

CURRICULUM VITAE

PERSONAL DATA

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EDUCATIONAL BACKGROUND:

Ph.D. in Physics (1995-1999) Universidad de Cuyo and Instituto Balseiro
(National Commission of Atomic Energy), Bariloche, Argentina.

M.Sc. in Physics (1991-1994) Universidad de Cuyo and Instituto Balseiro
(National Commission of Atomic Energy), Bariloche, Argentina.

Undergraduate Student in Engineering (1988-1991)
School of Engineering, University of Buenos Aires, Argentina.

PROFESSIONAL MEMBERSHIPS:

American Institute of Chemical Engineers
American Physical Society
Argentine Physics Association.

REFEREEING AND REVIEWING ACTIVITIES:

Referee for *Journal of Fluid Mechanics*
Referee for *Physical Review Letters*
Referee for *Physical Review E*

RESEARCH EXPERIENCE:

Co-Principal Investigator *Hydrodynamic Dispersion and Surface Roughness.*
Funded by The National Science Foundation: U.S.-Argentina Cooperative Research Program.
PI/Co-PI's: J. Koplik, G. Drazer. Performance Period: 6/1/2003 - 5/31/2005.

Research Associate *A Fundamental Study of Dispersed Multiphase Flows at Small Scales.*
Funded by The Department of Energy: Office of Basic Energy Sciences, Engineering.
PI/Co-PI's: A. Acrivos, J. Koplik and B. Khusid. Performance Period: 8/1/2003 - 7/31/2004.

Research Associate *Fluid and Particle Transport in Self-Affine Fractures.*
Funded by The Department of Energy: Geosciences Program.
PI/Co-PI's: J. Koplik. Performance Period: 3/1/2002 - 2/28/2006. &
The National Science Foundation: NSF-CNRS Cooperative Research Program.
PI/Co-PI's: J. Koplik, J. P. Hulin. Performance Period: 6/1/2000 - 5/31/2003.

Postdoctoral Student *The Rheology of Concentrated Suspensions.*

Funded by The Department of Energy: Office of Energy Research.

PI/Co-PI's: A. Acrivos. Performance Period: 1/1/2000 - 12/31/2003.

Postdoctoral Student *Molecular Dynamics of Fluid-Solid Systems*

Funded by NASA, Office of Physical and Biological Science.

PI/Co-PI's: J. Koplik, J. R. Banavar. Performance Period: 5/1/1996 - 11/30/2003.

Doctoral Student (1995-1999)

Flow through activated carbon double porosity porous media.

Dr. M. Rosen & Dr. H. S. Wio. University of Buenos Aires & Instituto Balseiro.

M. Sc. in Physics (1991-1994)

Pattern formation and non-equilibrium potentials in systems far from equilibrium.

Dr. H. S. Wio. Instituto Balseiro.

TEACHING EXPERIENCE:

Teaching Assistant

School of Engineering, Universidad de Buenos Aires, Argentina.

Courses: Probability and Statistics, Linear Algebra, Mathematical Analysis.

AWARDS AND FELLOWSHIPS:

J. J. Giambiagi Award 2000

Outstanding doctoral thesis in experimental physics.

Presented by the Argentine Physical Society.

Postdoctoral Research Fellow (2000-2002)

National Council of Scientific and Technical Investigations (CONICET).

Doctoral Research Fellow (1995-1999)

National Council of Scientific and Technical Investigations (CONICET).

Fellowship for Graduate Studies (1991-1994)

Instituto Balseiro and National Council of Atomic Energy (CNEA).

REFERRED JOURNAL PUBLICATIONS:

1. *Efficient mixing in microfluidic devices: Using baker's transformation to generate passive chaotic advection*, G. Drazer, to be submitted Phys. Fluids (2003)
2. *Fractal fronts in fractal fractures: large and small-scale structure*, G. Drazer, J. Koplik, H. Auradou and J.P. Hulin, accepted Phys. Rev. Lett. (2003) (arXiv:cond-mat/0307545)
3. *Microstructure and velocity fluctuations in sheared suspensions*, G. Drazer, J. Koplik, B. Khusid and A. Acrivos, submitted to J. Fluid Mech. (2003). (arXiv:cond-mat/0307478).
4. *Adsorption phenomena in the transport of a colloidal particle through a nanochannel containing a partially wetting fluid*, G. Drazer, J. Koplik, B. Khusid and A. Acrivos, Phys. Rev. Lett. **89**, 244501 (2002); Virtual Journal of Nanoscale Science & Technology **6**, 24; (arXiv:cond-mat/0206235).

5. *Transport in rough self-affine fractures*, G. Drazer and J. Koplik, Phys. Rev. E, **66**, 026303 (2002), ([arXiv:cond-mat/0110213](#)).
6. *Deterministic and stochastic behaviour of non-Brownian spheres in sheared suspensions*, G. Drazer, J. Koplik, B. Khusid and A. Acrivos, J. Fluid Mech. **460**, 307-335 (2002). ([arXiv:cond-mat/0105415](#)).
7. *Tracer dispersion in two-dimensional rough fractures*, G. Drazer and J. Koplik, Phys. Rev. E, **63**, 056104 (2001). ([arXiv:cond-mat/0010369](#)).
8. *Exact time-dependent solutions for anomalous diffusion with absorption*, G. Drazer, H. S. Wio and C. Tsallis, Granular Matter, **3**, 105 (2001).
9. *Permeability of self-affine rough fractures*, G. Drazer and J. Koplik, Phys. Rev. E, **62**, 8076 (2000). ([arXiv:cond-mat/0006287](#)).
10. *An analytical study of stochastic resonance in a monostable non-harmonic system*, G. Drazer, D. Strier and H.S. Wio, Phys. A, **283**, 234 (2000).
11. *Stable-unstable crossover in non-Newtonian radial Hele-Shaw flow*, S. Obernauer, G. Drazer and M. Rosen, Phys. A, **283**, 167 (2000).
12. *Anomalous transport in activated carbon porous samples: power-law trapping-time distributions*, G. Drazer, M. Rosen and D. Zanette, Phys. A, **283**, 161 (2000).
13. *Anomalous diffusion with absorption: Exact time-dependent solutions through a non-extensive thermostatistical Ansatz*, G. Drazer, H. S. Wio and C. Tsallis, Phys. Rev. E, **61**, 1417 (2000). ([arXiv:cond-mat/9910086](#)).
14. *Experimental evidence of power-law trapping-time distributions in porous media*, G. Drazer and D. H. Zanette, Phys. Rev. E, **60**, 5858 (1999).
15. *Exact expression for the diffusion propagator in a family of time-dependent anharmonic potentials*, J. A. Giampaoli, D. E. Strier, C. Batista, G. Drazer, H. S. Wio, Phys. Rev. E, **60**, 2540 (1999). ([arXiv:cond-mat/9910140](#)).
16. *Tracer dispersion in double porosity activated carbon packings*, G. Drazer, L. Bruno, R. Chertcoff, M. Rosen and J. P. Hulin, Chem. Eng. Sci., **19**, 4137 (1999).
17. *Concentration dependence of diffusion-adsorption rate in activated carbon*, G. Drazer, L. Bruno, R. Chertcoff, M. Rosen, Chem. Eng. Sci., **19**, 4285 (1999).
18. *Tracer dispersion in double porosity porous media with nonlinear adsorption*, G. Drazer, R. Chertcoff, L. Bruno, M. Rosen, Physica A, **257**, 371, (1998).
19. *Global Stability of stationary Patterns for activator-inhibitor system with fast inhibitor: the non-equilibrium potential.*, G. Drazer and H. S. Wio, Physica A, **240**, 571, (1997).
20. *Space-Time Transformations within the Path-Integral Approach to Stochastic Processes*, C. D. Batista, G. Drazer, D. Reidel, H. S. Wio, Phys. Rev. E, **54**, 86, (1996).

CONFERENCE AND WORKSHOP PUBLICATIONS:

21. *Adsorption phenomena in particle transport through a fluid-filled nanochannel*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, Technical Proceedings of the 2003 Nanotechnology Conference, pp. 142-143, Computational Publications, 2003.
22. *Squeezing flow of particles and large molecules suspended in a liquid through nanochannels*, A. Acrivos, B. Khusid, J. Koplik and G. Drazer, Technical Proceedings of the Second International Conference on Computational Nanoscience and Nanotechnology,

pp. 97-98, Computational Publications, 2002; and Technical Proceedings of the Fifth International Conference on Modeling and Simulation of Microsystems, pp. 66-67, Computational Publications 2002.

23. *Dispersion in activated carbon packed beds: adsorbent double porosity media*, G. Drazer, L. Bruno, R. Chertcoff and M. Rosen, Fundamentals of Adsorption VI, pp. 727-732, Elsevier, Paris, 1998.

PRESENTATIONS (NATIONAL AND INTERNATIONAL MEETINGS):

SELECTED AND INVITED SEMINARS:

1. *Velocity fluctuations in sheared suspensions of neutrally buoyant, non-Brownian spheres*, G. Drazer, J. Koplik, B. Khusid and A. Acrivos, 56rd Annual Meeting of the Division of Fluid Dynamics, New Jersey, November 23-25, 2003.
2. *Microstructure and Velocity Fluctuations in Sheared Suspensions*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, Annual AIChE Meeting, San Francisco, California, November 16-21, 2003.
3. *Flow of nanometer-size spheroids through a fluid-filled cylindrical tube*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, Annual AIChE Meeting, San Francisco, California, November 16-21, 2003.
4. *The translocation of a particle through a flow-filled nanochannel*, G. Drazer, J. Koplik, A. Acrivos and B. Khusid, 7th US National Congress on Computational Mechanics, Albuquerque, New Mexico, July 27-31, 2003.
5. *Trapping of a colloidal particle in fluid-filled nanochannels*, German Drazer, Joel Koplik, Andreas Acrivos and Boris Khusid, Second M.I.T. Conference on Computational Fluid and Solid Mechanics, Massachusetts, June 17-20, 2003
6. *Transport properties of a narrow self-affine fracture*, H. Auradou, G. Drazer, J. P. Hulin and J. Koplik, European Geophysical Society, American Geophysical Union, European Union of Geosciences, Joint Assembly, Nice, France, April 06-11, 2003.
7. *Adsorption Phenomena in the Transport of a Colloidal Particle through a Nanochannel Containing a Partially Wetting Fluid*, G. Drazer, J. Koplik, A. Acrivos and B. Khusid, 88th Statistical Mechanics Conference, Rutgers University, New Jersey, December 15-17, 2002.
8. *Adsorption of colloidal particles traveling through a nanochannel containing a partially wetting fluid*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, 55rd Annual Meeting of the Division of Fluid Dynamics, Texas, November 24-26, 2002.
9. *Flow of Particles Through A Fluid-filled Nanochannel*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, Annual AIChE Meeting, Indianapolis, Indiana, November 3-8, 2002.
10. *Transport properties of self-affine rough fractures*, G. Drazer and J. Koplik, 54rd Annual Meeting of the Division of Fluid Dynamics, California, November 18-20, 2001.
11. *Dynamic simulation of sheared suspensions of non-Brownian spheres*, A. Acrivos, G. Drazer, B. Khusid, J. Koplik and M. Marchioro, 73rd Annual Meeting of The Society of Rheology, Maryland, October 21-25, 2001.

12. *Transport properties of self-affine two-dimensional rough fractures*, G. Drazer and J. Koplik, 53rd Annual Meeting of the Division of Fluid Dynamics, Washington, DC, November 19 - 21, 2000.
13. *Stability crossover in non-Newtonian radial Hele-Shaw flow*, S. Obernauer, G. Drazer and M. Rosen, 13th MEDYFINOL conference and 6th Latin American Workshop on Nonlinear Phenomena, Huerta Grande, Córdoba, Argentina, October 12-16, 1999
14. *Anomalous transport in activated carbon porous samples: power-law trapping-time distributions*, G. Drazer, M. Rosen and D. Zanette, 13th MEDYFINOL conference and 6th Latin American Workshop on Nonlinear Phenomena, Huerta Grande, Córdoba, Argentina, October 12-16, 1999.
15. *Signal-to-noise ratio enhancement in monostable systems*, G. Drazer, D. E. Strier and H. S. Wio, Workshop on the Dynamics of Nonequilibrium Systems, ICTP, Trieste, Italy, August 16-27, 1999.
16. *Dispersion in activated carbon packed beds: adsorbent double porosity media*, G. Drazer, R. Chertcoff, L. Bruno, M. Rosen, Fundamental of Adsorption VI, Giens, France, May 1998.

SELECTED ABSTRACTS

17. *Squeezing flow of particles and large molecules suspended in a liquid through nanochannels*, A. Acrivos, B. Khusid, J. Koplik and G. Drazer, 1st International Conference and School Nanoscale/Molecular Mechanics, Hawaii, May 12-17, 2002.
18. *Exact results for stochastic resonance in a monostable system*, G. Drazer, D. Strier and H.S. Wio, 13th MEDYFINOL conference and 6th Latin American Workshop on Nonlinear Phenomena, Huerta Grande, Córdoba, Argentina, October 12-16, 1999
19. *Hydrodynamic dispersion in an adsorbent porous medium*, S. Gurevich, N. Nerone, G. Drazer, R. Chertcoff, M. Rosen, 83th National Meeting of Physics, La Plata, Argentina, September 1998.
20. *Transit time distributions of a tracer in activated carbon porous media*, R. Chertcoff, L. Bruno, G. Drazer, M. Rosen, V International symposium on recent advances in mechanics and physics of fluids, Tunuyan, Argentina, November 1997.
21. *Tracer dispersion in double porosity porous media with nonlinear adsorption*, G. Drazer, R. Chertcoff, L. Bruno, M. Rosen, 11th MEDYFINOL conference and 4th Latin American Workshop on Nonlinear Phenomena, Canela, Brasil, October 1997.
22. *Hydrodynamic dispersion in activated carbon double porosity media*, G. Drazer, M. Rosen, 82th National meeting of Physics, San Luis, Argentina, September 1997.
23. *Determination of radioactive-tracer transit-time distributions in activated carbon porous samples through dispersion measurements*, G. Drazer, R. Chertcoff, L. Bruno, M. Rosen, 82th National meeting of Physics, San Luis, Argentina, September 1997.
24. *Complementary methods to measure adsorption in activated carbons*, S. Boeykens, L. Bruno, G. Drazer, N. Temprano, X National physicochemical conference, Tucuman, Argentina, April 1997.
25. *Diffusion-adsorption experiments in activated carbon grains*, G. Drazer, R. Chertcoff, L. Bruno, M. Rosen, S. Gabbanelli, X National physicochemical conference, Tucuman, Argentina, April 1997.

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26. *Non-Gaussian Tracer Dispersion in Double-Porosity Media*, G. Drazer, L. Bruno, R. Chertcoff, M. Rosen, 10th MEDYFINOL conference, Tucuman, Argentina, September 1996.
 27. *Tracer flow in activated carbon porous samples*, L. Bruno, G. Drazer, R. Chertcoff, M. Rosen, 81th National meeting of Physics, Tandil, September 1996.
 28. *Space-Time transformations within the path integral approach to stochastic processes*, C. D. Batista, G. Drazer, D. Reidel, H. S. Wio, 9th MEDYFINOL conference and 4th Latin American workshop on nonlinear Phenomena, Bariloche, September 1995.
 29. *Adsorption influence on the dispersion process in activated carbon porous samples*, L. Bruno, G. Drazer, R. Chertcoff, 80th National meeting of Physics, Bariloche, Argentina, October 1995.
 30. *Global Stability and stationary spatial-structures in an activator-inhibitor system in the fast inhibitor limit, non-equilibrium potentials*, G. Drazer, H. S. Wio, 80th National meeting of Physics, Bariloche, Argentina, October 1995.
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INVITED SEMINARS:

1. *Adsorption and transport of colloidal particles in nanochannels*, University of Buenos Aires, Buenos Aires, August 13, 2003.
2. *Transport in Rough Fractures*, Schlumberger-Doll Research, Ridgedfield, Connecticut, January 22, 2003.
3. *Stochastic Phenomena in Particle-Laden Flows*, Department of Chemical Engineering, Lehigh University, Pennsylvania, November 20, 2002.
4. *Stochastic Phenomena in Particle-Laden Flows*, Department of Chemical Engineering, City College of the City University of New York, New York, October 21, 2002.
5. *Shear-induced diffusion in suspensions*, Fluides, Automatique & Systemes Thermiques, University of Paris Sud, Paris, France, May 31 2002.
6. *Shear-Induced Structure and Diffusion in Suspensions of Solid Spheres by Numerical Simulations*, Levich Institute Fluid Mechanics Series, City College of the City University of New York, New York, February 5, 2002.
7. *Experimental evidence of power-law trapping-time distributions in porous media*, Levich Institute Fluid Mechanics Series, City College of the City University of New York, New York, March 28, 2000.