

LISTE DE PUBLICATIONS

par Denis S. GREBENKOV

- *PAPIER INVITE*

1. D. S. Grebenkov, *Partially Reflected Brownian Motion: A Stochastic Approach to Transport Phenomena*, in “Focus on Probability Theory”, Ed. L. R. Velle, pp. 135-169 (Nova Science Publishers, 2006).
[Version électronique est disponible sur <http://arxiv.org/abs/math/0610080>]

- *PUBLICATIONS DANS DES REVUES AVEC COMITE DE LECTURE*

1. D. S. Grebenkov and J. Serror, *Following a Trend with an Exponential Moving Average: Analytical Results for a Gaussian Model*, Physica A **394**, 288-303 (2014).
2. D. S. Grebenkov, M. Vahabi, E. Bertseva, L. Forró, and S. Jeney, *Hydrodynamic and subdiffusive motion of tracers in a viscoelastic medium*, Phys. Rev. E **88**, 040701(R) (2013).
3. D. S. Grebenkov, *Optimal and sub-optimal quadratic forms for non-centered Gaussian processes*, Phys. Rev. E **88**, 032140 (2013).
4. B.-T. Nguyen and D. S. Grebenkov, *Localization of Laplacian eigenfunctions in circular, spherical and elliptical domains*, SIAM J. Appl. Math. **73**, 780-803 (2013).
5. D. S. Grebenkov and B.-T. Nguyen, *Geometrical structure of Laplacian eigenfunctions*, SIAM Reviews **55**, 601-667 (2013).
6. A. Serov, D. S. Grebenkov, C. Salafia, and M. Filoche, *A geometrical model for searching an optimal villi density in the inter-villous cross-sections of the human placenta*, Placenta **34**, A93-A94 (2013).
7. D. S. Grebenkov, H. T. Nguyen, and J.-R. Li, *A fast random walk algorithm for computing diffusion-weighted NMR signals in multi-scale porous media: a feasibility study for a Menger sponge*, Micropor. Mesopor. Mater. **178**, 56-59 (2013).
8. M. Nordin, D. S. Grebenkov, M. N. Jacobi, and M. Nyden, *An efficient eigenfunction approach to calculate spin-echo signals in heterogeneous porous media*, Micropor. Mesopor. Mater. **178**, 7-10 (2013).
9. D. V. Nguyen, D. S. Grebenkov, C. Poupon, D. Le Bihan, and J.-R. Li, *Effective diffusion tensor computed by homogenization*, Diff. Fundam. **18** (9), 1-6 (2013).
10. S. Valeyre, D. S. Grebenkov, S. Aboura and Q. Liu, *The Reactive Volatility Model* (accepté à Quant. Finance)
11. J.-F. Rupprecht, O. Bénichou, D. S. Grebenkov, and R. Voituriez, *Exact mean exit time for surface-mediated diffusion*, Phys. Rev. E **86**, 041135 (2012).
12. A. L. Delitsyn, B.-T. Nguyen, and D. S. Grebenkov, *Exponential decay of Laplacian eigenfunctions in domains with branches of variable cross-sectional profile*, Eur. Phys. J. B **85**, 371 (2012).
13. E. Bertseva, D. S. Grebenkov, P. Schmidhauser, S. Gribkova, S. Jeney, and L. Forró, *Optical Trapping Microrheology in Cultured Human Cells*, Eur. Phys. J. E **35**, 63 (2012).

14. A. Andreanov and D. S. Grebenkov, *Time-averaged MSD of Brownian motion*, J. Stat. Mech. P07001 (2012).
15. J.-F. Rupperecht, O. Bénichou, D. S. Grebenkov, and R. Voituriez, *Kinetics of active surface-mediated diffusion in spherically symmetric domains*, J. Stat. Phys. **147**, 891-918 (2012).
16. T. Calandre, O. Bénichou, D. S. Grebenkov, and R. Voituriez, *The interfacial territory covered by surface-mediated diffusion*, Phys. Rev. E **85**, 051111 (2012).
17. A. Rozanova-Pierrat, D. S. Grebenkov, and B. Sapoval, *Faster Diffusion across an Irregular Boundary*, Phys. Rev. Lett. **108**, 240602 (2012).
18. J. Gill, D. Vvedensky, C. Salafia, D. S. Grebenkov, and S. VanHorn, *Correlations between intravillous screening and placental functional efficiency: the influence of villous capillary geometry onto oxygen transport flux*, Placenta **33**, A18 (2012).
19. A. L. Delitsyn, B.-T. Nguyen, and D. S. Grebenkov, *Trapped modes in finite quantum waveguides*, Eur. Phys. J. B **85**, 176 (2012).
20. J. S. Gill, C. M. Salafia, D. S. Grebenkov, D. D. Vvedensky, *Modelling oxygen transport in human terminal villi*, J. Theor. Biol. **291**, 33-41 (2011).
21. D. S. Grebenkov, *Probability Distribution of the Time-Averaged Mean-Square Displacement of a Gaussian Process*, Phys. Rev. E **84**, 031124 (2011).
22. D. S. Grebenkov, *Time-Averaged Quadratic Functionals of a Gaussian Process*, Phys. Rev. E **83**, 061117 (2011).
23. 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).
24. D. S. Grebenkov, *A fast random walk algorithm for computing the pulsed-gradient spin-echo signal in multiscale porous media*, J. Magn. Reson. **208**, 243-255 (2011).
25. D. S. Grebenkov, *Pulsed-Gradient Spin-Echo Monitoring of Restricted Diffusion in Multilayered Structures: Challenges and Solutions*, AIP Conf. Proc. **1330**, 65-68 (2011).
26. O. Bénichou, D. S. Grebenkov, P. Levitz, C. Loverdo, R. Voituriez, *Optimal Reaction Time for Surface-Mediated Diffusion*, Phys. Rev. Lett. **105**, 150606 (2010).
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28. D. S. Grebenkov, *Pulsed-gradient spin-echo monitoring of restricted diffusion in multilayered structures*, J. Magn. Reson. **205**, 181-195 (2010).
29. D. G. Grebenkov, *Searching for partially reactive sites: Analytical results for spherical targets*, J. Chem. Phys. **132**, 034104 (2010).
30. D. G. Grebenkov, *Subdiffusion in a bounded domain with a partially absorbing/reflecting boundary*, Phys. Rev. E **81**, 021128 (2010).
31. Denis S. Grebenkov, *Use, Misuse and Abuse of Apparent Diffusion Coefficients*, Conc. Magn. Reson. **A36**, 24-35 (2010).
32. D. S. Grebenkov, Y. A. Goddard, G. Diakova, J.-P. Korb, and R. G. Bryant, *Dimensionality of Diffusive Exploration at the Protein Interface in Solution*, J. Phys. Chem. B **113**, 13347-13356 (2009).
33. D. S. Grebenkov, *Laplacian Eigenfunctions in NMR. II Theoretical Advances*, Conc. Magn. Reson. A **34**, 264-296 (2009).

34. D. S. Grebenkov, *Laplacian Eigenfunctions in NMR I. A Numerical Tool*, Conc. Magn. Reson. A **32**, 277-301 (2008).
35. 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).
36. D. S. Grebenkov, M. Pica Ciamarra, M. Nicodemi, A. Coniglio, *Flow, Ordering and Jamming of Sheared Granular Suspensions*, Phys. Rev. Lett. **100**, 078001 (2008).
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38. D. Habib, D. S. Grebenkov, G. Guillot, *Gas diffusion in a pulmonary acinus model: experiments with hyperpolarized helium-3*, Magn. Reson. Imaging **26**, 1101 (2008).
39. M. Filoche, D. S. Grebenkov, *The toposcopy, a new tool to probe the geometry of an irregular interface by measuring its transfer impedance*, Eur. Phys. Lett. **81**, 40008 (2008).
40. D. S. Grebenkov, *NMR survey of reflected Brownian motion*, Rev. Mod. Phys. **79**, 1077-1137 (2007).
41. D. S. Grebenkov, *Residence times and other functionals of reflected Brownian motion*, Phys. Rev. E **76**, 041139 (2007).
42. D. S. Grebenkov, *Multiple Correlation Function Approach: Rigorous Results for Simple Geometries*, Diff. Fundam. **5**, 1-34 (2007).
43. 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).
44. 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).
45. D. S. Grebenkov, M. Filoche, B. Sapoval, *A Simplified Analytical Model for Laplacian Transfer Across Deterministic Prefractal Interfaces*, Fractals **15**, 27-39 (2007).
46. D. S. Grebenkov, *Multiple correlation function approach to study the restricted diffusion under arbitrary magnetic field*, Magn. Reson. Imag. **25**, 559 (2007).
47. D. S. Grebenkov, G. Guillot, *NMR of diffusion in porous media: branched or disordered structure?*, Magn. Reson. Imag. **25**, 560 (2007).
48. D. Habib, D. S. Grebenkov, G. Guillot, *Probing a model pulmonary acinus by NMR gas diffusion*, Magn. Reson. Imag. **25**, 560 (2007).
49. 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).
50. 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).
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52. D. S. Grebenkov, *Scaling Properties of the Spread Harmonic Measures*, Fractals **14** (3), 231-243 (2006).
53. D. S. Grebenkov, *What Makes a Boundary Less Accessible*, Phys. Rev. Lett. **95**, 200602 (2005).
54. 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).

55. 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).
56. B. Sapoval, J. S. Andrade Jr, A. Baldassari, A. Desolneux, F. Devreux, M. Filoche, D. S. Grebenkov, S. Russ, *New Simple Properties of a Few Irregular Systems*, Physica A **357** (1), 1-17 (2005).
57. D. S. Grebenkov, G. Guillot, *Numerical MRI of the translational diffusion in branching three-dimensional labyrinths of a model pulmonary acinus*, MAGMA **18**, S128 (2005).
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59. A. P. Grinin, D. S. Grebenkov, *Study of Relaxation in Micellar Solution by the Numerical Experiment*, Colloid Journal **65** (5), 552-561 (2003).
60. D. S. Grebenkov, *Parametric Equations of the Theory of Formation of Spherical Micelles*, J. Coll. Int. Sci. **249**, 162-171 (2002).
61. D. S. Grebenkov, A. P. Grinin, *Simulation numérique des processus transitoires de la micellisation*, Vestnik Sankt-Peterburgskogo Universiteta, Série 4, **4** (28), 3-12 (2001).
62. D. S. Grebenkov, A. P. Grinin, F. M. Kuni, *Vérification numérique de l'exactitude de certains résultats analytiques de la théorie de nucléation*, Vestnik Sankt-Peterburgskogo Universiteta, Série 4, **2** (11), 3-10 (1999).

- *CONFERENCES INVITEES*

1. Cours invité “*Diffusion in porous media*”, 9th International Bologna Conference on Magnetic Resonance in Porous Media (13 Juillet 2008, Cambridge MA, Etats-Unis).
2. Conférence invitée “*Diffusion, reaction, and spin-echo signal attenuation in branched structures*” au programme thématique ”Optimal Transport”, Institute for Pure and Applied Mathematics (22 Mai 2008, Los Angeles CA, Etats-Unis).
3. Cours invité “*Modelling of the Respiratory System and Diffusion-Weighted Imaging*”, PHE-LINet General training school on Lung Imaging with Hyperpolarised Helium-3 Magnetic Resonance (21-26 Janvier 2008, Paris, France)
4. Conférence invitée “*Harmonic Measure and Passivation of 2D and 3D Fractals*” au programme thématique ”Random Shapes”, Institute for Pure and Applied Mathematics (19 Avril 2007, Los Angeles CA, Etats-Unis).
5. Cours invité “*Laplacian transport towards irregular surfaces: the mathematics*” au programme thématique ”Random Shapes”, Institute for Pure and Applied Mathematics (12 Mars 2007, Los Angeles CA, Etats-Unis).

- *PUBLICATIONS DANS DES ACTES DE CONGRES AVEC COMITE DE LECTURE*

1. D. S. Grebenkov, H. T. Nguyen, J.-R. Li, *A fast random walk algorithm for computing diffusion-weighted NMR signals in multi-scale porous media: a feasibility study for a Menger sponge*, Proceedings of the 11th International Bologna Conference on Magnetic Resonance in Porous Media (Guilford, Grande Bretagne, 2012).

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4. J. Gill, D. Vvedensky, C. Salafia, D. S. Grebenkov, and S. VanHorn, *Correlations between intravillous screening and placental functional efficiency: the influence of villous capillary geometry onto oxygen transport flux*, International Federation of Placenta Associations Meeting 2012 (Hiroshima, Japan, September 2012).
5. J.-R. Li, D. S. Grebenkov, C. Poupon, D. Le Bihan, *An approximate analytical formula for the long time apparent diffusion coefficient*, Proceedings of the 20th Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), #1840 (Melbourne, Australia, May 2012).
6. D. V. Nguyen, D. S. Grebenkov, C. Poupon, D. Le Bihan, J.-R. Li, *Effective diffusion tensor computed by homogenization*, Proceedings of the 20th Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), #1843 (Melbourne, Australia, May 2012).
7. E. Bertseva, D. S. Grebenkov, S. Jeney and L. Forro, *Optical trapping microrheology in cultured human cells*, Proc. 8th EBSA European Biophysics Congress (Budapest, Hungary, 23-27 August 2011).
8. J. S. Gill, D. S. Grebenkov, C. M. Salafia, and D. Vvedensky, *Diffusive Oxygen Fluxes to Capillaries within the Human Placenta*, Proceedings of 18th Meeting of the Japan-Placenta Association (Kumamoto, Japan, 2010); publié à Placenta **31**, A41 (2010).
9. J. S. Gill, D. S. Grebenkov, C. M. Salafia, D. P. Misra and D. Vvedensky, *Functional Analysis of Capillaries within Villi of the Human Placenta: Area, Flux, and Birth Weight, Placental Weight and Gestation Age*, Proceedings of 18th Meeting of the Japan-Placenta Association (Kumamoto, Japan, 2010); publié à Placenta **31**, A21 (2010).
10. J. S. Gill, D. S. Grebenkov, C. M. Salafia, and D. Vvedensky, *Diffusional Screening of Capillaries within Villi of the Human Placenta*, Proceedings of 18th Meeting of the Japan-Placenta Association (Kumamoto, Japan, 2010); publié à Placenta **31**, A20 (2010).
11. M. Sarraçanie, X. Maître, A. Caluch, R. Santarelli, R.-M. Dubuisson, L. Darrasse, B. Louis, R. Fodil, E. Boriassé, F. Marsolat, D. S. Grebenkov, M. Filoche, B. Sapoval, G. Caillibotte, G. Apiou, D. Isabey, E. Durand, and J. Bittoun, *Assessment of hyperpolarised helium-3 MRI for aerosol deposition in the lungs*, Proceedings of the 25th Annual Meeting of the ESMRMB, # 959 (Valence, Espagne, 2008).
12. D. S. Grebenkov, *An exactly solvable model for restricted diffusion in NMR*, Proceedings of the XXIII IUPAP International Conference on Statistical Physics, p. 174 (Gênes, Italie, 2007).
13. D. S. Grebenkov, *Multiple correlation function approach to study the restricted diffusion under arbitrary magnetic field*, Proceedings of the 8th International Bologna Conference on Magnetic Resonance in Porous Media, p. 54 (Bologne, Italie, 2006).
14. D. S. Grebenkov, G. Guillot, *NMR of diffusion in porous media: branched or disordered structure?*, Proceedings of the 8th International Bologna Conference on Magnetic Resonance in Porous Media, p. 55 (Bologne, Italie, 2006).

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18. D. S. Grebenkov, G. Guillot, *Numerical MRI of the translational diffusion in branching three-dimensional labyrinths of a model pulmonary acinus*, Proceedings of the 22th Annual Meeting of ESMRMB, # 219 (Bâle, Suisse, 2005).
19. D. S. Grebenkov, E. Chassaing, M. Filoche, B. Sapoval, *Rôle de l'irrégularité géométrique d'une électrode : approche théorique et vérification expérimentale*, Proceedings of the 17th Forum of Electrochemical Impedances, pp. 183-192 (Paris, France, 2005).
20. D. S. Grebenkov, *Numerical Study of the Multifractal Properties of the Harmonic Measure on a Cubic Koch Surface*, in Proceedings of Europhysics Conference on Computational Physics (ed. par G. Ciccotti), p. 121 (Gènes, Italie, 2004).
21. D. S. Grebenkov, *Approximate Distribution of Hitting Probabilities for a Regular Surface with Compact Support in 2D*, Proceedings of the European Summer School 2001 "Asymptotic Combinatorics with Application to Mathematical Physics", 221-242 (Saint-Pétersbourg, Russie, 2002).

• *PUBLICATIONS SOUMISES*

1. J. R. Li, D. Le Bihan, T. Q. Nguyen, D. S. Grebenkov, C. Poupon, and H. Haddar, *Analytical and numerical study of the apparent diffusion coefficient in diffusion MRI at long diffusion times and low b-values* (soumis à J. Magn. Reson.)
2. M. Sarracanie, D. S. Grebenkov, J. Sandeau, S. Coulibaly, A. R. Martin, K. Hill, J. M. Pérez Sánchez, L. Martin, E. Durand, G. Caillibotte, D. Isabey, L. Darrasse, J. Bittoun, and X. Maître, *Hyperpolarized helium-3 MRI as a new tool to quantify aerosol deposition* (soumis à Magn. Reson. Med.)
3. F. Cadiz, D. Paget, A. C. H. Rowe, J.-P. Korb, D. S. Grebenkov, P. Barate, S. Arscott, and E. Peytavit, *Effect of Pauli blockade on spin-dependent diffusion in degenerate semiconductors* (soumis).
4. D. V. Nguyen, J.-R. Li, and D. S. Grebenkov, *A finite elements method to solve the Bloch-Torrey equation applied to diffusion magnetic resonance imaging* (soumis à J. Comput. Phys.)
5. A. Serov, D. S. Grebenkov, C. Salafia, and M. Filoche, *Optimal villous density for maximal oxygen uptake in the human placenta* (soumis à Placenta)
6. T. Calandre, O. Bénichou, D. S. Grebenkov, and R. Voituriez, *Splitting probabilities and interfacial territory covered by 2D and 3D surface-mediated diffusion* (soumis à Phys. Rev. E)
7. D. S. Grebenkov and M. Vahabi, *Analytical solution of the generalized Langevin equation with hydrodynamic interactions: subdiffusion of heavy tracers*, (soumis à Phys. Rev. E)

- *CONFERENCES INTERNATIONALES*

1. D. S. Grebenkov, *Diffusion-Reaction in Branched Structures: Theory and Application to the Lung Acinus*, Conference on Practical Applications of Fractals, Trieste, Italie, 2004.
2. D. S. Grebenkov, *Diffusive Transport towards Irregular Interfaces: from Numerical Simulations to Experimental Studies*, Conference on Physics Survey of Irregular Systems, Fortaleza, Brésil, 2004.
3. A. P. Grinin, D. S. Grebenkov, *Time Evolution of Ensembles of Molecular Aggregates in a Micellar Solution after an Instantaneous Change of the Thermodynamic Parameters*, VII Research Workshop “Nucleation Theory and Applications”, Dubna, Russie, 2003.
4. D. S. Grebenkov, *Study of the Brownian Self-Transport Operator*, TMR Network Meeting “Fractal Structures and Self-Organization”, Anacapri, Italie, 2002.

- *CONFERENCES LOCALES*

1. D. S. Grebenkov, *Modélisation de la diffusion restreinte dans un labyrinthe tridimensionnel de l'acinus pulmonaire*, 11ème Journées Simulation Numérique, Paris, France, 2005.
2. D. S. Grebenkov, *Diffusion-réaction sur des structures arborescentes : théorie et applications*, 25ème Rencontre de Physique Statistique, Paris, France, 2005.
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