

# Vladimir V. Zavalniuk

## (Info)

### Personal:

First Name: Vladimir (Volodymyr)  
Middle Name (Father's): Viktorovich  
Last Name: Zavalniuk  
Date and Place of Birth: 20 March 1985, Odessa, Ukraine  
Citizenship: Ukraine  
Address: Department of Theoretical Physics, Physics Faculty,  
Odessa I.I. Mechnikov National University  
2 Dvoryanskaya St.,  
Odessa 65026  
Ukraine  
E-mail: [VZavalnyuk@onu.edu.ua](mailto:VZavalnyuk@onu.edu.ua)  
Spoken Languages: English, Russian (native), Ukrainian (native)

### Educational Training

01 Sep 2001 – **Bachelor of Science in Physics**  
31 Jun 2005 Diploma with Honors in Theoretical Physics  
Odessa I.I. Mechnikov National University, Odessa (Ukraine)

01 Sep 2005 – **Master of Science in Theoretical Physics**  
30 Jun 2006 Diploma with Honors in Theoretical Physics  
Department of Theoretical Physics  
Odessa I.I. Mechnikov National University, Odessa (Ukraine)

15 Oct 2006 – PhD program in Physics and Mathematics, specialization in Theoretical Physics  
15 Oct 2009 Supervisor: Prof. Dr.Sc. Vadym Adamyan.  
Department of Theoretical Physics  
Odessa I.I. Mechnikov National University, Odessa (Ukraine)

21 Dec 2012 **Ph.D. in Physics and Mathematics, specialization in Theoretical Physics**  
Title of the Thesis:  
*Vibrational excitations in graphene and carbon nanotubes with point defects.*  
Supervisor: Prof. Dr.Sc. Vadym Adamyan.  
Department of Theoretical Physics  
Odessa I.I. Mechnikov National University, Odessa (Ukraine)

### Additional Education:

18 Dec 2013 [edX MITx certificate](#)  
7.00x: Introduction to Biology - The Secret of Life, by Eric S. Lander

28 Mar 2014 [edX MITx certificate](#)  
CS1156x: Principles of Economics with Calculus, by Antonio Rangel

29 Aug 2014 [edX MITx certificate](#)  
3.091x\_2: Introduction to Solid State Chemistry, by Michael J. Cima

### Scientific Interests:

Classical Mechanics, Condensed Matter, Nanoscale Physics, Quantum Theory;  
Data Compression; Computational Phylogenetics; Laser Dermatology and Surgery.

### **Skills and Experience:**

Theoretical Physics, Mathematics, Programming (Delphi, C++), Numerical Methods, AI, Mathematical Software, MS Excel.

### **Teaching Experience:**

*(Department of Physics, Odessa I.I. Mechnikov National University, Odessa, Ukraine)*

- Classical Mechanics, 2006-2007, 2012-2013.
- Methods of Mathematical Physics, 2006-2012.
- Quantum Mechanics, 2007-2011.
- Mathematics of Finance, 2013-2014.
- Quantum Information Theory, 2017.

*(Department of Fundamental Sciences, Odessa Military Academy, Odessa, Ukraine)*

- General Physics, 2015-2018.
- Organizational informatics, 2016-2017.

*(Private school "Nika-M", Odessa, Ukraine)*

- Physics, 2007-2009.

### **Organizational / managerial experience:**

- Member of organizing committee of the International Conference "Modern Analysis and Applications" (MAA 2007) dedicated to the centenary of Mark Krein, April 9–14, 2007, Odessa, Ukraine.
- Member of organizing committee of the International Symposium "Physics of Complex Fluids" in Memory of Alexander Vsevolodovich Zatonvsky (1942-2006), June 6, 2012, Odessa, Ukraine.

### **Scientific publications:**

- V. Adamyan and V. Zavalniuk. *Phonons in graphene with point defects*. J. Phys.: Condens. Matter **24**, p.015402 (10pp.) (2011);
- V. Zavalniuk and S. Marchenko. *Theoretical analysis of telescopic oscillations in multi-walled carbon nanotubes*. Low. Temp. Phys. **37**, p.337-42 (6pp.) (2011);
- V. Adamyan and V. Zavalniuk. *Lattice thermal conductivity of graphene with conventionally isotopic defects*. J. Phys.: Condens. Matter **24**, p.415401 (7pp.) (2012);
- V. Zavalniuk. *Axial stiffness of multiwalled carbon nanotubes as a function of the number of walls*. Ukr. J. Phys. **57**, p.933-9 (7pp.) (2012);
- S.S. Kryzhanovsky and V. Zavalniuk. Effect of foaming on the pool boiling heat flux for isobutane-"Azmol" solutions. Refrigeration engineering and technology **139**, p.25-9 (5pp.) (2012); (С.С. Крыжановский, В.В. Завальнюк. *Влияние пенообразования на интенсивность теплообмена при кипении растворов изобутан-«Азмол» в большом объеме*. Холодильная техника и технология **139**, стр. 25-9 (5 стр.) (2012) );
- V.M. Adamyan, V.N. Bondarev and V.V. Zavalniuk. *Bending sound in graphene: Origin and manifestation*. J. Physics Letters A **380** pp.3732-7, (2016);
- Viktor N. Bondarev, V.M. Adamyan and V.V. Zavalniuk. *Bending mode and thermal expansion of graphene*. Phys. Rev. B **97**, 035426 (9 pp.), (2018);

### **Books and book chapters:**

- V. Tsepkoenko, V. Zavalniuk, K. Karpenko and S. Kadochnikov. *Lasers in dermatology and cosdmetology*. (In "Course of plastic surgery: Guide for Physicians", two volumes, ed. K.P. Phenisnov; ISBN 978-5-88697-193-4, 978-5-88697-195-8; Yaroslavl, Rybinsk, 2010); Vol. 1, pp.305-346.

(В.А. Цепколенко, В.В. Завальнюк, Е.С. Карпенко, С.В. Кадочников. *Лазеры в дерматологии и косметологии*. Курс пластической хирургии: руководство для врачей, в двух томах, под редакцией К.П. Пшениснова; "Рыбинский дом печати"; ISBN 978-5-88697-193-4, 978-5-88697-195-8. Ярославль, Рыбинск, 2010. Том 1, стр. 305-346.)

### Participation in Conferences:

- Young Scientists Conference on Physics of Semiconductors "Lashkaryov readings", April 25-27, 2007, Kyiv, Ukraine;
  - ◆ V. Zavalniuk. *Phonon contribution to electric resistance of carbon nanotubes* (Фононний вклад в сопротивление углеродных нанотрубок). Abstracts: Kiev, 2007. – P.29;
- III Ukrainian Scientific Conference on Physics of Semiconductors (USCPS-3) with international participation, June 17-22, 2007, Odessa, Ukraine;
  - ◆ V. Zavalniuk. *Electronic properties of metal-filled carbon nanotubes* (Електронні властивості вуглецевих нанотрубок із прониклими атомами домішки). Abstracts: Odessa, 2007. – P. 257;
- International Students and Young Scientists Conference "HEUREKA-2008", May 19-21, 2008, Lviv, Ukraine;
  - ◆ V. Zavalniuk. *Phonon spectra of chiral carbon nanotubes is coprime indices* (Фононні спектри хіральних вуглецевих нанотрубок із взаємно-простими індексами). Abstracts: Lviv, 2008. – P. A7;
- Physics and Technology of Thin Films and Nanosystems, XII International Conference, May 18-23, 2009, Ivano-Frankivsk, Ukraine;
  - ◆ V. Zavalniuk, S. Marchenko. *Telescopic oscillation in multi-walled carbon nanotubes* (Телескопічні коливання в системі вкладених вуглецевих нанотрубок). Abstracts: Ivano-Frankivsk, 2009. – Vol. 1, P. 303;
  - ◆ S. Marchenko, V. Zavalniuk. *Radial and rotational oscillations in double-walled nanotubes* (Радіальні та обертові коливання в системі двостінкових нанотрубок). Abstracts: Ivano-Frankivsk, 2009. – Vol. 1, P. 422;
- Modern Problems of Theoretical Physics, December 24-26, 2009, Kiev, Ukraine;
  - ◆ V.V. Zavalniuk. *Oscillation spectra in harmonic approximation for ideal and non-ideal graphene*. Abstracts: Kiev, 2009. – P. 44;
  - ◆ S.V. Marchenko, V.V. Zavalniuk, Ye.V. Koskin. *Statistical methods in computational phylogenetics*. Abstracts: Kiev, 2009. – P. 69;
- Modern Problems of Theoretical Physics, December 22-24, 2010, Kiev, Ukraine.
  - ◆ V. Zavalniuk. *Influence of different types of defects on the graphene and carbon nanotubes phonon spectra*. Abstracts: Kiev, 2010. – P. 41;
  - ◆ V. Zavalniuk, S. Marchenko. *Density of electronic states of the carbon nanocones and the finite graphene cluster*. Abstracts: Kiev, 2010. – P. 33.