

Personal Information

Full Name: Denis **GREBENKOV**
Citizenship: Russian/French Marital status: Married
Birth: August 31, 1978 (at Saint Petersburg, Russia)
Position: Scientist (CR1) at CNRS
Work Address: Laboratory of Condensed Matter Physics
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Professional Experience

Since 2012 Lecturer at **Ecole Polytechnique**, FRANCE
2011 Sabbatic Year at Poncelet Laboratory, Moscow, RUSSIA
Since 2010 Scientist (CR1) at CNRS, **Ecole Polytechnique**, FRANCE
Since 2010 Lecturer at **Ecole Normale Supérieure de Cachan**, FRANCE
2009 Habilitation for research supervision (HDR), **University Paris-6**, FRANCE
Since 2007 Lecturer at **Ecole Supérieure d'Electricité**, FRANCE
2006-2010 Scientist (CR2) at CNRS, **Ecole Polytechnique**, FRANCE
2005-2006 Post-doc research position at **University of Naples "Federico II"**, ITALY
European Marie Curie Research Training Network "Arrested Matter" (MRTN-CT-2003-504712)
Subject: *Theoretical and Numerical Study of Complex Systems Exhibiting a Structural Arrest in the Field of Soft and Colloidal Matter*
Supervisor: Prof. Antonio Coniglio (Department of Physics)
2004-2005 Post-doc research position at **Université Paris-Sud**, FRANCE
Subject: *Dynamics of a Confined Diffusion of Hyperpolarized Helium-3 in the Human Pulmonary Acinus. Geometry-Image Relation and Emphysema Diagnostic*
Supervisor: Prof. Geneviève Guillot (Department of Medical Magnetic Resonance Research)
2001-2004 PhD thesis at **Ecole Polytechnique**, FRANCE
Diploma: PhD, with honors and congratulations (defense on 2nd July 2004)
Subject: *Laplacian Transport towards Irregular Interfaces: A Theoretical, Numerical and Experimental Study*
Supervisor: Prof. Bernard Sapoval (Laboratory of Condensed Matter Physics)
2001-2003 PhD thesis at **Saint Petersburg State University**, RUSSIA
Diploma: PhD, with honors (defense on 25th December 2003)
Subject: *Study of Relaxation in a Model Micellar Solution*
Supervisor: Prof. Aleksandr P. Grinin (Department of Statistical Physics)
1996-1999 Assistant professor of mathematics at lyceum 239, Saint Petersburg, RUSSIA

Awards and Distinctions

2012 Bronze Medal CNRS
2010 Giulio Cesare Borgia Prize
2004 Prix de thèse de l'Ecole Polytechnique (best PhD thesis of the year)

Languages

Russian: mother tongue
English: fluent
French: fluent

Computer skills

Programming: C/C++
Software: Matlab, Maple
TeX, Microsoft Word

Education

- 2000-2001 **Ecole Normale Supérieure de Paris**, Ecole Polytechnique, Paris VI, Paris VII, Paris XI
Diploma: *DEA in Theoretical Physics* (equivalent to MSc degree)
- 1999-2000 **Ecole Polytechnique**, France (International Program, X'97, last academic year)
Certificate with honors, congratulations of the jury "physics"
- 1999-2001 **Saint Petersburg State University**, Russia
Diploma: *Master of Science in Physics*, with honors
Research field: Non-equilibrium physics (Department of Statistical Physics)
- 1995-1999 **Saint Petersburg State University**, Russia
Diploma: *Bachelor of Science in Physics*, with honors
Research field: Statistical physics and complex systems (Department of Statistical Physics)
- 1991-1995 **Lyceum 239** specialized in mathematics and physics, Saint Petersburg, Russia
Graduate Education Certificate

Research Interests

- **Mathematical Physics:** restricted diffusion, anomalous diffusions, reflected Brownian motion, NMR and transport processes in porous media; spectral properties of the Laplace operator in irregularly-shaped domains; inverse spectral problems; fractal geometry; wave equation;
- **Physics of Physiological Objects, Biophysics:** magnetic resonance imaging (MRI) of biological tissues and organs (brain, lungs); single particle tracking in living cells, inference methods; respiratory function, diffusion through semi-permeable membranes; transport in the human placenta;
- **Statistical Physics:** dynamics of granular media; non-equilibrium systems; self-organization; transitive processes; models of stock exchanges;
- **Condensed Matter Physics:** nucleation theory; micellization; relaxations.

Scientific Production and Synergetic Activities

- Author and co-author of more than 80 publications in top peer-reviewed journals, including *Rev. Mod. Phys.* (1), *Proc. Nat. Ac. Sci.* (1), *Phys. Rev. Lett.* (6), *Phys. Rev. E* (13), *J. Chem. Phys.* (3), *J. Magn. Reson.* (7), *J. Stat. Phys.* (4), *Eur. Phys. J. B* (3), *J. Theor. Biol.* (2), etc.
- Lecturer at the leading French and international institutions: Ecole Polytechnique (France), Ecole Normale Supérieure de Cachan (France), Ecole Supérieure d'Electricité (France), Saint Petersburg State University (Russia), University of Sciences in Ho Chi Minh City (Vietnam)
- Supervisor and co-supervisor of 7 PhD theses, 3 post-docs and more than 20 master theses
- Organizers of 6 international conferences during the last 5 years in France, USA and Russia

Ten the Most Cited Papers in Peer-Reviewed Journals

1. D. S. Grebenkov, *NMR survey of reflected Brownian motion*, **Rev. Mod. Phys.** **79**, 1077-1137 (2007).
2. O. Bénichou, D. S. Grebenkov, P. Levitz, C. Loverdo, R. Voituriez, *Optimal Reaction Time for Surface-Mediated Diffusion*, **Phys. Rev. Lett.** **105**, 150606 (2010).
3. D. S. Grebenkov, *Residence times and other functionals of reflected Brownian motion*, **Phys. Rev. E** **76**, 041139 (2007).
4. D. S. Grebenkov, *Laplacian Eigenfunctions in NMR I. A Numerical Tool*, **Conc. Magn. Reson. A** **32**, 277-301 (2008).
5. D. S. Grebenkov, M. Pica Ciamarra, M. Nicodemi, A. Coniglio, *Flow, Ordering and Jamming of Sheared Granular Suspensions*, **Phys. Rev. Lett.** **100**, 078001 (2008).
6. P. Levitz, D. S. Grebenkov, M. Zinsmeister, K. Kolwankar, B. Sapoval, *Brownian flights over a fractal nest and first passage statistics on irregular surfaces*, **Phys. Rev. Lett.** **96**, 180601 (2006).
7. D. S. Grebenkov, M. Filoche, B. Sapoval, *Mathematical Basis for a General Theory of Laplacian Transport towards Irregular Interfaces*, **Phys. Rev. E** **73**, 021103 (2006).
8. O. Bénichou, D. S. Grebenkov, P. Levitz, C. Loverdo, R. Voituriez, *Mean first-passage time of surface-mediated diffusion in spherical domains*, **J. Stat. Phys.** **142**, 657-685 (2011).
9. D. S. Grebenkov, G. Guillot, B. Sapoval, *Restricted Diffusion in a Model Acinar Labyrinth by NMR. Theoretical and Numerical Results*, **J. Magn. Reson.** **184**, 143-156 (2007).
10. D. S. Grebenkov, M. Filoche, B. Sapoval, *Spectral Properties of the Brownian Self-Transport Operator*, **Eur. Phys. J. B** **36** (2), 221-231 (2003).