

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

2011 Sabbatic Year at Poncelet Laboratory, Moscow, RUSSIA
Since 2011 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
2006-2011 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
Affiliation: 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
Affiliation: 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
Affiliation: Laboratoire de Physique de la Matière Condensée
Specialization: Theoretical 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
Affiliation: Department of Statistical Physics
Specialization: Condensed matter physics
1996-1999 Assistant professor of mathematics at lyceum 239, Saint Petersburg, RUSSIA

Awards and Distinctions

2012 Bronze Medal CNRS (the highest scientific distinction for junior scientists in France)
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
Affiliation: Physics Faculty, 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
Affiliation: Physics Faculty, Department of Statistical Physics
- 1991-1995 **Lyceum 239** specialized in mathematics and physics, Saint Petersburg, Russia
Graduate Education Certificate

Research Activities

- Mathematical Physics (restricted diffusion, reflected Brownian motion, random walks in porous media; spectral properties of the Laplace operator in domains with complex shape, properties of eigenfunctions and asymptotics of eigenvalues; inverse spectral problems; fractal geometry; wave equation);
- Physics of Physiological Objects, Biophysics (imaging of biological tissues and organs; NMR and transport processes in porous media; geometry and function of interstitial space; respiratory function, diffusion through semi-permeable membranes);
- Statistical Physics (dynamics of granular media; non-equilibrium systems; self-organization; transitive processes);
- Condensed Matter Physics (nucleation theory; micellization; relaxations).

Selected Papers in Peer-Reviewed Journals (more than 40 publications)

1. D. S. Grebenkov, *NMR survey of reflected Brownian motion*, **Rev. Mod. Phys.** **79**, 1077-1137 (2007).
2. M. Filoche, D. S. Grebenkov, J. S. Andrade Jr., B. Sapoval, *Passivation of Irregular Surfaces Accessed by Diffusion*, **Proc. Natl. Acad. Sci.** **105**, 7636-7640 (2008).
3. O. Bénichou, D. S. Grebenkov, P. Levitz, C. Loverdo, R. Voituriez, *Optimal Reaction Time for Surface-Mediated Diffusion*, **Phys. Rev. Lett.** **105**, 150606 (2010).
4. D. S. Grebenkov, M. Pica Ciamarra, M. Nicodemi, A. Coniglio, *Flow, Ordering and Jamming of Sheared Granular Suspensions*, **Phys. Rev. Lett.** **100**, 078001 (2008).
5. 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).
6. D. S. Grebenkov, *What Makes a Boundary Less Accessible*, **Phys. Rev. Lett.** **95**, 200602 (2005).
7. D. S. Grebenkov, M. Filoche, B. Sapoval, M. Felici, *Diffusion-Reaction in Branched Structures: Theory and Application to the Lung Acinus*, **Phys. Rev. Lett.** **94**, 050602 (2005).
8. D. S. Grebenkov, *Laplacian Eigenfunctions in NMR I. A Numerical Tool*, **Conc. Magn. Reson. A** **32**, 277-301 (2008).
9. D. S. Grebenkov, *Residence times and other functionals of reflected Brownian motion*, **Phys. Rev. E** **76**, 041139 (2007).
10. D. S. Grebenkov, *Nuclear Magnetic Resonance Restricted Diffusion between Parallel Planes in a Cosine Magnetic Field: An Exactly Solvable Model*, **J. Chem. Phys.** **126**, 104706 (2007).
11. D. S. Grebenkov, *Multieponential attenuation of the CPMG spin echoes due to a geometrical confinement*, **J. Magn. Reson.** **180**, 118-126 (2006).
12. 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).
13. 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).
14. D. S. Grebenkov, A. A. Lebedev, M. Filoche, B. Sapoval, *Multifractal Properties of the Harmonic Measure on Koch Boundaries in Two and Three Dimensions*, **Phys. Rev. E** **71**, 056121 (2005).
15. D. S. Grebenkov, M. Filoche, B. Sapoval, *Spectral Properties of the Brownian Self-Transport Operator*, **Eur. Phys. J. B** **36** (2), 221-231 (2003).