CURRICULUM VITAE

Gleb OSHANIN

Laboratoire de Physique Théorique de la Matière Condensée (LPTMC) UMR CNRS 7600
Université Pierre et Marie Curie
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Date of Birth: June 15, 1963 tel. : +33 1 44277237
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Education

- 09/1980 - 01/1986 Physics Department, Moscow State University
- 12/1983 B.Sc., General Physics and Mathematics
- 01/1986 M.Sc., Physics

  Master's Thesis: "Transport of relativistic electron beams in dense gases", supervised by Prof. A. Rukhadze, Lebedev Institute of Physics, Moscow
- 10/1989 Ph.D. in Theoretical and Mathematical Physics

  Ph.D. Thesis: "Kinetics of many-particle diffusion-controlled processes", supervised by Prof. S. Burlatsky and Prof. A. Ovchinnikov, Institute of Chemical Physics, Moscow

Research experience

- 02/2009 – 09/2009 *Visiting Researcher*, Laboratory J.-V.Poncelet (UMI CNRS), Independent University, Moscow, Russia
- Since 10/1997 *Staff Researcher* at CNRS, LPTMC, University of Paris 6
- 07/1997 - 09/1997 *Associated Researcher* at CNRS, LPTL, University of Paris 6
- 04/1996 - 06/1997 *Invited Professor*, University of Mons-Hainaut, Belgium
- 10/1995 - 03/1996 *Associated Researcher* at CNRS, LPTL, University of Paris 6
- 09/1995 *Invited Professor*, DPT of IPN, University Paris-Sud
- 11/1994 - 08/1995 *Associated Researcher* at CNRS, LPTL, University of Paris 6
- 06/1993 - 11/1994 *Researcher*, University of Freiburg, Germany
- 07/1992 - 05/1993 *Invited Researcher*, LPTL, University of Paris 6
- 05/1986 - 07/1992 *Junior*, then *Staff Researcher*, Statistical Physics Laboratory, Institute of Chemical Physics, Moscow, Russia

Grants and Fellowships

- 1992 - Post doctoral fellowship by the French Ministry of Research and Technologies (MRT)
- 1993 - Fellowship by the Alexander von Humboldt Foundation, Germany
- 1997 - Bilateral Franco-German PROCOPE-grant
- 2003 - EPSRC grant together with Imperial College, UK (A. Kornyshev) and University of Dusseldorf, Germany (H. Lowen)

- 2003 - Bessel Research Prize, German government and Alexander von Humboldt Foundation, Germany
- 2006 - Bilateral Franco-Polish POLONIUM-grant
- 2007 - ANR "DYOPTRI" (Dynamique et Optimisation des Processus de TRansport Intermittents) grant

Visiting Positions

- 1994 - Associated researcher at CNRS, France, Section 17, 10 months
- 1995 - Associated researcher at CNRS, France, Section 02, 6 months
- 1996 - Invited Professor, Belgian National Scientific Foundation (FNRS), 18 months
- 1997 - Associated researcher at CNRS, France, 2 months
- 2004 - Visiting scientist, Max-Planck Institute, Stuttgart, Germany, 2 months
- 2005 - Visiting scientist, Max-Planck Institute, Stuttgart, Germany, 2 months
- 2005 - Visiting scientist, AIST Tsukuba, Japan, 1 month
- 2007- Visiting scientist, AIST Tsukuba, Japan, 3 months
- 2008 - Visiting scientist, Max-Planck Institute, Stuttgart, Germany, 2 months
- 2008 - Invited Professor (FNRS), University of Mons-Hainaut, Belgium, 1 month
- 2009 – Visiting researcher, Laboratory J.-V.Poncelet, Independent University, Moscow, Russia, 8 months

Research Interests

Condensed matter theory, non-equilibrium and equilibrium statistical mechanics, chemical physics

- Since 1988 - Fluctuation Phenomena in Reaction/Diffusion Systems
- Since 1988 - Random Transport and Dynamics in Disordered Media
- Since 1991 - Stochastic Dynamics of Interacting Particles Systems
- Since 1994 - Wetting Phenomena
- Since 2006 - Stochastic Search, Evasion and Pursuit

Teaching and educational activities

- Undergraduate students: A. Stemmer, Diploma Thesis, Freiburg University, 1993 (with A. Blumen)
- Postgraduate students: A. Mogutov, Ph. D. Thesis, University of Paris 6, 1992 (with M. Moreau), H. Schiessel, Ph. D Thesis, Freiburg University, 1994 (with A. Blumen), S. Luding, Ph. D Thesis, Freiburg University, 1994 (with A. Blumen), M. De Ruijter, University of Mons-Hainaut, 1996 (with J. De Coninck), O. Benichou, Ph. D Thesis, University of Paris 6, 1999 (with M. Moreau), M. Coppey, Ph. D Thesis, University of Paris 6, 2004 (with M.Moreau), S. Mechkov, Ph. D Thesis, University of Paris 6/ENS, 2009 (with A.M.Cazabat)
- Postdocs: R. Voituriez, 2005, O. Vasilyev, 2006

Consulting

- 2003-2004 on wetting properties of carbon fibers, United Technologies Corporation, East Hartford CT USA
- 2007-2008 on stochastic search and evasion, DARPA and US Air Force OSR Project "Robust uncertainty management in search and surveillance"

Publications (by topics)

♣ - research article (88)
♠ - chapter in a book (8)
♥ - conference proceedings with a peer review (12)
♦- article submitted or in preparation (9)

Anomalous Fluctuation-Induced Kinetic Behavior of Irreversible Diffusion-Controlled Processes

♣ Fluctuation induced kinetics of incoherent excitations quenching,
with S. Burlatsky and A. Ovchinnikov,
Physics Letters A **139**, 245 (1989)

♣ Fluctuation-induced kinetics of reversible coagulation,
with S. Burlatsky,
Journal of Physics A **22**, 973 (1989)

♣ Influence of spatial fluctuations on the long-time recombination of particles with different mobilities,
with A.Chernoutsan and S. Burlatsky,
Theoretical and Experimental Chemistry **26**, 12 (1990)

♣ Kinetics of chemical short-range ordering in liquids and diffusion-controlled reactions,
with S. Burlatsky and A. Ovchinnikov,
Chemical Physics **152**, 13 (1991)

♣ Long-time kinetics of the quenching of incoherent excitations,
with S. Burlatsky,
Soviet Journal of Chemical Physics **8**(3), 547 (1991)

♠ Correlation effects in many-body reactive systems,
with S Burlatsky and A Ovchinnikov,
in: Electron-electron correlation effects in low dimensional conductors and superconductors; eds.: A. Ovchinnikov and I. Ukrainsky, Springer Research Reports in Physics, (Springer, Berlin, 1991), p. 129

♥ Fluctuation dominated kinetics of diffusion-controlled processes: Strong effects due to fluctuations and correlations,
with S. Burlatsky,
Journal of Statistical Physics **65**, 1095 (1991)
Proceedings of the Meeting on Non-Classical Reaction Rates in honour of the 65th anniversary of George H. Weiss, NIH, Bethesda, USA 1991, presented by S. Burlatsky

♣ Comment on "Pair and triple correlations in diffusion-limited A + B → B reactions",
with S.Burlatsky, M.Moreau and A.Blumen,
Physical Review Letters **75**, 585 (1995)

♣ Fluctuation-dominated A + B → 0 kinetics under short-ranged inter-particle interactions,
with I. Sokolov, P. Argyrakis and A. Blumen,
Journal of Chemical Physics **105**, 6304 (1996)

♠ Exciton decay models based on reacting interacting particles,
with I. M. Sokolov, A. Blumen and P. Argyrakis,
in: Excitonic Processes in Condensed Media, ed. M. Schreiber, (Dresden University Press, 1996), p.339

♣ Kinetics of stochastically gated diffusion-limited reactions and geometry of random walk trajectories,
with O. Benichou and M. Moreau,
Physical Review E **61**, 3388 (2000)

♥ Dynamical disorder in diffusion-limited reactions,
with M. Moreau and O. Benichou,
Physica A **306**, 169 (2002)
Proceedings of the 21st IUPAP International Conference on Statistical Physics, Cancun, Mexico, July 2001, presented by M. Moreau

♠ Diffusion-limited reactions of particles with fluctuating activity,
with O. Benichou and M Moreau,
in: Instabilities and Non-Equilibrium Structures VIII, ed. E Tirapegui, (Kluwer Academic Publishers, Dordrecht, 2004), p.5

♣ Trapping reactions with randomly moving traps: Exact asymptotic results for compact exploration,
with O. Benichou, M. Coppey and M. Moreau,
Physical Review E **66**, 060101(R) (2002)

♣ Pascal principle for diffusion-controlled trapping reactions,
with M. Moreau, M. Coppey and O. Benichou,
Physical Review E **67**, 045104(R) (2003)

♥ Stochastic theory of diffusion-controlled reactions,
with M. Moreau, M. Coppey and O. Benichou,
Physica A **327**, 99 (2003)
Proceedings of the XXIII Meeting on Non-equilibrium Statistical Mechanics and Nonlinear Physics, Colonia del Sacramento, Uruguay, December 2002, presented by M. Moreau

♣ Lattice theory of trapping reactions with mobile species,
with M. Moreau, M. Coppey and O. Benichou,
Physical Review E **69**, 046101 (2004)

♣ Survival probability of a particle in a sea of mobile traps: a tale of tails,
with O. Benichou, J. Klafter, K. Lindenberg and S.B.Yuste,
Physical Review E **78**, 021105 (2008)

♣ Exact asymptotics for nonradiative migration-accelerated energy transfer in one-dimensional systems,
with M. Tachiya,
Physical Review E **78**, 031124 (2008)

Anomalous Kinetic and Steady-State Properties of Reversible Diffusion-Controlled Reactions

♣ Fluctuation kinetics in systems with reversible recombination,
with S. Burlatsky and A. Ovchinnikov,
Soviet Physics JETP **68**, 1153 (1989)

♣ Fluctuation-induced kinetics of reversible reactions,
with S. Burlatsky and A. Ovchinnikov,
Journal of Physics A **22**, 977 (1989).

♣ Effects of reagent density fluctuations on the kinetics of reversible bimolecular reactions in non stoichiometric mixtures,
Soviet Journal of Chemical Physics **8**(2), 395 (1991)

♣ Correlation induced non monotonic behavior of reversible chemical reactions,
with A. Mogutov, M. Moreau and S. Burlatsky,
Journal of Molecular Liquids **63**, 175 (1995)
Special issue on "Chemical Kinetics and Reactions in Liquids", eds: H. Ratajczak and M. Moreau.

♣ Corrections to the law of mass action and the properties of the asymptotic state in reversible diffusion-limited reactions,
with R. Voituriez and M. Moreau,
Journal of Chemical Physics **122**, 084103 (2005)

♣ Reversible diffusion-limited reactions: The law of mass action and chemical equilibrium state revisited,
with R. Voituriez and M. Moreau,
Europhysics Letters **69**, 177 (2005)

Reactions Involving Polymers: Polymer-Size and Anomalous Mobility Effects

♣ Diffusion-controlled reactions with a polymer,
with S. Burlatsky and V. Likhachev,
Soviet Journal of Chemical Physics **7**, 970 (1989)

♣ Many-particle kinetics of reversible polymerization,
with S. Burlatsky,
Soviet Journal of Chemical Physics **9**, 718 (1990)

♣ Diffusion-controlled reactions in polymer systems,
with S. Burlatsky,
Physics Letters A **145**, 61 (1990)

♣ Two dimensional model of trapping reactions with Gaussian coils,
with A. Mogutov and S. Burlatsky,
Physics Letters A **149**, 55 (1990)

♣ Direct energy transfer in polymer systems,
with S. Burlatsky and A. Mogutov,
Physical Review Letters **65**, 3205 (1990)

♥ Reaction kinetics in polymer systems,
with S. Burlatsky,
Journal of Statistical Physics **65**, 1109 (1991)
Proceedings of the Meeting on Non-Classical Reaction Rates in honour of the 65th anniversary of George H. Weiss, NIH, Bethesda, USA 1991

♣ Models of chemical reactions with participation of polymers,
with M. Moreau and S. Burlatsky,
Advances in Colloid and Interface Science **49**, 1 (1994)
Special issue in honor of P. G. de Gennes, eds.: Th. F. Tadros and A. M. Cazabat

♣ Influence of transport limitations on the kinetics of homopolymerization reactions,
with M. Moreau,
Journal of Chemical Physics **102**, 2977 (1995)

♣ Direct energy transfer in solutions of ideal polymer chains,
with A. Blumen, M. Moreau and S. Burlatsky,
Journal of Chemical Physics **103**, 9864 (1995)

♠ Direct energy transfer in systems of polymerized acceptors,
with J. De Coninck, A. Blumen, M. Moreau and S. Burlatsky,
in: Excitonic Processes in Condensed Media, ed. M Schreiber, (Dresden University Press, 1996), p.315

♣ Kinetics of anchoring of polymer chains on substrates with chemically active sites,

with S. Nechaev, A. M. Cazabat and M. Moreau,
Physical Review E **58**, 6134 (1998)

♣ Anchoring of polymers by traps randomly placed on a line,
with S. Nechaev and A. Blumen,
Journal of Statistical Physics **98**, 281 (2000)

Reaction-Diffusion Systems with External Random Input of Particles: Steady-State Properties and Self-Ordering Phenomena

♣ Fluctuation induced kinetics of reactions on fractals with external sources,
with S. Burlatsky and A. Ovchinnikov,
Physics Letters A **139**, 241 (1989)

♣ Fluctuation kinetics of bimolecular reactions with external particles input,
with S. Burlatsky and A. Ovchinnikov,
Soviet Journal of Chemical Physics **8**, 372 (1989)

♣ Anomalous steady-state properties of long-range bimolecular reactions,
with S. Burlatsky, E.Clement, D. Graff and L. Sander
Journal of Physical Chemistry **98**, 7390 (1994)
Special issue in honour of Raoul Kopelman

Kinetics and Equilibrium Properties of Catalytic (Three-Particle) Reactions in Random Media

♣ Smoluchowski approach for three-body reactions in one dimension,
with S. Luding, A. Stemmer and A. Blumen,
Physical Review E **52**, 5800 (1995)

♣ Kinetic description of diffusion-limited reactions in random catalytic media,
with A. Blumen,
Journal of Chemical Physics **108**, 1140 (1998)

♣ Single-species reactions on a random catalytic chain,
with S. Burlatsky,
Journal of Physics A **35**, L695 (2002)

♣ Influence of self-organization and fluctuations on kinetics of the monomer-monomer catalytic scheme,
with P. Argyrakis, E. Clement and S. Burlatsky,
Physical Review E **63**, 021110 (2001)

♣ Exactly solvable model of $A + A \rightarrow 0$ reactions on a heterogeneous catalytic chain,
with A. Blumen and O. Benichou,
Europhysics Letters **62**, 69 (2003)

♣ Equilibrium properties of a monomer-monomer catalytic reaction on a one-dimensional chain,
with M. Popescu and S. Dietrich,
Physical Review E **68**, 016109 (2003)

♣ Adsorption of reactive particles on a random catalytic chain: Exact solution,
with S. Burlatsky,
Physical Review E **67**, 016115 (2003)

♣ Exactly solvable model of reactions on a random catalytic chain,
with O. Benichou and A. Blumen,
Journal of Statistical Physics **112**, 541 (2003)

♣ Catalytic reactions with bulk-mediated excursions: Mixing fails to restore chemical equilibrium,
with M. Coppey, O. Benichou, J. Klafter and M. Moreau,

Physical Review E **69**, 036115 (2004)

♣ Exactly solvable case of monomer-monomer reactions on a two-dimensional random catalytic substrate,
with M. Popescu and S. Dietrich,
Physical Review Letters 93, 020602-1 (2004)

♦ Binary reactions on a random catalytic surface: Bethe lattice solution,
with O. Benichou and M. Moreau,
manuscript in preparation

♣ Kinetics of diffusion-limited catalytically-activated reactions: an extension of the Wilemski-Fixman approach,
with M. Coppey, O. Benichou and M. Moreau,
Journal of Chemical Physics **123**, 194506 (2005)

♣ Binary reactive adsorbate on a random catalytic substrate,
with M. Popescu and S. Dietrich,
Journal of Physics: Condensed Matter **19** (6): Art. No. 065126 (2007)

Polymer Dynamics in Random Media

♣ Probability distribution of Rouse chain segment trajectories,
with S. Burlatsky,
Theoretical and Mathematical Physics **75**, 473 (1989)

♣ Rouse chain dynamics in layered random flows,
with A. Blumen,
Physical Review E **49**, 4185 (1994)

♣ Dynamics and conformational properties of polymers in random layered flows,
with A. Blumen,
Macromolecular Theory and Simulations **4**, 87 (1995)

♣ Polyampholytes in external electric fields: dynamics and conformation properties,
with H. Schiessel and A. Blumen,
Journal of Chemical Physics **103**, 5070 (1995)

♣ Dynamics and conformation properties of polyampholytes in external electrical fields: Influence of the charge distribution,
with H. Schiessel and A. Blumen,
Macromolecular Theory and Simulations **5**, 45 (1996)

♣ Polymer dynamics in time-dependent Matheron – de Marsily flows: An exactly solvable model,
with S. Jespersen and A. Blumen,
Physical Review E **63**, 011801 (2001)

Permeability of Disordered Membranes

♣ Diffusive transfer of particles through disordered layers,
with S. Burlatsky and S. Timashev,
Soviet Journal of Chemical Physics **9**, 1299 (1990)

♣ Non-Fickian diffusive flow through disordered membranes,
with S. Burlatsky and A. Chernoutsan,
Physics Letters A **149**, 47 (1990)

♠ Tunneling of particles through disordered thin layers,
with S. Burlatsky and A. Chernoutsan,
in: Electron-electron correlation effects in low dimensional conductors and superconductors; eds.: A. Ovchinnikov and I. Ukrainsky, Springer Research Reports in Physics, (Springer, Berlin, 1991), p. 121.

Random Walks in Random Media

♣ Non Fickian steady flux in a one-dimensional Sinai chain,
with S. Burlatsky, A. Mogutov and M. Moreau,
Physical Review A **45**, R6955 (1992)

♣ Steady flux in a continuous space Sinai chain,
with A. Mogutov and M. Moreau,
Journal of Statistical Physics **73**, 379 (1993)

♣ Behavior of transport characteristics in several one-dimensional disordered systems,
with S. Burlatsky, M. Moreau and B. Gaveau,
Chemical Physics **178**, 803 (1993)
Special issue on "Transport in disordered media", eds.: G Zumofen, J Klafter and A Blumen.

♥ Subdiffusive transport in model disordered media,
with B. Gaveau and M. Moreau,
Acta Physica Polonica **25**, 943 (1994)
Proceedings of the VI Symposium on Statistical Physics, September 1994, Zakopane, Poland, presented by M. Moreau

♣ Sample-size dependence of the ground-state energy in a one-dimensional localization problem,
with C. Monthus, A. Comtet and S. Burlatsky,
Physical Review E **54**, 231 (1996)

♣ On the joint residence time of N independent two-dimensional Brownian motions,
with O. Benichou, M. Coppey, J. Klafter and M. Moreau,
Journal of Physics A **36**, 7225 (2003)

♣ Random walk generated by random permutations of 1, 2, 3, … , n,
with R. Voituriez,
Journal of Physics A **37**, 6221 (2004)

♣ Mean joint residence time of two Brownian particles in a sphere,
with O. Benichou, M. Coppey, J. Klafter and M. Moreau,
Journal of Physics A **38**, 7205 (2005)

♣ Helix or coil? Fate of a melting heteropolymer,
with S. Redner,
Europhysics Letters **85**, 10008 (2009)

♦ Random walks with growing steps,
with S. Redner,
in preparation

♦ Residence time distribution for random walks generated by random permutations,
with S. Redner,
in preparation

♦ Black-Scholes forecasts on races of Asian options,
in preparation

Random Surfaces

♣ Diffusion-controlled deposition of dense lattice gas,
with S. Burlatsky and M. Elyashevich,
Physics Letters A **151**, 538 (1990)

♣ On the distribution of surface extrema in several one- and two-dimensional random landscapes,

with F. Hivert, S. Nechaev and O. Vasilyev,
Journal of Statistical Physics **126**, 243 (2007)

♥ Random patterns generated by random permutations of natural numbers,
with R. Voituriez, S. Nechaev, O.Vasilyev and F. Hivert,
European Physical Journal - Special Topics **143**, 143 (2007)
Proceedings of the International Workshop on Complex Systems – New Trends and Expectations, June 2006, Santander, Spain

Molecular Motors

♣ Molecular motor with a built-in escapement device,
with J. Klafter and M. Urbakh,
Europhysics Letters **68**, 26 (2004)

♣ Saltatory drift in a randomly driven two-wave potential,
with J. Klafter and M. Urbakh,
Journal of Physics: Condensed Matter **17**, S3697 (2005)
Special issue on "Molecular Motors and Friction", eds.: J. Klafter and M. Urbakh,

♦ Confinement effects on dynamics of self-propelling particles,
with M. Popescu and S. Dietrich,
submitted to Journal of Chemical Physics

Tracer Diffusion in Lattice Gases

♣ Directed walk in a one-dimensional lattice gas,
with S. Burlatsky, A. Mogutov and M. Moreau,
Physics Letters A **166**, 230 (1992)

♥ Driven tracer in lattice gas wetting dynamics,
with S. Burlatsky, W. Reinhardt and M. Moreau,
Bulletin of American Physical Society **40**, 301 (1995)
American Physical Society Meeting, March 1995, San Diego, USA, presented by S. Burlatsky

♣ Motion of a driven tracer particle in a one-dimensional lattice gas,
with S. Burlatsky, M. Moreau and W. Reinhardt,
Physical Review E **54**, 3165 (1996)

♣ Generalized model for dynamic percolation,
with O. Benichou, J. Klafter and M. Moreau,
Physical Review E **62**, 3327 (2000)

♣ Atomic slide puzzle: self-diffusion of an impure atom,
with O. Benichou,
Physical Review E **64**, R020103 (2001)

♣ Ultra-slow vacancy-mediated tracer diffusion in two-dimensions: The Einstein relation verified,
with O. Benichou,
Physical Review E **66**, 031101 (2002)

♠ Phase boundary dynamics in a one-dimensional non-equilibrium lattice gas,
with J. De Coninck, M. Moreau and S. Burlatsky,
in: Instabilities and Non-Equilibrium Structures VII, ed. E Tirapegui, (Kluwer Academic Pub., Dordrecht, 2004), p.69; cond-mat/9910243

♠ Biased tracer diffusion in hard-core lattice gases: Some notes on the validity of the Einstein relation,
with M. Moreau, O. Benichou and S. Burlatsky,
in: Instabilities and Non-Equilibrium Structures IX, ed. O Descalzi, J Martinez and S Rica, (Kluwer Academic Pub., Dordrecht, 2004), p.33; cond-mat/0209611

♣ Microscopic model of charge carrier transfer in complex media,
with O. Benichou, J. Klafter and M. Moreau,
Chemical Physics **319**, 16 (2005)
Special issue on" Molecular charge transfer in condensed media", eds. A. Kornyhev, M. Newton, J. Ulstrup, and B. Sanderson

Tracer Diffusion and Frictional Properties of Adsorbed Monolayers

♣ Dynamics of a driven probe molecule in a liquid monolayer,
with J. De Coninck and M. Moreau,
Europhysics Letters **38**, 527 (1997)

♣ Biased diffusion in a one-dimensional adsorbed monolayer,
with O. Benichou, A. M. Cazabat, A. Lemarchand and M. Moreau,
Journal of Statistical Physics **97**, 351 (1999)

♣ Directed random walk in adsorbed monolayer,
with O. Benichou, A. M. Cazabat and M. Moreau,
Physica A **272**, 56 (1999)

♣ Stokes formula and density perturbances for driven tracer diffusion in an adsorbed monolayer,
with O. Benichou, A. M. Cazabat, J. De Coninck and M. Moreau,
Physical Review Letters **84**, 511 (2000)

♣ Force-velocity relation and density profiles for biased diffusion in adsorbed monolayers,
with O. Benichou, A. M. Cazabat, J. De Coninck and M.Moreau,
Physical Review B **63**, 235413 (2001)

♣ Intrinsic friction of adsorbed monolayers,
with O. Benichou, A. M. Cazabat, J. De Coninck and M. Moreau,
Journal of Physics C **13**, 4835 (2001)
Special issue on "Liquids at Interfaces", ed. H. Lowen

♥ Intrinsic friction of monolayers adsorbed on solid surfaces,
with O. Benichou, A. M. Cazabat, J. De Coninck and M. Moreau,
Proceedings of the MRS Fall 2003 Meeting, Vol. **790**, Symposium T: Dynamics in Small Confining Systems IV, eds.: J. M. Drake, J. Klafter, P. Levitz, R. M. Overney and M. Urbakh, 2.7.1 (2004); cond-mat/0311625

Precursor Films

♣ Microscopic model of an upward creep of ultrathin wetting film,
with S. Burlatsky, A. M. Cazabat and M. Moreau,
Physical Review Letters **76**, 86 (1996)

♣ Spreading of a thin wetting film: microscopic approach,
with S. Burlatsky, A. M. Cazabat, M. Moreau and W. Reinhardt,
Physical Review E **54**, 3832 (1996)

♥ Microscopic model for spreading of a two-dimensional monolayer,
with J. De Coninck, A. M. Cazabat and M. Moreau,
Journal of Molecular Liquids **76**, 195 (1998)
Proceedings of the XXVI Winter Meeting on Statistical Physics, Cuernavaca, Mexico, January 1997

♣ Dewetting, partial wetting and spreading of a monolayer on solid substrate,
with J. De Coninck, A. M. Cazabat and M. Moreau,
Physical Review E **58**, R20 (1998)

♣ Dynamics of spreading of liquid microdroplets on substrates of increasing surface energies,
with M. Voue, M. P. Valignat, A. M. Cazabat and J. De Coninck,
Langmuir **14**, 5951 (1998)

♠ Spreading of molecularly thin wetting films on solid interfaces,
with S. Burlatsky, A. M. Cazabat, M. Moreau and S. Villette,
in Nonlinear Phenomena and Complex Systems, Vol.V: Instabilities and Non-Equilibrium Structures VI, eds. E Tirapegui, J Martinez and R Tiemann, (Kluwer Academic Publ., Dordrecht, 1999)

♥ Propagation dynamics of a particle phase in a single-file pore,
with A. M. Lacasta, J. M. Sancho and F. Sagues,
MRS Proceedings Volume **651**, Symposium T: Dynamics in Small Confining Systems V, eds.: J. M. Drake, J. Klafter, P. Levitz, R. M. Overney and M. Urbakh, T9-1; cond-mat/0101119

♥ Spreading of a monolayer on a chemically heterogeneous solid surface,
with N. Pesheva,
Colloids and Surfaces A **206**, 349 (2002)
Proceedings of the International Workshop on Nanocapillarity: Wetting of Heterogeneous Surface and Porous Solid, June 2001, Princeton, USA, ed. A Neimark

♣ Defect-induced perturbations of atomic monolayers on solid surfaces,
with H. Schiessel, A. M. Cazabat and M. Moreau,
Physical Review E **66**, 056130 (2002)

♣ Diffusive spreading and mixing of fluid monolayers,
with M. Popescu and S. Dietrich,
Journal of Physics: Condensed Matter **17**, S4189 (2005)
Special issue on "Diffusion in Liquids, Chemical and Biophysical Systems", eds.: K. Lindenberg, G. Oshanin and M. Tachiya

Spreading and Dissipative Processes in Monolayers

♣ Molecular weight dependence of spreading rates of ultrathin polymeric films,
with M. P. Valignat, S. Villette, A. M. Cazabat and M. Moreau,
Physical Review Letters **80**, 5377 (1998)

♥ Structure and dynamics of thin liquid films on solid substrates,
with M. P. Valignat, M. Voue and A. M. Cazabat,
Colloids and Surfaces A **154**, 25 (1999)
Proceedings of the 2nd Conference on Surface Characterization of Adsorption and Interfacial Reactions, Keanhou Kona, Hawaii, January 1998, presented by A. M. Cazabat

♣ Dissipation processes at the mesoscopic and molecular scale. The case of polymer films,
with M. Voue, M. P. Valignat and A. M. Cazabat,
Langmuir **15**, 1522 (1999)

Spreading of Macroscopic Droplets

♣ Droplet spreading: Partial wetting regime revisited,
with M. de Ruijter and J. De Coninck,
Langmuir **15**, 2209 (1999)

♣ Contact line stability of ridges and drops,
with S. Mechkov, M. Rauscher, A. M. Cazabat, M. Brinkmann and S. Dietrich,
Europhysics Letters **80** (6), 66002-66008 (2007)

♦ Paradoxical line tension controlled spreading,
with S. Mechkov and A. M. Cazabat,
in preparation

♦ Wetting/Dewetting hysteresis,
with J. De Coninck, E.Bernard, T. Blake and D. Seveno
in preparation

Stochastic Search, Evasion and Pursuit

♣ Intermittent random walks for an optimal search strategy: One-dimensional case,
with H.Wio, K. Lindenberg and S. Burlatsky,
Journal of Physics: Condensed Matter **19** (6), Art. No. 065142 (2007)
Special issue on "Reaction kinetics beyond the textbook: fluctuations, many particle effects and anomalous dynamics", eds. K. Lindenberg, G. Oshanin and M. Tachiya

♦ Efficient search strategies for intermittent random walks,
with H. Wio, K. Lindenberg and S. Burlatsky,
Journal of Physics A, submitted
Special issue on "Random search problem", eds. MEG da Luz, E Raposo, GM Viswanathan and A. Grosberg

♦ Prey passive evasion: modest effort, high success,
with J. Klafter, O. Vasilyev and P. Krapivsky,
in preparation

Editorial

co-editor (with Katja Lindenberg, UCSD, and Masanori Tachiya, AIST, Tsukuba) of a special issue of Journal of Physics: Condensed Matter on "*Diffusion in Liquids, Chemical and Biophysical Systems*" **17** (2005)

co-editor (with Katja Lindenberg and Masanori Tachiya), of a special issue of Journal of Physics: Condensed Matter on "*Reaction Kinetics Beyond the Textbook: Fluctuations, Many Particle Effects and Anomalous Dynamics*" **19** (2007)

co-editor (with Gary Grest and Ed Webb, Sandia National Labs) of a special issue of Journal of Physics: Condensed Matter on "*Dynamics of Wetting*", in preparation, scheduled for May 2009

Talks at Conferences (since 2000)

- Material Research Society Fall 2000 Meeting, Symposium T: Dynamics in Confined Geometries, Boston, USA, November 2000 (invited lecture and symposium section chairman)
- CECAM Workshop on Statistical and Dynamical Aspects of Surface Reactions: Theory, Modeling and Experiments, Lyon, France, July 2000 (invited lecture)
- TRI Princeton Workshop on Nanocapillarity and Wetting of Heterogeneous Systems, Princeton, USA, June 2001 (invited lecture and conference section chairman)
- 223d ACS Annual Meeting, Symposium on Friction and Dynamics in Submicron Confined Systems, Orlando, USA, April 2002 (invited lecture and conference section chairman)
- International workshop on "Diffusion-Assisted Reactions", Seoul, Korea, August 2002 (invited lecture and conference section chairman)
- Symposium on Anomalous Dynamical Processes, Niels Bohr Institute - Nordita, Copenhagen, May 2003 (invited lecture)
- Material Research Society Fall 2003 Meeting, Symposium T: Dynamics in Confined Geometries, Boston, USA, December 2003 (invited lecture and symposium section chairman)
- Dynamics Days Asia-Pacific 3, Singapore, July 2004 (contributed talk)
- International Conference on Combinatorial Methods in Physics and Knot Theory, Moscow, Russia, February 2005 (invited lecture)
- Fluctuations and Noise, Symposium on Noise in Complex Systems and Stochastic Dynamics III, Austin, USA, May 2005 (invited lecture)
- IX Latin American Workshop on Nonlinear Phenomena, San Carlos de Bariloche, Argentina, October 2005 (contributed talk)
- Frontiers in Chemical Kinetics, Tel Aviv, Israel, May 2006 (section chairman)
- Complex and Stochastic Systems, Santander, Spain, June 2006 (invited lecture)

- Isaac Newton Institute Workshop on First Passage and Extreme Value Statistics, Cambridge, UK, June 2006 (contributed talk)
- DARPA Caltech Meeting on Search and Surveillance, Pasadena, USA, January 2007 (invited lecture)
- Fluctuations and Noise: Symposium on Noise in Complex Systems and Stochastic Dynamics, Florence, Italy, May 2007 (invited lecture)
- DARPA Workshop on Search and Surveillance, Islamorada FL, USA, July 2007 (invited lecture)
- Applied Probability Society INFORMS Meeting, Eindhoven, Holland, July 2007 (invited lecture)
- Combinatorial Physics, Krakow, Poland, November 2007 (invited lecture)
- Max-Planck-Institute Stuttgart Workshop on "Physics of Fluctuations", Germany, July 2008 (invited lecture)
- Nordita Workshop on Movement and Search, Stockholm, Sweden, August 2008 (invited lecture)
- New Paths for Random Walks, Cuernavaca, Mexico, January 2009 (invited lecture)

Seminars (since 2000)

- Physics Department, Boston University, USA, June 2000
- United Technologies Research Center, East Hartford, USA, July 2000
- TRI-Princeton, Princeton, USA, June 2001
- Max-Planck-Institute Stuttgart, Germany, June 2002
- Chemistry Department, Imperial College London, UK, January 2003
- LPTMS, Orsay, France, June 2003
- Max-Planck-Institute Stuttgart, Germany, June 2004
- AIST, Tsukuba, Japan, November 2004 (three lectures)
- Kyoto University, Japan, November 2004 (two lectures)
- Waseda University, Tokyo, Japan, November 2004
- Chemistry Department, Imperial College London, UK, December 2004
- Max-Planck-Institute Stuttgart, Germany, April 2005
- Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, June 2006
- Insitut Henri Poincare, Paris, December 2006
- AIST Tsukuba, Tsukuba, Japan, March 2007
- Porous Media Group, University of Paris V, May 2007
- Physics Department, Humboldt University, Berlin, July 2008
- Physics Department, UNAM, Mexico City, January 2009