzana Masáková, Edita Pelantová: Quasicrystals: algebraic, combinatorial and geometrical aspects, submitted to *Proceedings of NATO School "Physics and Computer Science"*; `math-ph/0603065`
3. T. Probst-Schendzielorz, A. Wolf, M. Freyberger, J. Bergou, I. Jex, Bing He: Unambiguous discriminator for unknown quantum states: An implementation, *submitted*
4. Ľubomira Balková, Edita Pelantová, Wolfgang Steiner: Return words in the Thue-Morse and other sequences, *submitted*; `math.CO/0608603`
5. Jiří Patera, Edita Pelantová, Milena Svobodová: Fine gradings of the real forms of $sl(4, \mathbb{C})$, $sp(4, \mathbb{C})$, and $o(4, \mathbb{C})$, submitted; `math-ph/0608032`
6. Pavel Exner, Jiří Lipovský: Equivalence of resolvent and scattering resonances on quantum graphs, submitted; `math-ph/0610065`
7. Ľubomira Balková, Zuzana Masáková: Palindromic complexity of infinite words associated with non-simple Parry numbers, submitted to *RAIRO: Theoretical Informatics and Applications*; `math.CO/0611508`
8. Zuzana Masáková, Edita Pelantová: Self-matching properties of Beatty sequences, *submitted*; `math.CO/0609631`

9. Denis Kochan: Noncommutative Lagrange mechanics, *submitted*; hep-th/0610061
10. Ondřej Lev, Pavel Štoviček: On a semiclassical formula for non-diagonal matrix elements, *submitted*; hep-th/0611109
11. A. Tereszkievicz, A. Odziejewicz, M. Horowski, I. Jex, G. Chadzitaskos: Explicitly solvable models of two-mode coupler in Kerr-media, *submitted*
12. V. Košťák, G. Nikolopoulos, I. Jex: Perfect state transfer in networks of arbitrary topology and coupling configuration, *submitted*
13. Ladislav Hlavatý, Libor Šnobl: Poisson-Lie T-plurality as canonical transformation, *submitted*; hep-th/0608133
14. Tamás Fülöp, Izumi Tsutsui: Boundary effect of a partition in a quantum well, *submitted*; quant-ph/0612011
15. Milan Krbálek: Equilibrium distributions in thermodynamical traffic gas, *submitted*; cond-mat/0603375
16. Milan Krbálek, Petr Šeba: Statistical variances in traffic data, *submitted*; physics/0611049
17. Denis Borisov: Asymptotic behaviour of the spectrum of a waveguide with distant perturbation, *submitted*; math-ph/0606011
18. Denis Borisov: Distant perturbations of the Laplacian in a multi-dimensional space, *submitted*; math-ph/0608006
19. Pavel Exner: Unstable system dynamics: do we understand it fully?, *Rep. Math. Phys.*, to appear
20. Joachim Asch, Pavel Štoviček: Dynamics of a classical Hall system driven by a time dependent Aharonov-Bohm flux, *submitted*; math-ph/0609039
21. Joachim Asch, Pavel Štoviček: On the dynamics created by a time dependent Aharonov-Bohm flux, *submitted*
22. Denis Kochan: How to quantize forces: an academic essay how the strings could enter classical mechanics, *submitted*; hep-th/0612115
23. V.B. Belyaev, M. Tater, E. Truhlík: Influence of protons on the capture of electrons by the nuclei of ${}^7\text{Be}$ in the Sun, *submitted*; astro-ph/0606679
24. Pedro Freitas, David Krejčířík: Location of the nodal set for thin curved tubes, *submitted*

(d) A popular book

1. Igor Jex: *Ludwig Boltzmann – the first among the atomists*, Prometheus Publishers, Prague 2006 (in Czech).