

# CURRICULUM VITAE

## Personal information

**Oleg Lychkovskiy**, born January 28, 1983.

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## Education

- 2006-2009 **Ph.D. in Physics and Mathematics**, Institute for Theoretical and Experimental Physics.  
Thesis: Phenomenology of astrophysical neutrinos and hypothetical mirror particles (*in Russian*).  
Supervisor: Lev Okun.
- 2005-2006 **M.S. in Applied Physics and Mathematics**, with honors, Moscow Institute of Physics and Technology.  
Supervisor: Lev Okun.
- 2000-2005 **B.S. in Applied Physics and Mathematics**, with honors, Moscow Institute of Physics and Technology.  
Supervisor: Lev Okun.

## Employment

- 2016 – present **Senior Researcher**, [Steklov Mathematical Institute](#).
- 2014 – present **Postdoctoral Fellow**, [Russian Quantum Center](#), Many-body Theory group.
- 2015 – 2016 **Project Leader** (project – “Development of algorithms for quantum key processing”), DEPHAN LLC.
- 2012 – 2014 **Senior Research Associate**, [Lancaster University](#), Physics Department.
- 2009 – 2012 **Researcher**, [Institute for Theoretical and Experimental Physics](#), Theory Department.

## Short-term visits

- 2015, 2016 Leiden Institute of Physics
- 2009, 2011, 2015 Laboratoire de Physique Theorique et Modeles Statistiques (LPTMS), Orsay, France
- 2010, 2011 Palermo University, Quantum Open System group.
- 2009, 2011 CERN, Theoretical Physics Division, Geneva.

## Publications

- 2017 **Nikolay Il'in, Elena Shpagina, Filipp Uskov, Oleg Lychkovskiy**. [A parametrization of constrained and unconstrained sets of quantum states](#) // arXiv 1704.03861.
- 2016 **Oleg Lychkovskiy, Oleksandr Gamayun, Vadim Cheianov**. [Timescale for adiabaticity breakdown in driven many-body systems and orthogonality catastrophe](#) // arXiv 1611.00663, submitted to Phys. Rev. Lett.
- 2016 **O. Lychkovskiy**. [Large quantum superpositions of a nanoparticle immersed in superfluid helium](#) // Phys. Rev. B 93, 214517 (2016).
- 2015 **O. Lychkovskiy**. [Perpetual motion and driven dynamics of a mobile impurity in a quantum fluid](#) // Phys. Rev. A 91, 040101 (Rapid Communications) (2015).
- 2015 **O. Gamayun, O. Lychkovskiy, and V. Cheianov**. [Reply to 'Comment on 'Kinetic theory for a mobile impurity in a degenerate Tonks-Girardeau gas''](#) // Phys. Rev. E 92, 016102 (2015).
- 2014 **O. Gamayun, O. Lychkovskiy, and V. Cheianov**. [Kinetic theory for a mobile impurity in a degenerate Tonks-Girardeau gas](#) // Phys. Rev. E 90, 032132 (2014).
- 2014 **E. Burovski, V. Cheianov, O. Gamayun, and O. Lychkovskiy**. [Momentum relaxation of a mobile impurity in a one-dimensional quantum gas](#) // Phys. Rev. A 89, 041601 (Rapid Communication) (2014).
- 2014 **O. Lychkovskiy**. [Perpetual motion of a mobile impurity in a one-dimensional quantum gas](#) // Phys. Rev. A 89, 033619 (2014).
- 2013 **E. Safonov and O. Lychkovskiy**. [Spin dynamics in finite cyclic XY model](#) // Phys. Rev. A 87, 042105 (2013).
- 2013 **O. Lychkovskiy**. [Dependence of decoherence-assisted classicality on the way a system is partitioned into subsystems](#) // Phys. Rev. A 87, 022112 (2013).

- 2012 **B. Leggio, O. Lychkovskiy and A. Messina.** [On the merit of a Central Limit Theorem-based approximation in statistical physics](#) // J. Stat. Phys 146, 1274 (2012).
- 2012 **O. Lychkovskiy and M. Vysotsky.**  [\$\mu \rightarrow e\gamma\$  decay versus  \$\mu \rightarrow eee\$  bound and lepton flavor violating processes in supernova](#) // JETP 114, 382 (2012).
- 2011 **O. Lychkovskiy.** [Entanglement and Relaxation in Exactly Solvable Models](#) // Optics and Spectroscopy 111, 713 (2011).
- 2011 **O. Lychkovskiy.** [Entanglement, decoherence and thermal relaxation in exactly solvable models](#) // J. Phys. Conf. Ser. 306, 012028 (2011).
- 2010 **O. Lychkovskiy.** [Necessary condition for the thermalization of a quantum system coupled to a quantum bath](#) // Phys. Rev. E 82, 011123 (2010).
- 2010 **O. Lychkovskiy, S. Blinnikov and M. Vysotsky.** [TeV-scale bileptons, see-saw type II and lepton flavor violation in core-collapse supernova](#) // Eur. Phys. J. C 67, 213 (2010).
- 2010 **O. Lychkovskiy and S. Blinnikov.** [Spin flip of neutrinos with magnetic moment in core-collapse supernova](#) // Phys. of Atom. Nucl., 73, 614 (2010).
- 2009 **O. Lychkovskiy.** [Neutrino oscillations: Deriving the plane-wave approximation in the wave-packet approach](#) // Phys. of Atom. Nucl. 72, 1557 (2009).
- 2009 **O. Lychkovskiy.** [Purity sieve for models with factorizable interactions](#) // J. Phys. Conf. Ser. 174, 012030 (2009).
- 2008 **B. Kerbikov, O. Lychkovskiy.** [Neutron-Mirror-Neutron Oscillations in a Trap](#) // Phys. Rev. C 77, 065504 (2008).
- 2005 **A.D. Dolgov, O.V. Lychkovskiy, A.A. Mamonov, L.B. Okun and M.G. Schepkin.** [Neutrino wave function and oscillation suppression](#) // Eur. Phys. J. C 44, 431 (2005).
- 2005 **A.D. Dolgov, O.V. Lychkovskiy, A.A. Mamonov, L.B. Okun, M.V. Rotaev, M.G. Schepkin.** [Oscillations of neutrinos produced and detected in crystals](#) // Nucl. Phys. B 729, 79 (2005).

## Grants and projects

- 2016 – 2017 Quantum dynamics of a mobile impurity in a medium. Team leader: Oleg Lychkovskiy. RFBR grant N 16-32-00669.
- 2015 – 2016 Development of algorithms for quantum key processing. Scientific director: Oleg Lychkovskiy (till May 2016). Ministry of Education and Science of the Russian Federation contract N 14.579.21.0104.
- 2012 – 2014 Non-equilibrium dynamics of quantum fluids in one dimension. Team leader: Vadim Cheianov. ERC grant N 279738.
- 2010 – 2011 Mass, energy, gravitation and neutrino in classical and quantum theory. Team leader: Lev Okun. RFBR grant N 10-02-01398.
- 2010 – 2011 Standard Model and its extensions. Team leader: Lev Okun. Grant for Leading Scientific School N 4172.2010.2.
- 2010 – 2011 Lepton and quark flavor, Dark Matter and Dark Energy and LHC. Team leader: Alexander Dolgov. Ministry of Education and Science Contract N 02.740.11.5158.
- 2008 – 2010 Flavor physics in the LHC era. Team leader: Mikhail Vysotsky. RFBR grant N 08-02-00494.
- 2008 – 2009 Standard Model and its extensions. Team leader: Lev Okun. Grant for Leading Scientific School N 4568.2008.2.
- 2007 – 2009 Neutrino and mirror particles: theoretical problems. Team leader: Lev Okun. RFBR grant N 07-02-00830.
- 2006 – 2007 Extensions of Standard Model of elementary particles, physics of vacuum and cosmology. Team leader: Lev Okun. Grant for Leading Scientific School N 5603.2006.2.
- 2005 – 2007 The Standard Model, hierarchies, CP - violation. Team leader: Mikhail Vysotsky. RFBR grant N 05-02-17203.

## Honors, Awards, Fellowships

- 2011 Prize for young scientists working in atomic industry (awarded by the State Atomic Energy Corporation "Rosatom").
- 2005 – 2010 ITEP Fellowship for young scientists.
- 2007 – 2008 Dynasty Foundation Fellowship for PhD students specializing in theoretical physics.

- 2007 Bruno Rossi Diploma; awarded by the Ettore Majorana Foundation for the contribution to the International School of Subnuclear Physics, Erice.
- 2005 Diploma of the Russian Ministry of Education and Science for the best research work of the undergraduate students.
- 2005 – 2006 Dynasty Foundation Fellowship for undergraduate students specializing in theoretical physics.

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## Miscellaneous

Reviewing Physical Review A, Physical Review E, New Journal of Physics.