

Personal Information

Full Name: Denis S. **GREBENKOV**
Sex: Male
Citizenship: Russian
Place of birth: Saint Petersburg, Russia
Date of birth: August 31, 1978
Marital status: Single
Position: Researcher CNRS
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Award: *Prix de thèse de l'Ecole Polytechnique*

Award: *2010 Giulio Cesare Borgia Prize*

Professional Experience

- 2011 Sabbatic Year at Poncelet Laboratory, Moscow, RUSSIA
- Since 2010 Scientific Adviser at John Locke Investments, FRANCE
- 2009 Habilitation for research supervision (HDR), **University Paris-6**, FRANCE
- Since 2007 Lecturer at **Ecole Supérieure d'Electricité**, FRANCE
- 2007-2008 Scientific Adviser at Systeia Capital Management, FRANCE
- Since 2006 Researcher 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 Researches
- 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

Languages

Russian: mother tongue
English: fluent
French: fluent

Computer skills

Programming: C/C++, Pascal
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

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. D. S. Grebenkov, M. Pica Ciamarra, M. Nicodemi, A. Coniglio, *Flow, Ordering and Jamming of Sheared Granular Suspensions*, Phys. Rev. Lett. **100**, 078001 (2008).
4. 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).
5. D. S. Grebenkov, *What Makes a Boundary Less Accessible*, Phys. Rev. Lett. **95**, 200602 (2005).
6. 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).
7. D. S. Grebenkov, *Laplacian Eigenfunctions in NMR I. A Numerical Tool*, Conc. Magn. Reson. A **32**, 277-301 (2008).
8. D. S. Grebenkov, *Residence times and other functionals of reflected Brownian motion*, Phys. Rev. E **76**, 041139 (2007).
9. 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).
10. D. S. Grebenkov, *Multiexponential attenuation of the CPMG spin echoes due to a geometrical confinement*, J. Magn. Reson. **180**, 118-126 (2006).
11. 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).
12. 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).
13. 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).
14. D. S. Grebenkov, M. Filoche, B. Sapoval, *Spectral Properties of the Brownian Self-Transport Operator*, Eur. Phys. J. B **36** (2), 221-231 (2003).