

# Pavel Evgenjevich Timoshenko

*Ph.D. Physical and Mathematical Sciences, Senior Lecturer, Engineer,  
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## Education

- **18.05.2012** — **defended Ph.D. thesis** entitled “Study of magnetostatic waves excitation in microstrip lines and scattering by a defect of the surface of a ferromagnetic film”) in the dissertation council D 212.208.10 of Southern Federal University on the specialty 01.04.03 — Radiophysics.
- **2006 – 2009** — **postgraduate studies** at Radiophysics Department of Physics Faculty of Southern Federal University. The scientific advisor was professor, doctor of physical and mathematical sciences R.K. Babichev.
- **2004 – 2006** — **studying in magistracy** at Physics Faculty of Rostov State University on a specialty “Radiophysics and Electronics”. Master's thesis entitled “A study coplanar transducer of magnetic waves”. After graduation awarded the Master of Science degree in “Physics” (diploma VMA 0035409).
- **2000 – 2004** — **studying in baccalaureate** at Physics Faculty of Rostov State University on a specialty “Radiophysics and Electronics”. After graduation awarded the Bachelor of Science degree in “Physics” (diploma AVB 0694324).
- **1990 – 2000** — **studying in school No 2** in Bataysk, Rostovsky obl.

## Experience

- **Since 04.2013** — **Senior Lecturer** (0.5 rate) at Nanotechnology Department of Physics Faculty of Southern Federal University.
- **Since 04.2013** — **Engineer** (1.0 rate) at Nanotechnology Department of Physics Faculty of Southern Federal University.
- **09.2010 – 04.2013** — **Assistant** (0.5 rate) at Nanotechnology Department of Physics Faculty of Southern Federal University.

## Personal and Professional Qualities

- Purposefulness.
- Availability of spacious mind, focus on professional growth and self-learning.
- Communicability.
- The ability to solve assigned tasks efficiently, the ability to make independent decisions to achieve the required results.

## Foreign Languages

- **English** — intermediate level: speak technical language; in various situations without preparing can communicate with native speakers; can speak on a wide range of issues; can explain my point of view and read native texts.

## Researching

- Methods of computing microwave electrodynamics
  - Investigation of the properties and the development of microwave devices based on ferrite structures, exciting magnetostatic spin wave.
  - The study of periodic structures — photonic crystals and magnon (1D- and 2D-periodic and quasi-periodic structures based on ferromagnetic and ferroelectric films).
- Mathematical modeling of microwave electronics elements with modern software and technologies.

## Area of Interest

- **Development of information systems**
  - Agile methods of software development
    - **Microsoft Solutions Framework**, Unified Process
  - **Unified Modeling Language**
  - Team developing (**Microsoft Visual Studio**, **Team Foundation Server**)
  - Object-oriented programming:
    - **Software architecture**
    - Methods of software development (**Test-driven development**, Model-driven engineering)
    - **Design and testing patterns**
    - **Code refactoring**
    - Inversion of control containers (**PRISM**, **Unity Application Block**, **Managed Extensibility Framework**, Spring.NET, **Spring Framework**, PicoContainer, PocoCapsule)
  - Modern programming technologies (**JavaFx**, **Windows Presentation Foundation**, **ADO.NET with LINQ and Entity**, Workflow Foundation, Adobe Flex, Component Object Model, Services, Windows Management Interfaces, Microsoft Foundation Classes)
  - Parallel computing and asynchronous programming (OpenMP, MPI, **Windows Communication Foundation**, **Task-based asynchronous programming** — async/await in C#, CUDA)
  - Databases (entity-relationship models, **SQL**, DBMS: **SQLServer**, **MySQL**, PostgreSQL, SQLite)
  - Problem-oriented programming languages (**Java**, **C#**, **C++**, **Delphi**, Pascal, F#, Perl, Python, Ruby, Basic, Fortran)
  - Low-level programming language assembler
  - Driver developing and debugging kits Windows (SoftICE, WinDAsm, IDA, Assembler x86, Driver Development Kit)
- Mathematical modeling
  - Computer Algebra System (**Maple**, **MatLAB**, MathCAD, Matematica, **Origin**)
  - Numerical methods
  - **Methods of computational microwave electrodynamics**
    - Analytical and numerical modeling of microwave devices
    - Software packages for modeling of microwave devices (COMSOL)

- Web-design
  - **Modern approaches for user interface design** in application and sites
  - Declarative markup languages (**XML, XSLT, XAML, HTML, CSS**)
  - Scripting languages (**JavaScript, VBScript**)
  - Server-side programming languages (**PHP, ASP.NET**)
  - Flash animation (Adobe Flash, **ActionScript**)
  - Java web technologies (applets, servlets)
  - Microsoft.NET web technologies (**Silverlight, XBAP**)
  - Libraries for developing web applications and user interfaces (ExtJS, **jQuery, YUI, Prototype**)
  - Modules development for content management systems (**Moodle, Joomla, Drupal**)
  - Modules development for enterprise portals (Microsoft SharePoint)
- Software technologies in modern electronics:
  - Programming microcontrollers, PLIS, DSP, (Assembler, C++, VHDL, Verilog)
  - Communication interfaces (**RS-232, USB**)
  - Data acquisition and processing system (**LabVIEW**)
- System administration
  - Hardware and software packet's routing
  - Network devices (transmission media, routers, switches, etc.)
  - Network operating systems (Windows, Unix)
  - Command shells (MS Command, PowerShell, bash)
  - Virtualization technologies
- Office system software
  - **Modern methods editing documents** (based on styles)
  - **Office systems (Microsoft Office with VBA, OpenOffice)**
  - **LaTeX**
  - Graphics editors (GIMP, InkScape, Corel, Adobe)
- Others
  - Engineering and computer graphics (**AutoDesk AutoCAD** with AutoLISP, VBA; AutoDesk 3DSMax)
  - Project management system (Microsoft Project)
  - Geographic information systems (developing ArcGIS add-ins based on COM technology and used C#, Java and Python languages)

## Educational and Methodical Work

- Nanotechnology Department of Physics Faculty of Southern Federal University
  - **222900 — “Nanotechnology and Microsystems Engineering”**
    - Engineering and Computer Graphics (lectures and practices, 1 term)
      - Technical drawing, AutoDesk AutoCAD
    - Information Technology (lectures and practices, 1-3 terms)
      - Term 1: numerical methods, C# (Console and WinForms applications), OOIL.
      - Term 2: OOD, DBMS, SQL, ADO.NET, LINQ, WPF
      - Term 3: basics OOA, team developing, TFS, MSF, MS Project.

- Information and Communication Technologies (lectures and practices, 4 term)
  - Advanced using of Internet (i.e. searching command), using Microsoft Office in scientific work (styles, table of contents, styles, custom bibliography), plotting curves and spectra fitting in OriginLab Origin, system-design platform and development environment LabVIEW, computer algebra system MathWorks MatLAB with graphical simulation modeling Simulink.
- Methods of mathematical modeling (seminars, 6 семестр)
  - Differential models (theory of dynamical systems, the dynamics of biological populations, limit cycles and oscillations, self-organization and pattern formation, fractals, chaotic behavior of dynamical systems), stochastic and deterministic models (percale theory, modeling of dendrite growth, cellular automata, Ising model, genetic algorithms).
- Methods of mathematical modeling (lectures and practices, 1 term of magistracy)
  - Additional chapters of the theory of functions of a complex variable, asymptotic methods and special functions, Fourier transform, fuzzy logic and neural network.
- Computer technologies in science (lectures and practices, 2 term of magistracy)
  - Document preparation system and document markup language LaTeX, using Java in numerical modeling of physics problems
- 210600 — “Nanotechnology”
  - Engineering and Computer Graphics (lectures and practices, 1 term)
    - Technical drawing, AutoDesk AutoCAD
  - Informatics (lectures and practices, 1-2 семестр)
    - Programming in C#
  - Computational physics (practices, 2 term)
    - Programming in C#, numerical methods
  - Computer methods in modern science (lectures and practices, 1 term of magistracy)
    - Using computer algebra systems of Maple, MatLAB for solving physics problems.
  - Methods of mathematical modeling (7 term)
    - Differential, stochastic and deterministic models.
- **Radio Physics Department at Physics Faculty of Southern Federal University**
  - 210400 — “Infocommunication technologies and communication systems”
    - Engineering and Computer Graphics (lectures and practices, 1 term)
      - Technical drawing, AutoDesk AutoCAD

- Additional training courses “Systems Engineer” at Physics Faculty of Southern Federal University
  - Programming in C#
    - Basics of programming language C#, regular expressions, writing PowerShell add-ins
  - Technical facilities of computers and networks, its service and repair
    - Computer architecture, network equipment, IT-infrastructure planning and design of networks, servers, data centers, virtualization technology.

## Professional Skills Improvement

1. **19.11.2012 – 01.12.2012** — “Modern technology and interactive forms of learning and training students in the field of “Materials Science and Technology of Materials” (“Nanotechnologies and Nanomaterials” training program) (certificate number 3410, at Don State Technical University, 72h.)
2. **01.11.2011 – 12.11.2011** — “Supercomputer technology for solving problems of natural science” (certificate number 027-397 at Southern Federal University, 72h.)
3. **21.11.2011 – 30.11.2011** — “Supercomputer technology for solving problems of natural science” (certificate number 50 at Southern Federal University, 72h.)
4. **21.09.2011 – 30.09.2011** — “Advanced training for teachers and researchers in the field of multiprocessor systems and parallel programming” (certificate number 8868 at Southern Federal University, 72h.)
5. **20.10.2010 – 27.12.2010** — “Hardware and software maintenance networks of educational organizations” (certificate number 6995 at South-Russian Center of Informatization of Southern Federal University, 72h.)
6. **20.10.2009 – 20.12.2009** — “System administration of educational organizations” (certificate number 6597 at Southern Federal University, 158h.)
7. **24.09.2007 – 20.12.2007** — “Improvement language communicative competence for administrative and scientific-pedagogical staff of natural science and engineering faculties” (certificate number 1205 at Southern Federal University, 100h.)

## Scientific Publications in Peer-Reviewed Journals

1. **P.E. Timoshenko**, V.N. Ivanov, R.K. Babichev, A.V. Shloma “Scattering of forward bulk magnetostatic waves by a defect of the surface of a ferromagnetic film magnetized at an arbitrary angle” // Journal of Communications Technology and Electronics. 2012. V. 57. N. 5. PP. 480-489. (DOI: 10.1134/S1064226912050099)
2. **P.E. Timoshenko**, V.N. Ivanov, R.K. Babichev, A.V. Shloma “Diffraction of surface magnetostatic waves by surface cavities on ferromagnetic film” // Journal of Communications Technology and Electronics. 2012. V. 57. N. 7. PP. 726-733. (DOI: 10.1134/S1064226912060137)
3. V.N. Ivanov, V.I. Zubkov, E.R. Babicheva, **P.E. Timoshenko** “Impedance of the microstrip line for magnetostatic forward volume waves”. // Electromagnetic waves and electronic systems. 2010. N. 5. PP. 64-67.
4. I.N. Leontyev, B. Dkhil, V.E. Guterman, E.B. Pakhomova, **P.E. Timoshenko**, A.V. Guterman, I.N. Zakharchenko, G.P. Petin “XRD and electrochemical investigation of particle size effects in platinum-cobalt cathode electrocatalysts for oxygen reduction” //

Journal of Alloys and Compounds. 2010. V. 500. N. 2. P. 241-246. (DOI: 10.1016/j.jallcom.2010.04.018)

5. **P.E. Timoshenko**, E.R. Babicheva, V.N. Ivanov, V.I. Zubkov, “Impedance of the microstrip line for magnetostatic backward volume waves”. // Radiophysics and Quantum Electronics. 2009. V. 52. N. 12. PP. 892-899. (DOI: 10.1007/s11141-010-9197-9)

## Participation in Conferences and Workshops

I participated with oral presentations at 14 scientific conferences, including 7 international conferences: “Radiation and scattering of electromagnetic waves” (Taganrog, TSURE, 25 – 30 June 2007, 29 June – 4 July 2009), “Radiolocation and radiocommunications” (Moscow, MPEI, 7 – 11 November 2007, 7 – 11 November 2008, 20 – 22 November 2009), “Electromagnetic fields and materials” (Moscow, MPEI, 19 – 21 November 2010, 18 – 20 November 2011, 16 – 18 November 2012), “Actual Problems of Electronic Instrument (APEDE)” (Saratov, SGU, 18 – 19 September 2008). Performed with the oral presentation (Saratov, SGU, 3 – 8 February 2009) and the 40 minutes lecture (Saratov, SGU, 6 – 11 February 2012) at the “Winter Workshop on Microwave Electronics and Radiophysics”. I participated in an oral presentation at a regional scientific conference “Problems of operation of water transport and training in the south of Russia” (Novorossiysk, 26 – 28 November 2009), Russian workshop “Wave phenomena in heterogeneous environments (Waves-2010) (Zvenigorod, MSU, 24 – 29 May 2010) and Russian conference “Electronics and Microelectronics microwave” (Saint Petersburg, LETI, 4 – 7 June 2012).

## Participation in Grants

- RFBR 14-02-31256-MOL\_a “The scattering of magnetostatic waves on the 2D magnon crystal” (*head of the grant, presented at the competition*)
- RFBR 12-02-91051-NCNI\_a “Thin films and superlattices of multiferroic” (*performer*)
- RFBR 10-02-91158-GFEN\_a “The mechanism of growth, size effects and lattice dynamics of 1D ferroelectrics  $\text{SrBi}_2\text{Ta}_2\text{O}_9$  and  $\text{Bi}(\text{La},\text{Nd})_4\text{Ti}_3\text{O}_{12}$ ” (*performer*)
- RFBR 09-02-00666-a “The structure and lattice dynamics of nanoscale ferroelectric films in electric fields” (*performer*)

## Sample Projects

- The “Systems Engineer” Web site at Physics Faculty of Southern Federal University (CMS Joomla; <http://systemengineer.sfedu.ru/>, 2013).
- The MSWReflection application for calculation and analysis of the energy flux density magnetostatic waves scattered by a defect of the surface of a ferromagnetic film magnetized at an arbitrary angle (Maple, MatLab, Java; DOI: 10.1134/S1064226912050099, 10.1134/S1064226912060137).
- The automation of experimental research of the scattering of magnetostatic waves by inhomogeneities on the surface of a ferromagnetic film (LabVIEW).
- The RichTextBoxToolBar Control (C#, WPF; P.E. Timoshenko «WPF RichTextBoxToolBar Control» // CodeProject.com, 2012, <http://www.codeproject.com/Articles/448062/WPF-RichTextBoxToolBar-Control>).
- The program “L&T Grain Size Distribution” (Delphi; DOI: 10.1016/j.jallcom.2010.04.018).
- The Web site “Nanotechnology Department of Physics Faculty of Southern Federal University” (CMS Moodle 2; <http://nanotechnology.sfedu.ru/>, 2010).