

**Dr. Denis Khomitsky**  
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**Born:** 26.08.1977.

**Position:** Associate Professor (Docent), Department of Theoretical Physics, Faculty of Physics, University of Nizhny Novgorod, Russia.

**Education:** M.Sc. in Theoretical and Mathematical Physics (2000), Faculty of Physics, University of Nizhny Novgorod; Technology Transfer add-on program (1999), University of Nizhny Novgorod; Ph.D. (Candidate of Science) in Condensed Matter Physics (2003), Faculty of Physics, University of Nizhny Novgorod.

**Visiting researcher:** Post Doc (2003-2004), Theoretical Physics Department, Umea University, Sweden

**Research interests:** Quantum physics of condensed matter, spintronics, dynamics and evolution of spin-dependent phenomena, effects of spin-orbit coupling and topological properties of solids, nonlinear effects, open quantum systems, optical and magnetic properties of low-dimensional systems.

**Recent contacts and cooperation:** Prof. E.Ya. Sherman, University of Basque Country, Bilbao, Spain.

**Teaching:** Lecturer in general and special courses “Theory of low-dimensional structures”, “Advanced chapters of mathematical physics”, “Analytical geometry”, “Linear Algebra”.

**Main grant programs and awards:** Project Director of the President of Russian Federation grant for young Ph.D. researchers (2009-2010). Participant in projects from the Russian Foundation for Basic Research and from the Ministry of Education and Science RF (1999 - present). Winner of the Dynasty Foundation Scholarship for young Ph.D. researchers (2006-2008). English-Russian Translator (edited by Prof. V.Ya. Demikhovskii) of the book by Prof. S. Datta “Quantum Transport: Atom to Transistor”, Cambridge University Press, 2005 (Moscow, Izhevsk, 2009). Honor Diploma from the Ministry of Education of Nizhny Novgorod (2011).

**Membership and Referee:** Member of the American Physical Society (2008), Secretary of the Young Researchers Council, University of Nizhny Novgorod, Secretary of the Research School “Nanomaterials and Nanotechnology”, University of Nizhny Novgorod. Referee of Physical Review Letters, Physical Review B, A, E (2007), Physics Letters A (2012).

**Main Publications:**

- D. V. Khomitsky, L. V. Gulyaev, and E. Ya. Sherman, “Spin dynamics in a strongly driven system: Very slow Rabi oscillations”, Physical Review B, 2012, V.85, p.125312.
- D.V. Khomitsky, “Quantum states and linear response in dc and electromagnetic fields for charge current and spin polarization of electrons at Bi/Si interface with giant spin-orbit coupling”, Journal of Experimental and Theoretical Physics, 2012, V.114, No.5, p.738.
- E.Ya. Sherman, Yue Ban, L.V. Gulyaev, and D.V. Khomitsky, “Spin Tunneling and Manipulation in Nanostructures”, Journal of Nanoscience and Nanotechnology, 2012, V.12 No. 9, p.7535.

- D.V. Khomitsky and E.Ya. Sherman, “Pumped double quantum dot with spin-orbit coupling”, *Nanoscale Research Letters*, 2011, V.6, p.212
- D.V. Khomitsky and E.Ya. Sherman, “Pulse-pumped double quantum dot with spin-orbit coupling”, *Europhysics Letters*, 2010, V.90, p.27010.
- A.A. Perov, L.V. Solnyshkova, and D.V. Khomitsky, “Terahertz radiation-induced conductivity, Kerr and Faraday angles, and spin textures in a two-dimensional electron gas with spin-orbit coupling subjected to a high magnetic field and periodic potential”, *Physical Review B*, 2010, V.82, p.165328.
- D.V. Khomitsky and E.Ya. Sherman, “Nonlinear spin-charge dynamics in a driven double quantum dot”, *Physical Review B*, 2009, V.79, p.245321.
- D.V. Khomitsky, “Electric field-induced spin textures in a superlattice with Rashba and Dresselhaus spin-orbit coupling”, *Physical Review B*, 2009, V.79, p.205401.
- D.V. Khomitsky, “Manipulating the spin texture in a spin-orbit superlattice by terahertz radiation”, *Physical Review B*, 2008, V.77, p.113313.
- D.V. Khomitsky, “Scattering on the lateral one-dimensional superlattice with spin-orbit coupling”, *Physical Review B*, 2007, V.76, p.033404.
- V.Ya. Demikhovskii and D.V. Khomitsky, “Spin-orbit lateral superlattices: energy bands and spin polarization in 2DEG”, *Journal of Experimental and Theoretical Physics Letters*, 2006, V.83, No.8, p.340.
- J. Wabnig, D.V. Khomitsky, J. Rammer, and A.L. Shelankov, “Statistics of charge transfer in a tunnel junction coupled to an oscillator”, *Physical Review B*, 2005, V.72, p.165347
- V.Ya. Demikhovskii and D.V. Khomitsky, “Quantum Hall effect in a p-type heterojunction with a lateral surface superlattice”, *Physical Review B*, 2003, V.68, p.165301.
- V.Ya. Demikhovskii and D.V. Khomitsky, “Quantum states and optics in a *p*-type heterojunction with lateral surface quantum dot or antidot superlattice subjected to perpendicular magnetic field”, *Physical Review B*, 2003, V.67, p.035321.