

Guillermo Hugo Goldsztein

School of Mathematics
Georgia Institute of Technology
Atlanta, GA 30332-0160

Tel: (404) 894-2286
Fax: (404) 894-4409
ggold@math.gatech.edu

Education

Ph.D., Mathematics, Massachusetts Institute of Technology June 1997
Licenciado en Ciencias Matematicas, University of Buenos Aires March 1992

Professional Experience

Professor Since August 2011
School of Mathematics, Georgia Institute of Technology
Associate Professor August 2006 – August 2011
School of Mathematics, Georgia Institute of Technology
Assistant Professor August 2000 – August 2006
School of Mathematics, Georgia Institute of Technology
Postdoctoral Research Fellow July 1997 – July 2000
Applied Mathematics, California Institute of Technology
Lecturer in Applied Mathematics July 1998 – July 1999
Applied Mathematics, California Institute of Technology

Publications in Refereed Journals

1. Goldsztein, G.H. 2012 Effects of the fibers shape and volume fraction on the strength of ideally plastic fiber reinforced composites. *SIAM J. Appl. Math.*, accepted.
2. Claria, J.J., Goldsztein, G.H. and Santamarina, J.C. 2012 AC Diffusion: Transport in porous networks subjected to zero-time-average advective flow. *Transport in Porous Media*, **93**, 51-61.
3. Kampel, G. and Goldsztein, G.H. 2011 Transport of non-Brownian particles in porous media. *SIAM J. Appl. Math.*, **71**, 773-790.
4. Goldsztein, G.H. 2011 Bound on the yield set of fiber reinforced composites subjected to antiplane shear. *Discrete and Continuous Dynamical Systems - Series B*, **15**, 391-400.
5. Kampel, G., Goldsztein, G.H. and Santamarina J.C. 2009 Particle transport in porous media: The role of inertial effects and path tortuosity in the velocity of the particles. *Appl. Phys. Lett.*, **95**, Art # 194103.
6. Goldsztein, G.H. 2009 Clogging of multigraphs as toy models of filters. *SIAM J. Appl. Math.*, **70**, 1078-1096.
7. Kampel, G. and Goldsztein, G.H. 2008 Filters. The number of channels that can clog in a network. *SIAM J. Appl. Math.*, **69**, 743-762.
8. Goldsztein, G.H. 2008 Solute transport in porous media. Media with capillaires as voids. *SIAM J. Appl. Math.*, **68**, 1203-1222.
9. Kampel, G., Goldsztein, G.H. and Santamarina J.C. 2008 Plugging of porous media and filters: maximum clogged porosity. *Appl. Phys. Lett.*, **92**, Art. # 084101.
10. Goldsztein, G.H. 2007 Solute transport in porous media. Dispersion tensor of periodic networks. *Appl. Phys. Lett.*, **91**, Art. # 054102.

11. Goldsztein, G.H. 2005 Volume of suspension that flows through a small orifice before it clogs. *SIAM J. Appl. Math.*, **66**, 228-236.
12. Goldsztein, G.H. 2005 Transport of nutrients in bones. *SIAM J. Appl. Math.*, **65**, 2128-2140.
13. Pelesko, J.A. and Goldsztein, G.H. 2004 Modeling constrained capacitive systems. *J. Com. Theor. Nanosciense*, **1**, 424-428.
14. Goldsztein, G.H. and Santamarina, J.C. 2004 Suspension extraction through an opening before clogging. *Appl. Phys. Lett.*, **85**, 4535-4537.
15. Goldsztein, G.H. and Santamarina, J.C. 2004 Solute transport during cyclic flow in saturated porous media. *Appl. Phys. Lett.*, **85**, 2432-2434.
16. Goldsztein, G.H. and Bruno, O.P. 2004 A fast algorithm for the simulation of polycrystalline misfits II: martensitic transformations in three space dimensions. *Proc. R. Soc. Lond. A*. **460**, 1613-1630.
17. Goldsztein, G.H. 2004 Collapse and rebound of a gas bubble. *Studies in Appl. Math.* **112** 101-132.
18. Goldsztein, G.H. 2003 Two-dimensional rigid polycrystals whose grains have one ductile direction. *Proc. R. Soc. Lond. A*. **459**, 1949-1968.
19. Goldsztein, G.H. 2001 Rigid-perfectly-plastic two-dimensional polycrystals. *Proc. R. Soc. Lond. A*. **457**, 2789-2798.
20. Goldsztein, G.H. 2001 The effective energy and laminated microstructures in martensitic phase transformations. *J. Mech. Phys. Solids* **49**, 899-925.
21. Bruno, O.P. and Goldsztein, G.H. 2000 Numerical simulation of martensitic transformations in two and three-dimensional polycrystals. *J. Mech. Phys. Solids* **48**, 1175-1201.
22. Bruno, O.P. and Goldsztein, G.H. 1999 A fast algorithm for the simulation of polycrystalline misfits: martensitic transformations in two space dimensions. *Proc. R. Soc. Lond. A* **455**, 4245-4276.
23. Goldsztein, G.H., Broner F. and Strogatz, S.H. 1997 Dynamical Hysteresis without Static Hysteresis: Scaling Laws and Asymptotic Expansions. *SIAM J. Appl. Math.* **57**, 1163-1187.
24. Hohl, A., Vanderlinden, H., Roy, R., Goldsztein, G.H., Broner F. and Strogatz, S.H. 1995 Scaling Laws for Dynamical Hysteresis in a Multidimensional Laser System. *Phys. Rev. Lett.* **74**, 2220-2223.
25. Goldsztein, G.H. and Strogatz, S.H. 1995 Stability of Synchronization in Networks of Digital Phase-Locked Loops. *Int. J. Bifurcation and Chaos* **5**, 983-990.

Publications in Refereed Proceedings

1. Goldsztein, G.H. 2010 The effect of the inclusions shape in ideally plastic matrix-particulate composites. *Proceedings of PACAM XI*.
2. Goldsztein, G.H. 2010 Analysis of a toy model of ideally plastic polycrystals. *Proceedings of PACAM XI*.
3. Pelesko, J.A. and Goldsztein, G.H. 2003 Electrostatic deflection of volume constrained MEMS. *Proceedings of ICMENS 2003*, 76-80

Invited Presentations

1. Mathematics Colloquium. Rochester Institute of Technology, September 19, 2011.

2. International Symposium on Plasticity 2011 and its Current Applications, Puerto Vallarta, Mexico, January 3-8, 2011.
3. PACAM XI, Iguazu, Brazil, January 3-7, 2010.
4. SIAM Conference on Computational Science and Engineering, Miami, FL, March 2-6, 2009.
5. International Symposium on Plasticity 2009 and its Current Applications, St. Thomas, US Virgin Islands, January 3-8, 2009.
6. University of Akron. Department of Mathematics. Colloquium. November 13, 2008.
7. 45th Annual Technical Meeting Society of Engineering Science, Champaign, IL, October 12-15, 2008.
8. Fifth World Congress of Nonlinear Analysts Orlando, FL, July 2-11, 2008.
9. SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, PA, May 11-14, 2008.
10. University of Delaware. Department of Mathematical Sciences. Applied Math. Seminar. May 12 2008.
11. SIAM Conference on Analysis of Partial Differential Equations, Mesa, AZ, December 10-12, 2007
12. 44th Annual Technical Meeting Society of Engineering Science, College Station, TX, October 21-24, 2007
13. Rethinking the Mathematics Curriculum for Engineering and Science Students, Atlanta, GA, April 23-24, 2007.
14. AMS National Annual Meeting joint with SIAM, New Orleans, LA, January 5-8 2007.
15. QEM Network Workshop, Atlanta, GA, August 18-19 2006.
16. SIAM Conference on Analysis of Partial Differential Equations, Boston, MA, July 10-12 2006.
17. McMat 2005 Mechanics & Materials Conference, Baton Rouge, LA, June 1-3, 2005.
18. University of Delaware. Department of Mathematical Sciences. Applied Math. Seminar. March 22 2005.
19. SIAM Conference on Mathematical Aspects of Materials Science, Los Angeles, CA, May 23-26, 2004.
20. Louisiana State University. Department of Mathematics. Colloquium. April 15, 2004.
21. Workshop: Computational methods in multiscale analysis and applications, Gainesville, FL, February 29-March 2, 2004.
22. Workshop on multi-scale challenges in soft matter materials, Research Triangle Park, NC, February 15-17, 2004.
23. AMS Sectional meeting, Baton Rouge, LA, March 14, 2003.
24. The Fourth International Conference on Dynamical Systems and Differential Equations, Wilmington, NC, May 25-27, 2002.
25. AMS Sectional meeting, Atlanta, GA, March 10, 2002.
26. McMaster University. Department of Mathematics and Statistics. Colloquium. February 28, 2002.
27. Annual meeting of the AMS, San Diego, CA, January 7, 2002.
28. University of Akron. Department of Mathematics. Colloquium. November 29, 2001.
29. 2001 SIAM Annual meeting, San Diego, CA, July 11, 2001.
30. Third SIAM conference on mathematical aspects of material science, Philadelphia, PA, May 23, 2000.

31. Workshop on applied mathematics. UC Irvine. May 14, 2000.

Research Grants

National Science Foundation DMS. Mathematical modeling of heterogeneous materials (\$ 170,493). August 2008 to August 2011.

National Science Foundation DMS. Mathematical modeling of heterogeneous media (\$ 114,939). June 2005 to May 2008.

National Science Foundation DMS. Mechanical and electrical properties of heterogeneous solids (\$ 86,146). June 2002 to May 2005.

Graduate student supervision

Guido Kampel, PhD (graduated in 2007).

Other professional activities

Co-organizer of a symposium at the 45th Annual Technical Meeting Society of Engineering Science, Champaign, IL, October 12-15, 2008.

Co-organizer of a symposium at the 44th Annual Technical Meeting Society of Engineering Science, College Station, TX, October 21-24, 2007.

Co-organizer of a special session at the AMS Sectional meeting, Atlanta, GA. March 8-10, 2002.

Reviewed manuscripts for:

Journal of Applied Physics

SIAM Journal of Applied Mathematics

Multiscale Modeling and Simulations

Journal of Differential Equations

Proc. Royal Soc. London A: Mathematical, Physical and Engineering Sciences

Acta Materialia

Discrete and Continuous Dynamical Systems

Chemical Engineering Science

SIAM Journal of Mathematical Analysis.

Reviewed grant proposals for the NSF.