

CURRICULUM VITAE

Personal Information

Name: Taras Fityo (Fito)
Date of birth: January 10, 1979
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Work experience

Dates: September 2008 – September 2009, August 2010 – Present
Name and address of employer: National Institute for Nanotechnology,
11421 Saskatchewan Drive, Edmonton, AB T6G 2M9,
Canada
Position held: Postdoctoral fellow
Main activities: scientific research

Dates: July 2010 – August 2010
Name and address of employer: Ivan Franko National University of Lviv, Department
for theoretical physics, 12 Drahomanov St., Lviv, 79005,
Ukraine
Position held: Docent
Main activities: teaching and scientific research

Dates: November 2004 – August 2008, October 2009 – June 2010
Name and address of employer: Ivan Franko National University of Lviv, Department
for theoretical physics, 12 Drahomanov St., Lviv, 79005,
Ukraine
Position held: Assistant
Main activities: teaching and scientific research

Dates: May 2001 – December 2004, May 2007 – August 2008
Name and address of employer: Institute for Condensed Matter Physics,
1 Svientsitskii St., Lviv, 79011, Ukraine
Position held: Part-time engineer
Main activities: software development and scientific research

Education

Dates: November 2001 – October 2004
Name and type of organization providing education: Ivan Franko National University of Lviv, Chair for theoretical physics
Position held: Post-graduated student
Thesis title: “New exactly and quasi-exactly solvable problems of quantum mechanics”, presented on December 20, 2006

Dates: September 1996 – June 2001
Name and type of organization providing education: Ivan Franko National University of Lviv, Chair for theoretical physics
Position held: Student
Thesis title: “Quantum mechanical movement of a particle in complex potentials”, awarded as the best diploma essay of Physics Faculty

Dates: September 1993 – June 1996
Name and type of organization providing education: Lviv Physics and Mathematics Liceum
Position held: Student
Thesis title: Certificate of secondary education with honours

Personal skills and competencies

Mother tongues:	Ukrainian		
Other languages:			
	Russian	English	Polish
Reading skills	excellent	excellent	good
Writing skills	excellent	good	basic
Verbal skills	good	good	good
Technical skills and competencies:	Most MS Office products, L ^A T _E X, Maple, OpenGL, PostScript language, Delphi (I am a certified Delphi developer, two software packages developed by myself are protected by Ukrainian certificates of authorship No. 8943 and No. 28600), Pascal, C/C++, Fortran		
Hobbies:	Mountain tourism (hiking), numismatics		
Interests:	Like to play chess and other logic games, history (especially economic history), modern ukrainian literature		

Papers and preprints by Taras V. FITYO

Let me describe the enlisted below papers shortly.

Two optical topics: security schemes and gratings, were considered in my early papers ([1–2] and some other in Ukrainian). But my contributions to them reduced to software development, numerical calculations and derivation of some probability formulae.

My scientific supervisor and me considered the reality conditions of the non-Hermitian Hamiltonian spectra in [3–4]. In [5–6] we consider quasi-exactly solvable systems, i. e. such Hamiltonians for which one or several wavefunctions satisfying the corresponding Schrödinger equation are known.

Papers [7–11] are devoted to the study of the deformed commutation relations leading to the existence of the minimal length. In [8] the spectrum of one-dimensional Coulomb problem ($P^2\psi - \frac{\alpha}{X}\psi = E\psi$) was found. In this paper the Kempf's deformation $[X, P] = i(1 + \beta P^2)$ was considered. In all other papers [7, 9–11] a general form of the deformation function was used. In [7, 10] generalization of the Bohr-Sommerfeld quantization rule for one-dimensional case was obtained. In [11] I developed a classical method of the partition function evaluation and showed that the minimal length introduction reduced the degrees of freedom in the high temperature limit significantly.

Papers [12–14] are based on results of work performed at NINT and they include my theoretical description for polymer development.

1. S. Y. Lebid, Y. V. Bobitski, V. M. Fitio, T. W. Fityo, Spectrum of Bragg grating reflection coefficient (RC) in optical fiber // Proc. SPIE **3291**, 165–172 (1998).
2. L. I. Muravsky, M. V. Shovgenyuk, Ya. P. Kulynych, T. I. Voronyak, T. W. Fityo, Hybrid joint transform correlator for optical security // Proc. SPIE **4016**, 430–434 (1999).
3. V. M. Tkachuk, T. V. Fityo, Factorization and superpotential of the PT symmetric Hamiltonian // J. Phys. A **34**, 8673–8677 (2001).
4. T. V. Fityo, A new class of non-Hermitian Hamiltonians with real spectra // J. Phys. A **35**, 5893–5897 (2002).
5. V. M. Tkachuk, T. V. Fityo, Multidimensional quasi-exactly solvable potentials with two known eigenstates // Phys. Lett. A **309**, 351–356 (2003).
6. T. V. Fityo, V. M. Tkachuk, Time-dependent Schrödinger equation with one know solution // Journal of Physical Studies (Lviv) **9**, 299–303 (2005).
7. T. V. Fityo, I. O. Vakarchuk, V. M. Tkachuk, WKB approximation in deformed space with minimal length // J. Phys. A **39** 379–387 (2006).
8. T. V. Fityo, I. O. Vakarchuk, V. M. Tkachuk, One dimensional Coulomb-like problem in deformed space with minimal length // J. Phys. A **39** 2143–2149 (2006).

9. T. V. Fityo, Deformed Heisenberg algebra with upper bound of momentum value //preprint arXiv: quant-ph/0607025 (2006).
10. T. V. Fityo, I. O. Vakarchuk, V. M. Tkachuk, The WKB approximation in the deformed space with the minimal length and minimal momentum // J. Phys. A **41** 045305, 6 pages (2008).
11. T. V. Fityo, Statistical physics in deformed space with minimal length, Phys. Lett. A **372**, 5872–5877 (2008).
12. M. Mohammad, T. Fito, J. Chen, M. Aktary, M. Stepanova and S. Dew, Interdependence of optimum exposure dose regimes and the kinetics of resist dissolution for electron beam nanolithography of polymethylmethacrylate, J. Vac. Sci. Technol. B **28**, L1–L4 (2010).
13. M. A. Mohammad, T. Fito, J. Chen, S. Buswell, M. Aktary, M. Stepanova and S. K. Dew, Systematic study of the interdependence of exposure and development conditions and kinetic modelling for optimizing low-energy electron beam nanolithography // Microelectronic Engineering **87**, 1104–1107 (2010).
14. M. A. Mohammad, T. Fito, J. Chen, S. Buswell, M. Aktary, S. K. Dew and M. Stepanova, The Interdependence of Exposure and Development Conditions when Optimizing Low-Energy EBL for Nano-Scale Resolution //in Lithography. Ed. by Michael Wang (Intech, Vukovar, Croatia) 293–318 (2010).

Public presentation of PhD thesis (“New exactly and quasi-exactly solvable problems of quantum mechanics”) was held on December 20, 2006. The thesis (in Ukrainian) can be downloaded at

<http://ktf.franko.lviv.ua/~fityo/Dyser.pdf>

The thesis is based on papers [3–9].

I also have several other papers in Ukrainian. They as well as my conference theses can be found at

<http://ktf.franko.lviv.ua/~andrij/authors.html>

after selecting surname Fityo from the list.