

**CURRICULUM VITAE**  
**Wolfgang Losert**

Notarization. I have read the following and certify that this curriculum vitae is a current and accurate statement of my professional record. 7/01/11

Signature \_\_\_\_\_ Date \_\_\_\_\_ 7/1/2011 \_\_\_\_\_

**1. Personal Information**

Wolfgang Losert  
Associate Professor, (effective 7/1/2006)  
Director, UMD-NCI Research & Graduate Partnership Program in Cancer Technology  
Director, Biophysics Graduate Program

Department of Physics  
Institute for Physical Science and Technology  
Institute for Research in Electronics and Applied Physics,  
Department of Bioengineering (Affiliate)  
Full Member: Program in Oncology University of Maryland Cancer Center

Assistant Professor 8/2000-6/30/2006

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**Educational and Employment Background:**

Visiting Assistant Professor, Dept. of Physics, Haverford College 7/1999-7/2000

Haverford College, Research Associate	Physics	1998-2000
City College of the City University of New York, Ph.D.	Physics	1998
Technische Univ. München, Diplom(~MS), S.c. Laude	Applied Physics	1995

**2. Research, Scholarly, and Creative Activities**

a. Books.

- i. Books authored.
- ii. Books edited.

iii. **Chapters in books.**

- 1. W. Losert, "Pattern Formation" in *Encyclopedia of Nonlinear Science*, ed. Alwyn Scott. New York and London: Routledge, 690-693, (2004).

2. W. Losert, "Granular Matter" in *Encyclopedia of Nonlinear Science*, ed. Alwyn Scott. New York and London: Routledge, 381-383, (2004).
3. C. Poole and W. Losert, "Laser Tweezer Deformation of Giant Unilamellar Vesicles", in "Methods to Study Membrane Lipids" *Methods in Molecular Biology Book Series*, (Humana Press, Totowa, NJ, 2007).

**b. Articles in Refereed Journals.**

\* *my undergraduate student* # *my graduate student (advised or co-advised)*

***Work carried out and authored at the University of Maryland***

1. J.W. Kim, J.Y. Vaishnav, E. Ott, S.C. Venkataramani, and **W. Losert**, "Front Propagation of Spatio-temporal Chaos", *Phys. Rev. E* **64**, 016215 (5 pages) (2001).
2. **W. Losert** and G. Kwon\*, "Transient and steady state dynamics of granular shear flows", *Advances in Complex Systems* **4**, 369-377 (2001).
3. S.J. Friedmann, G. Kwon\*, and **W. Losert** "Granular memory and its effect on the triggering and distribution of rock-avalanche events," *J. Geophys. Res.* **108**, No. B8, 2380-2391 (2003).
4. J. Stambaugh<sup>#</sup>, D.P. Lathrop, E. Ott, and **W. Losert**, "Pattern Formation in a Monolayer of Magnetic Spheres", *Phys. Rev. E* **68**, 026207 (5 pages) (2003).
5. N. Taberlet<sup>#</sup>, P. Richard, A. Valance, R. Delannay, **W. Losert**, J-M. Pasini, and J.T. Jenkins, "Super Stable Heap in a thin channel," *Phys. Rev. Lett* **91**, 264301 (4 pages) (2003).
6. M. Newey<sup>#</sup>, S. Van der Meer<sup>#</sup>, J. Ozik, E. Ott, **W. Losert**, "Band-in-band segregation of multidisperse granular mixtures" *Europhys. Lett.* **66**, 205-211 (2004).
7. K. Lee<sup>#</sup> and **W. Losert**, "Local control of the dendritic microstructure through perturbations", *Journal of Crystal Growth* **269**, 592-598 (2004).
8. J. Stambaugh<sup>#</sup>, Z. Smith\*, E. Ott, and **W. Losert**, "Segregation in a monolayer of magnetic spheres", *Phys. Rev. E* **70**, 031304 (6 pages) (2004).
9. M. Toiya<sup>#</sup>, J. Stambaugh<sup>#</sup>, and **W. Losert**, "Transient and oscillatory granular shear flow" *Phys Rev Lett.* **83**, 088001 (4 pages) (2004).
10. N. Taberlet<sup>#</sup>, P. Richard, and **W. Losert**, "Understanding the dynamics of segregation bands of simulated granular material in a rotating drum", *Europhys. Lett.* **68**, 522-528 (2004).
11. L.-Q. Wu, K. Lee<sup>#</sup>, X. Wang, D.S. English, **W. Losert**, and G.F. Payne "Chitosan-mediated and spatially selective electrodeposition of nano-scale particles" *Langmuir* **21**, 3641-3646 (2005).
12. K. Lee<sup>#</sup> and **W. Losert**, "Controlled dynamics of grain boundaries in binary alloys", *Acta Materialia* **53**, 3503-3510 (2005).
13. A. Pomerance<sup>#</sup>, J. Matthews, M. Ferguson<sup>#</sup>, J.S. Urbach, and **W. Losert**, "Actin polymerization in a thermal gradient" *Macromolecular Symposia* **227**, 231-242 (2005).
14. R. Skupsky<sup>#</sup>, **W. Losert**, and R. Nossal, "Distinguishing modes of Eucaryotic Gradient Sensing", *Biophysical Journal* **89**, 2806-2823 (2005).

15. J. Stambaugh<sup>#</sup>, K. Van Workum, J. Douglas, and **W. Losert**, “Polymerization Transitions in Two-Dimensional Systems of Dipolar Spheres,” *Phys. Rev. E* **72** 031301 (2005).
16. P. Ribiere, P. Richard, M. Toya<sup>#</sup>, **W. Losert**, R. Delannay and D. Bideau “Effect of rare events on out of equilibrium relaxation”, *Phys. Rev. Lett.* **95**, 268001 (2005).
17. S.J. Friedmann, N. Taberlet<sup>#</sup>, **W. Losert** “Rock avalanche dynamics: Insights from granular physics experiments”, *International Journal of Earth Sciences* **95**, Issue 5, pp.911-919 (2006).
18. S. Akamatsu, K. Lee<sup>#</sup>, and **W. Losert**, “Control of eutectic solidification microstructures through laser spot perturbations” *Journal of Crystal Growth* **289**, 331 (2006).
19. J. Galanis, D. Harris, D. Sackett, **W. Losert**, and R. Nossal, “Spontaneous patterning of confined granular rods”, *Phys. Rev. Lett.* **96** 028002 (2006).
20. N. Taberlet<sup>#</sup>, M. Newey<sup>#</sup>, P. Richard and **W. Losert** "On axial segregation in a tumbler: an experimental and numerical study" *J Stat. Mech.* P07013 (2006).
21. R. Skupsky<sup>#</sup>, C. McCann<sup>#</sup>, R. Nossal, and **W. Losert** “Bias in the Gradient Sensing Response of Chemotactic Cells” *Journal of Theoretical Biology* **247**, 242-258 (2007).
22. Luo R, Ahvazi B, Amarei D, Shroder D, Burrola B<sup>#</sup>, **Losert W**, Randazzo PA. “Kinetic analysis of GTP hydrolysis catalyzed by the Arf1.GTP.ASAP1 complex” *Biochem J.* **402**, 439–447 (2007).
23. M. Toiya<sup>#</sup>, J. Hettinga\*, and **W. Losert**, "3D Imaging of Particle Motion During Penetrometer Testing" *Granular Matter* **9**, 323-329 (2007).
24. A. J. Pons, **A. Karma**, S. Akamatsu, M. Newey<sup>#</sup>, A. Pomerance<sup>#</sup>, H. Singer, and **W. Losert**, “Feedback control of unstable cellular solidification fronts”, *Phys. Rev E* **75**, 021602 (2007).
25. S. Slotterback<sup>#</sup>, M. Toiya<sup>#</sup>, L. Goff\*, J. Douglas, **W. Losert**, “Particle motion during the compaction of granular matter”, arXiv:0802.0485; *Phys. Rev. Lett* **101**, 258001 (2008).
26. S. Han<sup>#</sup>; D.J. McBride; W. Losert, and S. Leikin, “Segregation of type I collagen homo- and heterotrimers in fibrils,” *J. Mol. Biol.* **383**(1): 122-132. (2008).
27. L. Li, M. Driscoll<sup>#</sup>, G. Kumi, R. Hernandez, K. J. Gaskell, W. Losert, and J. T. Fourkas, [Binary and Gray-Scale Patterning of Chemical Functionality on Polymer Films](#),” *J. Amer. Chem. Soc.* **130**, 13512-13513 (2008).
28. A.G. Banerjee, A. Pomerance<sup>#</sup>, W. Losert, and S.K. Gupta, “Developing a Stochastic Dynamic Programming Framework for Optical Tweezer based Automated Particle Transport Operations, *IEEE Transactions on Automation Science and Engineering* (2009).
29. A. Pomerance<sup>#</sup>, E. Ott, M. Girvan and **W. Losert**, “The Effect of Network Topology on the Stability of Discrete State Models of Genetic Control”, *PNAS* **106**, 8209-8214 (2009).
30. M. Driscoll, R. Kopace, L. Li, C. McCann, J. Watts, J.T. Fourkas, and **W. Losert**, “The Adventures of Dicty the Dictyostelium Cell.” *Chaos*, 19, 041110, (2009).
31. S. Han<sup>#</sup>, E. Makareeva, N.V. Kuznetsova, A.M. DeRidder, M.B. Sutter, W. Losert, C.L. Phillips, R. Visse, H. Nagase, and S. Leikin, "Molecular Mechanism of Type I Collagen Homotrimer Resistance to Mammalian Collagenases," *Journal of Biological Chemistry* **285**, 22276-22281 (2010).

32. C. P. McCann<sup>#</sup>, P. W. Kriebel, C. A. Parent, **W. Losert** “Cell Speeds, Persistence, and Information Transmission during Signal Relay and Collective Migration 123, 1724-1731 *Journal of Cell Science* (2010).
33. C.R. Berardi\*, K. Barros, J.F. Douglas, and **W. Losert**, “Direct observation of string-like collective motion in a two-dimensional driven granular fluid” *Physical Review E* **81**, 041301 (2010).
34. L. Liu, S. Das, W. Losert, and C.A. Parent “mTORC2-mediated AC9 activation is required for chemoattractant induced cAMP production and chemotaxis in neutrophils” **19**,845-857 *Developmental Cell* (2010). Previewed in *Developmental Cell* **19**,795 (2010), Editors Choice *Science Signalling* 3, 387 (2010).
35. J. Galanis, R. Nossal, **W. Losert**, and D. Harries “Nematic order in small systems: Measuring the elastic and wall anchoring constants in vibrofluidized granular rods” *Phys. Rev. Lett.* **105**, 168001 (2010).
36. J.A. Dijksman<sup>#</sup>, E. Wandersman, S. Slotterback<sup>#</sup>, C. Berardi\*, W.D. Updegraff\*, M. van Hecke, **W. Losert**, “From Frictional to Newtonian Flows: Three Dimensional Imaging and Rheology of Gravitational Suspensions” arXiv:1004.1121, *Physical Review E* **82**, 060301 (2010).
37. H. Zhou, B. Burrola Gabilondo, W. Losert, and W.van de Water, “Stretching and relaxation of vesicles” *Phys. Rev. E* **83** 011905 (2011).
38. B. Koss, S. Chowdhury, T. Aabo, SK Gupta, and W. Losert, “Indirect Optical Gripping with Triplet Traps”, *Journal of the Optical Society of America B* **28**, 982-985 (2011).
39. A. G. Banerjee, S. Chowdhury, W. Losert, and S.K. Gupta, “A Survey on Indirect Optical Manipulation of Cells, Nucleic Acids, and Motor Proteins” *Journal of Biomedical Optics* **16**, 051302 (2011).
40. M. Herrera, S. McCarthy, S. Slotterback, E. Cephas, W. Losert, and M. Girvan “The path to fracture: dynamics of contact networks in granular flows”, *Physical Review E* **83**, 061303 (2011).
41. K.T. Seale, S.E. Arndt, J.W. Chamberlain, L.T. Hoang, J.J. Hughey, E.G. Kim, B.A. Nguyen, M.E. Pfister, E.J. Schneibel, L.L. Wertz, B. Koss, W. Losert, J.S. Whitfield and J.P. Wikswo “The multitrap nanophysiometer for fluorescence and kinetic cytometry of populations of individual unattached cells” to be submitted.
42. M.K. Driscoll, C.P. McCann, R. Kopace, T. Homan, J.T. Fourkas, C.A. Parent, W. Losert “Cell Shape Dynamics: From Waves to Migration” submitted to *PLOS Computational Biology* (2011).
43. M.K. Driscoll, J.T. Fourkas, and W. Losert, “Local and global measures of shape dynamics,” submitted to *Physical Biology* (2011).
44. M.L.. Falk, M. Toiya, and W. Losert “Shear transformation zone analysis of shear reversal during granular flow” submitted to *Physical Review E* (2011).
45. E.C. Rericha, A. Pomerance. D. Sisan, J. Urbach, and W. Losert “Relaxations and Fracture in locally strained actin filament networks”, submitted to *Physical Review Letters* (2011).
46. N. Murdoch, P.Michel, D.C. Richardson, C.R. Berardi, S.F. Green, and W. Losert “Numerical simulations of granular dynamics II. Particle dynamics in a shaken granular material”, submitted to *Icarus* (2011).
47. K. Glass; E. Ott; W. Losert; M. Girvan, “Implications of Functional Similarity for Gene Regulatory Interactions”, submitted to *PLOS Computational Biology* (2011).

48. K.W. Desmond, U. Villa, M. Newey, W. Losert, "Characterizing the Rheology of Fluidized Granular Matter", submitted to *Phys. Rev. Lett* (2011).
49. T. R. Kießling, M. Herrera, K. D. Nnetu, E. Balzer, M. Girvan, A. Fritsch, S. Martin, J. Kaes and W. Losert, "Network Analysis of Biomechanical Data" submitted to *PNAS* (2011).
50. J.A. Dijksman<sup>#</sup>, F. Rietz, K.A. Loerincz, M. van Hecke, **W. Losert**, "Refractive Index Matched Scanning of Dense Granular Materials" *Review of Scientific Instruments* (Invited Review, submitted 2011).

***Work carried out as Graduate Student and Postdoctoral Researcher:***

51. L.M. Williams, M. Muschol, X. Qian, W. Losert, and H.Z. Cummins, "Dendritic sidebranching with periodic localized perturbations: Directional solidification of pivalic acid-coumarin152 mixtures" *Phys. Rev. E* **48**, 489-499; erratum: *E* **48**, 4862 (1993).
52. **W. Losert**, B.Q. Shi, H.Z. Cummins, and J.A. Warren, "Spatial period-doubling instability of dendritic arrays in directional solidification," *Phys. Rev. Lett.* **77**, 889-891 (1996).
53. **W. Losert**, O.N. Mesquita, J.M.A. Figueiredo, and H.Z. Cummins, "Direct Measurement of Dendritic Array Stability," *Phys. Rev. Lett.* **81**, 409-412 (1998).
54. **W. Losert**, D.A. Stillman\*, H.Z. Cummins, P. Kopzcynski, W.-J. Rappel and A. Karma, "Selection of doublet cellular patterns in directional solidification through spatially periodic perturbations," *Phys. Rev. E* **58**, 7492-7506 (1998).
55. **W. Losert**, B.Q. Shi and H.Z. Cummins, "Evolution of dendritic patterns during alloy solidification: Onset of the initial instability," *Proc. Nat. Acad. Sci. USA* **95**, 431-438 (1998).
56. **W. Losert**, B.Q. Shi and H.Z. Cummins, "Evolution of dendritic patterns during alloy solidification: From the initial instability to the steady state," *Proc. Nat. Acad. Sci. USA* **95**, 439-442 (1998).
57. H.Z. Cummins, Y.H. Hwang, G. Li, W.M. Du, W. Losert, and G.Q. Shen, J. "Relaxation dynamics in orthoterphenyl: Comparing bk from extended mode-coupling theory and phenomenological analyses," *J. Non-Cryst. Solids* **235-237**, 254 (1998).
58. J.-C. Geminard, W. Losert, and J.P. Gollub, "Frictional Mechanics of Wet Granular Material," *Phys. Rev. E* **59**, 5881-5890 (1999).
59. **W. Losert**, D.G.W. Cooper\*, and J.P. Gollub, "Propagating front in an excited granular layer," *Phys. Rev. E* **59**, 5855-5861 (1999).
60. **W. Losert**, D.G.W. Cooper\*, J. Delour, A. Kudrolli, and J.P. Gollub, "Velocity statistics in vibrated granular media," *Chaos* **9**, 682-690 (1999).
61. **W. Losert**, L. Bocquet, T.C. Lubensky, and J.P. Gollub, "Particle dynamics in sheared granular matter," *Phys. Rev. Lett.* **85**, 1428 (4 pages) (2000).
62. **W. Losert**, J.-C. Geminard, S. Nasuno, and J.P. Gollub, "Mechanisms for slow strengthening in granular materials," *Phys. Rev. E*, **61** 4060-4068 (2000).
63. L. Bocquet, W. Losert, T.C. Lubensky, and J.P. Gollub, "Granular Shear dynamics and forces: Experiments and continuum theory," *Phys. Rev. E* **65**, 011307 (19 pages) (2002).

64. J.-C. Tsai, W. Losert, G.A. Voth, J.P. Gollub, "Two-dimensional granular Poiseuille flow on an incline: multiple dynamical regimes," *Phys. Rev. E* **65**, 011306 (13 pages) (2002).
65. G.A. Voth, B. Bigger\*, M.R. Buckley\*, W. Losert, M.P. Brenner, H.A. Stone, and J.P. Gollub, "Ordered clusters and dynamical states of particles in a vibrated fluid," *Phys. Rev. Lett.* **88**, 234301 (4 pages) (2002).
66. J.-C. Geminard and **W. Losert**, "Frictional Properties of bidisperse granular matter," *Phys. Rev. E* **65**, 041301 (5 pages) (2002).

c. **Monographs, Reports, and Extension Publications.**

d. **Book Reviews, Other Articles, and Notes.**

e. **Talks, Abstracts, and Other Professional Papers Presented.**

i. **Invited talks, etc.**

*a. Invited Conference Talks*

1. APS Centennial Meeting (3/21/99)
2. NYS - APS Meeting (10/22/99)
3. CECAM, ENS-Lyon (7/25/00)
4. CCCNLS, Irvine (2/3/01)
5. Dynamics Days Europe (6/8/01)
6. ICTP, Trieste (8/8/01)
7. American Association for Crystal Growth meeting, "*In situ analysis and control of dendritic arrays in binary alloy directional solidification*", Seattle (8/7/2002)
8. Structures in Granular Matter Conference in Leiden, Holland "*Non-steady state granular shear flows*"(8/20/2002)
9. Gordon Conference on Physics Research And Education - Classical Mechanics and Nonlinear Dynamics "*Granular dynamics experiments: Visual demonstrations of non-equilibrium statistical mechanics*" (6/16/2004).
10. Dynamics Days 2005, Long Beach, CA "*Dynamics of Cell Motion*" (1/11/2005)
11. KITP Workshop in Granular Matter, UC Santa Barbara, "*The start of granular flow: Memory effects and instabilities*" (6/23/2005)
12. Workshop in Biological Physics, Kroegerup Hojskole, Denmark (8/24/2005)
13. APS March Meeting, Baltimore, MD (3/13/2006).
14. European Science Foundation Workshop on Optical Micromanipulation, Obergurgl, Austria (2/5/2007).
15. TMS Meeting, Frontiers in Solidification Science (Orlando, FL, 2/27/2007)
16. (*declined invitations due to scheduling conflicts to speak at STATPHYS satellite meeting in Italy on granular matter, and at International Solidification symposium in China*)
17. *Forced and Confined Actin networks* Polymers Gordon Conference (7/2007)
18. *Forced and Confined Actin networks* Symposium in Honor of Walter Goldburgs 80<sup>th</sup> birthday, Univ of Pittsburgh (9/29/2007)
19. National Academy of Sciences Frontiers of Science Symposium, Beijing China, invited participation and poster presentation. (10/28/2007)
20. American Society for Cell Biology Minisymposium Organizer and Introductory Speaker (Postdoc gave invited talk) (12/2007)

21. *Decision making during chemotaxis* Aspen Center for Physics, Workshop on Quantitative Biology (1/9/2008)
22. *Slow rearrangements of granular matter in three dimensions* Workshop on Jamming at Lorentz Center Leiden (2/19/2008)
23. Symposium in Honor of Herman Cummins 80<sup>th</sup> Birthday, “Decision Making and Group Behavior of Dictyostelium Discoideum” (12/16/2008).
24. Workshop on Numerical Modeling of Asteroid Granular Materials “*Segregation*” (1/14/2010).
25. Trends in Optical Micromanipulation workshop, Obergurgl, Austria (4/12/2010).
26. Particulate Materials in Extreme Environments , Livermore, CA (9/21/2010)
27. Dynamics Days 2011, “*The Path to Fracture: Dynamics of Broken Link Networks in Granular Flows*”, North Carolina (1/5/2011).
28. Fluid Dynamics in the 21<sup>st</sup> Century Workshop “*Physics of Cell Migration – from Waves to Migration*”, Haverford (5/19/2011).
29. Fluctuations and Response in Active Materials: From Driven Granular Systems to Swarming Bacteria, Leiden, Holland (6/21/2011).
30. Developmental Biology Annual Meeting Satellite Symposium, “” Chicago (7/21/2011).
31. Physics of Cancer Symposium “” Leipzig, Germany (10/2011).

#### ***b. Colloquia***

32. Physics Department Colloquium, Emory University “*Granular shear flow: Memory in Sand*” (11/15/2002).
33. Cosmos Club, Washington DC “The Physics of Flowing Sand” (4/24/2003).
34. Geology Department Colloquium, University of Maryland “*Physics of Granular Flows*” (10/10/2003)
35. Physics Colloquium, Georgia Tech “*Dynamics of Cell motion*” (10/5/2004)
36. Applied Math Colloquium, New Jersey Institute of Technology “*Memory in a Sandpile*”, (11/5/2004)
37. Physics Colloquium, UC Irvine “*Dynamics of Cell motion*” (2/10/2005)
38. Physics Colloquium, Univ. of Maryland “Dynamics of complex materials: From flowing sand to motile cells” (9/13/05)
39. Physics Colloquium, Univ of Buffalo “Cell migration: Biochemical signals & cell motion” (10/11/2007)
40. Physics Colloquium, Georgetown University “Cell Dance: Decision Making and group behavior of cells” (11/11/2008)
41. Physics Colloquium, Emory University “Decision Making and Group Behavior of cells (11/06/09).
42. Physics Colloquium, Oakland University (4/1/2010).
43. Physics Colloquium and Distinguished Lecturer Series: Force in Molecules, Cells and Tissues, Washington University (11/10/2010). “Cell migration: From waves to motion”
44. Physics Colloquium, Brandeis University (11/16/2010) “Cell migration: From waves to motion”

#### ***c. Seminars***

45. NIST, Gaithersburg, MD (4/93)
46. Dickinson College (04/19/99)

47. Columbia Univ. (08/02/99)
48. Syracuse University (11/05/99)
49. Duke University (12/07/99)
50. City College New York (12/15/1999)
51. University of Chicago (2/7/00)
52. UC San Diego (2/10/00)
53. University of Maryland (2/23/00)
54. Georgia Tech (2/14/00)
55. Georgetown University (3/9/00)
56. University of Toronto (3/28/00)
57. Institute for Computer Applications Univ. of Stuttgart (6/11/01)
58. Granular Group Seminar, Universite de Paris (6/14/01)
59. Condensed Matter Seminar, Johns Hopkins Univ. (10/11/01)
60. Applied Math Seminar, Mathematics Department, University of Maryland College Park, "*Control of binary alloy crystal growth patterns*" (3/14/2002)
61. Complex Systems Seminar, Center for Complex Systems, Northwestern University, "*Control of binary alloy crystal growth patterns*" (4/5/2002)
62. Biophysics Seminar, NIH, "*Understanding and controlling pattern formation on the microscale,*" (6/5/2002)
63. Chemical Physics Seminar, University of Maryland, College Park "*Understanding and controlling pattern formation on the microscale*" (10/9/2002).
64. Mechanical Engineering Seminar, Yale University, "*Granular shear flow: Memory in Sand*" (10/15/2002)
65. Center for Nonlinear Science Seminar, Georgia Tech "*Understanding and controlling pattern formation on the microscale*" (11/14/2002).
66. NIH, Laboratory for Integrative and Medical Biophysics Seminar, "Materials driven far from equilibrium" (5/29/2003).
67. George Mason University Seminar "Laser imaging and micromanipulation of biomaterials" (6/11/2003).
68. Condensed Matter Physics Seminar, University of Rennes, France "*The start of granular shear flow: Memory and aging effects*" (1/15/2004)
69. Metallurgy Division Group Seminar – J. Cahn, National Institute of Standards and Technology "*Grain boundary dynamics in thermal gradients in 2D and 3D*", (2/26/2004)
70. LASSP Seminar, Cornell University "*Granular Shear flow: Transients and Segregation Dynamics*" (4/9/2004)
71. Kimmel-Parent Group Seminar, NIH "Manipulation of Dictyostelium with Laser Tweezers", (5/14/2004).
72. "Dynamics of cell motion" CNLS seminar, Georgia Tech, (7/28/2004).
73. Informal Statistical Physics Seminar, "Memory in a Sandpile", University of Maryland (10/19/2004).
74. NIST Physics Seminar, "Dynamics of Cell Motion" (12/15/2004).
75. Applied Math Seminar, Penn State "Dynamics of Cell Motion" (State College, PA 1/31/2005).
76. Computations in Science seminar, Univ. of Chicago (Chicago, IL, 10/5/05).
77. Condensed Matter Physics seminar, Penn State "Dense granular flows" (State College, PA, 10/25/05).

78. Nonlinear Science Seminar, Northeastern University “Physics of cell motility” (Boston, MA 11/8/05).
79. Applied Math Seminar, DEAS, Harvard University (Boston MA 11/9/05).
80. Solid State Physics Seminar, University of Delaware (Newark, DE, 12/6/05).
81. Department of Physics, George Mason University (Fairfax, VA, 3/3/06).
82. Fluid Dynamics Reviews, University of Maryland (5/12/06).
83. Laboratory for Physical Sciences Seminar (10/4/06).
84. Condensed Matter Physics Seminar, University of Pittsburgh (10/19/06).
85. *Decision making during cell migration* Polymers Division Seminar, NIST (1/22/2008)
86. *Decision making during cell migration* Seminar, AMOLF, Amsterdam, Holland (2/18/2008)
87. *Decision making during cell migration* Biophysics Seminar, Syracuse University (4/10/2008)
88. *Decision making during cell migration* Machines and Organisms Seminar, Cornell University (4/10/2008)
89. *Decision making during cell migration* Condensed Matter Physics Seminar, Johns Hopkins University (4/17/2008)
90. *Micromanipulation with Holographic Optical Tweezers* Electrophysics Seminar, University of Maryland (4/19/2008)
91. *Cell migration with competing signals* IMA Workshop on Cell migration (5/28/2008)
92. *A look inside granular matter close to jamming* James Franck Institute Seminar (5/13/2008)
93. LAMMP Seminar, Beckman Laser Institute, UC Irvine, “Decision Making and group behavior of *Dictyostelium discoideum*” (11/12/2008)
94. Mechanical Engineering Seminar, Brown University (4/26/2009) “*The inside of a sandpile: 3D imaging of particle motion in dense granular flows*”.
95. Applied Dynamics Seminar, University of Maryland “*The inside of a sandpile: 3D imaging of particle motion in dense granular flows*”
96. University of Twente (5/25/2009) “*The inside of a sandpile: 3D imaging of particle motion in dense granular flows*”
97. Leiden University (5/27/2009) “*The inside of a sandpile: 3D imaging of particle motion in dense granular flows*”
98. Rutgers University (10/14/09) “*Decision Making in Group Migration*”
99. Emory University (11/05/09) “*The inside of a sandpile: 3D imaging of particle motion in dense granular flows*”
100. AMOLF Seminar, Amsterdam, Holland (11/30/09) “*Cell Migration*”
101. NIST, Polymers Division Seminar (12/16/09) “*Decision Making in Group Migration*”
102. Institut des Nanosciences de Paris, France (1/12/2010) “*Cell Dynamics*”
103. Biomath Seminar, UCLA (4/29/2010) “*Individual and Collective Cell Dynamics*”
104. Theoretical Biophysics Seminar, UCSD (4/30/02010) “*Individual and Collective Cell Dynamics*”\
105. Physics Seminar, ESPCI, Paris (6/2/2010).”*Cell migration: From waves to motion*”
106. Soft Matter Physics Colloquium, University of Leipzig (6/4/2010). ”*Cell migration: From waves to motion*”

107. Seminar, UC Berkeley “*Cell Migration: From Waves to Motion*” (9/20/2010)
108. Cummins Memorial Smposium, City College New York (10/15/2010)
109. Seminar, Institute for Synthetic Biology, “*Cell migration: From waves to motion*” University of Marburg (10/27/2010).
110. Statistical Physics Seminar (4/2011)
111. NIST Shape Metrology Seminar (5/15/2011) “Physics of Cell Migration”

***d. Select Conference Presentations***

112. Gordon Conference on Granular Flows, “Granular flow transients and instabilities: Hysteresis and segregation effects” New Hampshire (7/3/2002).
113. Nonlinear Science Gordon Conference “Dynamics of Granular Shear Flow: Patterns” (8/5/2003).
114. Newton Institute, Cambridge, England, Workshop on Granular Flow “Particle segregation in rotating cylinders” (9/26/2003).
115. Complex Systems Workshop, UIUC (5/18/2006).

**ii. Refereed conference proceedings.**

1. M. Toiya and **W. Losert**, “3D imaging of rod penetration through a Granular Pile”, Proceedings of the Powders and Grains conference (Stuttgart, 2005).
2. M. Newey, N. Taberlet, P. Richard, and **W. Losert**, “Segregation Transients in a Tumbler Flow”, Proceedings of the Powders and Grains conference (Stuttgart, 2005).
3. N. Taberlet, W. Losert, and **P. Richard**, “Axial segregation of dry grains in a rotating drum: a numerical study”, Proceedings of the Powders and Grains conference (Stuttgart, 2005).
4. **W. Losert**, K. Ronaszegi, J. Weijs, J. Dijkstra, and S. Slotterback, “Three Dimensional Particle Rearrangements During Slow Granular Shear Flow In A Split Bottom Geometry” Proceedings of the Powders and Grains conference (Golden, CO, 2009).
5. S. Slotterback, L. Goff, M. Toiya, J. Douglas, M.v. Hecke, **W. Losert** “Microscopic rearrangements in a granular column during compaction by thermal cycling” Proceedings of the Powders and Grains conference (Golden, CO, 2009).

**iii. Unrefereed conference proceedings.**

1. W. Losert, J.-C. Geminard, S. Nasuno, and **J.P. Gollub**, Friction in sheared granular material, M. Robbins, Ed., Symposium on Tribology (Materials Research Society, San Jose, CA, 1999).
2. **W. Losert**, C. Poole, P. Bradford, and D. English, “Shape Deformations of Giant Unilamellar Vesicles with a Laser Tweezer Array” Proceedings of SPIE Annual Meeting, August 2004.
3. **W. Losert**, C. Poole, R. Skupsky, “Investigating gradient sensing in cells through optical micromanipulation” Proceedings of the BIOS meeting Photonics West, January 2005.

4. **W. Losert**, J. Meszaros, C. Poole, “Shape dynamics of lipid vesicles forced by holographic optical tweezers” Proceedings of SPIE Annual Meeting, August 2006.

**f. Films, CDs, Photographs, etc.**

**g. Exhibits, Performances, Demonstrations, and Other Creative Activities**

Exhibit at Maryland Days (2001-2011) as part of the Physics Department demonstrations. My table, manned by my graduate and undergraduate students has provided hands on demonstrations of “the science of sand”. Demonstrations include a demo of spontaneous separation of sand by size, and a hands on demonstration of how strong jammed sand can be.

Physics of Cancer talk at Maryland Days 2010, 2011.

**h. Original Designs, Plans, Inventions, Software, and/or Patents.**

With W.E. Bentley et al.: US Patent Application, Filed June 17, 2005, Title: "Spatially Selective Deposition of Polysaccharide Layer onto Patterned Template"

With J. Fourkas and R. Duraiswami, Invention Disclosure Title” Method for spooling individual polymer strands”

With J. Fourkas and R. Duraiswami, Invention Disclosure Title” Method for controlled polymer disentanglement”

**i. Contracts and Grants.**

***Equipment Grants***

1. DURIP equipment grant (04/01/01-03/31/02) “*Nonlinear Dynamics and Noise under the Microscope: Three dimensional .....*”. **W. Losert, P.I.**, R. Roy (Physics), Co-PI.

NSF-MRI Research Instrumentation Grant “*MRI: Acquisition of a holographic laser tweezer array for ....*” **W. Losert, PI**, D. English, S. Lower, and R. Roy Co-PIs.

***Research Grants***

2. **NASA** Microgravity Fluid Physics Grant (01/01/02–12/31/05) “*Granular flow instabilities: Transients, aging, and segregation dynamics.*”. **W. Losert, P.I.**, J. Friedman (Geology), Co-PI.

**NASA** microgravity materials research (12/1/2003-11/30/2007) “*Adaptive control of alloy microstructures*” A. Karma (Northeastern Univ) PI, **W. Losert Co-I**

**NIH** Technology Development for Biomedical Applications Grant (7/1/2003-6/30/2006) “*Dynamic Control and Analysis of biopolymer networks*” **W. Losert P.I.**, J. Urbach (Georgetown University), Co-I,

**NIST** Cooperative Agreement (10/2003 – 9/2006) “*Control of crystal growth processes through curvature enhancers and suppressors*” **W. Losert PI.**

**MRSEC** seed funding (9/1/2003-8/30/2005) “*Dynamics of biomaterials studied through optical micromanipulation*” **W. Losert PI**; D. English, Co-I.

**NIST** Cooperative Agreement (6/2005-5/2006) “*FiPy based simulations of chemotaxis*” **W. Losert, PI.**

**UMD-NIST** Nanomanufacturing grant (9/2005 – 8/2007) “*Nanotube-vesicle bioreactor networks self-assembled and self-powered through directed actin polymerization*” W. Losert PI, K. Helmerson (NIST) Co-PI.

**NSF-CTS** grant (9/1/05 – 8/31/06) “*Collaborative Research: Studies of Aging and Memory in Granular Materials*” **W. Losert, PI**, C.S. O’Hern (Yale Univ) Co-PI

**ARO (\$25,000), ONR (\$20,000) , NSF**Funding for Dynamics Days 2006.

**NIST** Cooperative Agreement (6/2006-5/2008) “*FiPy based simulations of chemotaxis*” **W. Losert, PI.**

**NSF-CTS** grant (9/1/06 – 8/31/09) “*Aging and Memory in Granular Materials*” **W. Losert, PI**, C.S. O’Hern (Yale Univ) Co-PI

**NSF-CBET** International Supplement

**NSF-PHY**grant (7/15/2008-6/30/2011) “*Integration of topographical, mechanical and biochemical signals in cell motility*” PI

**NSF-DMR** grant (8/2009-7/2012) with M. Girvan “*RECOVERY: Dynamic Contact Networks in Granular Systems: New Insights Into Fracture and Segregation*”

**NSF-CPS** grant (9/2009-8/2012). “*CPS:Small:Image Guided Autonomous Optical Manipulation of Cell Groups*” Co-I with SK Gupta

**MRSEC Seed grant** (11/2009-10/2011) “*Assembly and Immobilization of Functional Nanomaterials for Device Applications*” Co-I with Fourkas, Waks, Shapiro)

**NIST** Cooperative Agreement (9/2009-8/2012) “*Developing Computational Tools for NIST’s effort in third generation photovoltaics*” PI

**DTRA** Subcontract from Duke University (4/2010-3/2013) “*Microstructure, fluidization, and control of penetrator trajectories in granular media*” Co-I with Behringer, O’Hern, Kondic

**NIH** Nanotechnology Grant (7/2010-6/2015) “*Using controlled 2D and 3D nanotopography to unravel tactile senses of motile cells*” PI with Fourkas as Co-PI

**DOD** Era of Hope Scholar – Breast Cancer Research Grant Co-I, S. Martin PI (4/2011-3/2016)

#### ***Other Awards***

3. Applied Materials Corp agreement (5/2004-12/2004) W. Losert PI (\$30,000)

4. Research Corporation Research Innovation Award (5/15/02 – 5/14/05) “*Adaptive control of crystal microstructures using variable laser patterns*” (\$35,000).

**National Academies Keck Futures Initiative Seed Grant** “*Biology on Demand: External Control of a Complex Cellular System, S. Cerevisiae*” Co-I with 4 others (\$50,000).

#### **j. Fellowships, Prizes, and Awards.**

Fellowship of the German National Merit Foundation (Studienstiftung). The foundation supports the top 0.2% of students in Germany, based on academic merit (grades and faculty recommendation) (1992-1995)

Research Corporation Research Innovation Award (2001).

University of Maryland Graduate Research Board Semester Research Award (2002).

Ferrell Award, Department of Physics, University of Maryland (2006).

**k. Editorships, Editorial Boards, and Reviewing Activities for Journals and Other Learned Publications.**

Referee for Physical Review Letters, Proceedings of the Royal Society, Physical Review B, Physical Review E, Physica D, Physics of Fluids, Journal of Fluid Mechanics, American Journal of Physics, ChemPhysChem, Journal of Geophysical Research, European Biophysics Journal, Journal of Molecular Biology, Systems Biology Reviews  
(~10-20 article reviews per year)

**l. Other.**

**3. Teaching, Mentoring, and Advising**

**a. Courses taught in the last five years.**

***Graduate Courses (Including semesters and number of students):***

- Nonlinear Dynamics and Chaos - Phys 715:, S2001 (16), S2002 (16), S2003 (16).
- Physics of Cancer – Phys818 S2010 (7).
- Cancer Bio-Physics – Phys828M S2011 (15).
- Applied Dynamics Seminar - Phys798D ([www.chaos.umd.edu/talks](http://www.chaos.umd.edu/talks)): F2001 (4), F2002 (4), F2003 (4), F2004 (4), F2005 (1), F2006 (3), F2008 (1)
- Biophysics Seminar co-listed as Phys798L and CHPH709L: S2004 (4), F2004 (3), S2005 (6), F2005 (1), S 2006, F2006 (3), .S 2007 (10) F 2007 (10)

***Undergraduate Courses:***

- Mathematical Methods in Physics F2010 Phys374 (30)
- Introduction to Physics I - Phys 141: F2004 (100), F2005 (80), F2006 (92)
- Introduction to Physics I - Phys 161: F2007 (170 in two sections) F2008 (100)
- Physics Laboratory Introduction - Phys174: F2002 (36), S2004 (22), S2005 (23).
- How Things Work: - Science Foundations - Phys104: F2003 (50).

**b. Course or Curriculum Development.**

Developing new graduate Course “ Physics of Cancer” (renamed Cancer BioPhysics with 3 credits) guest lectures by cancer cell biologists and doctors.

Co-Leader with Joe Redish in the Development of a new Physics for Biologists course which will focus on new competencies.

Helped initiate and lead a new Research and Graduate Partnership program on Cancer Technology with the National Cancer Institute. The Partnership started in the Summer of 2010 with 5 new supported projects.

Initiated new biophysics seminar series, which is being successfully continued as part of the new

Maryland biophysics program ( [www.marylandbiophysics.umd.edu](http://www.marylandbiophysics.umd.edu) ).

Ongoing effort to develop a biophysics concentration in the Physics Department. Helped develop personalized biophysics curriculum for several physics majors.

Integration of immediate student feedback through clickers in Physics 141 /161 since 2004.

Significant contribution to the proposal of a new course Physics 615 “Nonlinear Dynamics of Extended Systems” in 2003.

Lecture on optical nanomanipulation to Nanocenter Undergraduate students (ENME181, 2007) and to REU students (7/2008)

c. **Manuals, Notes, Software, Webpages, and Other Contributions to Teaching.**

Integration of Java Applets in Physics 715.

d. **Teaching Awards and Other Special Recognition.**

*My students have won several awards for their work, and for the presentation of research. The most significant award is listed first, other major awards are listed in bold*

- 1. Burroughs Wellcome Fund Interfaces in Sciences Award (\$500,000 total for 5 years, two of them as Postdoc in my group, three faculty years) to Erin Rericha, (2007)**  
One of 11 awardees from a field of over 100 applicants (not including the university selection step)
2. **Cosmos Club Fellowship** (Spring 2003: Mike Newey) - presentation at Cosmos Club foundation dinner April 2004.
3. **Cosmos Club Fellowship** (Spring 2003: Masahiro Toiya) - presentation at Cosmos Club foundation dinner April 2004.
4. Undergraduate Research Fellowship in IREAP (Spring 2003: Dominic Britti)
5. Thomas Mason Fellowship for Interdisciplinary Research (Summer 2003: Andrew Pomerance)
6. Best Graduate Student Presentation Award, IREAP, (Fall 2003: Masahiro Toiya)
7. **Student Research Achievement Award, Biophysical Society** meeting in Baltimore, 2004 (Justin Stambaugh)
8. 2<sup>nd</sup> place poster competition, Graduate Student Research Interaction Day, University of Maryland, Justin Stambaugh, Spring 2004.
9. Thomas Mason Fellowship for Interdisciplinary Research (Summer 2004, Cory Poole)
10. Undergraduate student presentation award TREND REU program (Summer 2004, Katherine Newhall)
11. Undergraduate Research Fellowship in IREAP, (Fall 2004, Andrew Porter)
12. Best Poster Award– Burgers Fluid Dynamics Meeting, Univ of Maryland (November 2004, Masahiro Toiya)

13. One graduate student, Andrew Pomerance, was invited to give the Physics Colloquium at Emory University on our work on actin networks and cell motility. (Jan 28, 2005).
14. **Student Research Achievement Award at the Biophysical Society** meeting in Long Beach, CA (Feb 2005, Sejin Han).
15. Thomas Mason Fellowship for Interdisciplinary Research (Summer 2005, Beatriz Burrola)
16. IPST - Monroe Martin Prize for undergraduate research (May 2005, Ricardo Pizarro).
17. Undergraduate student presentation award TREND REU program (Summer 2005, Kenneth Desmond)
18. Korean Embassy Scholarship, Sejin Han (2005).
19. Burgers Program Best Poster Award, Matt Ferguson (2005).
20. CMPS Senior Summer Scholarship, Chris Berardi (2006).
21. Selection to participate in Woods Hole Physiology Course, Erin Rericha (2006).
22. Korea-U.S. Science Cooperation Center/KSEA Scholarship, Sejin Han (2006).
23. Best Graduate Student Presentation Award, IREAP, (Spring 2006: Masahiro Toiya)
24. Thomas Mason Fellowship for Interdisciplinary Research (Summer 2006, Colin McCann)
25. **Mexican Government Fellowship (Beatriz Burrola, Summer 2006)**
26. APS-Division of Biological Physics Travel Award (Sejin Han, 2007)
27. Thomas Mason Fellowship for Interdisciplinary Research (Summer 2008, Meghan Driscoll)
28. Undergraduate Research Fellowship in IREAP (Summer 2008: Rael Kopace)
29. Undergraduate student presentation award TREND (Summer 2008, Alex Steinkamp)
30. Student Poster Award, Burgers Symposium (Nov 2008, Joost Weijs)
31. Undergraduate student presentation award TREND (Summer 2009, Simon Freedman)
32. The Ralph Myers Award for Exceptional Teaching (Mark Herrera, Nov 2009).
33. **The George A. Snow Memorial Award** (Beatriz Burrola-Gabilondo, for her role in successfully starting and running the Maryland Women in Physics Group, \$2000 prize Nov 2009)
34. Student Poster Award, Burgers Symposium (Nov 2009, Hernan Zhou)
35. DOD Graduate Student Fellowship (Mark Herrera, April 2010).
36. Burgers Program Best Poster Award, Meghan Driscoll (2010).

e. **Advising: Other Than Research Direction.**

i. **Undergraduate.**

Advising of about 4 physics undergraduate students every year, mainly students interested in biophysics. Helped secure summer internships and Postbac fellowships at NIH for several students – (Roshni Takhore, Rael Kopace).

ii. **Graduate.**

Advising of 6 incoming graduate students in Fall of 2004, 4 students Fall 2005, 5 students Fall 2007, 4 students Fall 2008

Thesis defense committees (several students 2001-2007)

2008: Jianwei Liu (Biochemistry), M. Sebastian Pauletti (Math), William Grimes (Chemical Physics, NIH)

2009: Joshua Dijkstra (Physics, Leiden University, Leiden, Holland)

2010: Tanay Desai (Biochemistry), Yuxiang Liu (Mechanical Engineering), Min Tang (Stat), Bora Sul, Christian Tomasetti (Math), Melanie Freed (Bioengineering), and Quiang Liu (Chemical Physics).

iii. **Other advising activities**

***Organized semester long research projects by international students***

1. Sander Van der Meer (2/2002 – 5/2002) Masters student from Univ. of Twente, Holland.
2. Nicolas Taberlet (5/2002-7/2005; , two visits to UMD for 8 months total) Ph.D. Student of the University of Rennes, jointly advised with R. Delanney, Univ. of Rennes, France. Since 1/2007 Staff Scientist/Lecturer at Ecole Normale Supérieure, Lyon.
3. Sascha Pfisterer (2/2005-8/2005) Masters student from FH Mannheim, Germany.
4. Jacco Hettinga (4/2005 – 7/2005) Masters student from the Univ. of Twente, Holland.
5. Justine Malafosse (5/2005– 7/2005) Ecole Nationale Supérieure de Techniques Avancées, Paris, France.
6. Martin Weber (8/2005-2/2006) Masters student from FH Mannheim, Germany.
7. Silvie Grossmann (4/2006-8/2006) University of Heidelberg, Germany
8. Dominik Wildanger (4/2006-8/2006) University of Heidelberg, Germany
9. Krisztian Ronaszegi (2/2007-2/2008) Budapest University, Hungary,
10. Joshua Dijkstra (2/2008-4/2008) Leiden University, Holland, *Velocity dependence of 3D granular shear flow*
11. Joost Weijs (9/2008-1/2009) University of Twente, Holland (supported by Burgers program), *separation of particles by shape in 3D granular flows*
12. Tess Homan (9/2008-1/2009) University of Twente, Holland, *quantifying cell migration*
13. Thomas Aabo (1/20/2009-4/30/2009) Danish Technical University *Cell-cell signaling in yeast investigated with holographic optical tweezers*
14. Hernan Zhou (9/2009-1/2010) University of Eindhoven *Cell membrane deformations.*
15. Ludovic Jacob (2/2010-9/2010) University of Rennes *Robotic digging in Sand*
16. Matthias van de Raa (7/2010-10/2010) University of Twente *patterns of peptide localization*

f. **Advising: Research Direction.**

i. **Undergraduate. – 14 from underrepresented groups**

1. Eric Kim (6/2010-current) electric guidance of cells
2. Peter Kordell (6/2010-current) analysis of wound healing assays
3. Anthony Coburger (6/2010-current) cell shape dynamics of neutrophils
4. Michael Lin (2/2010-current) rods in granular materials
5. Jon Balajthy (9/2009 – 5/2010) analysis of vesicle dynamics
6. William Derek Updegraff (2/2009-12/2010) digging into granular matter
7. Simon Freedman (6/2009-8/2009) TREND student, shape dynamics analysis for cell migration
8. Nicholas Prior (5/2009-9/2009) research on robotic clam
9. John Watts (6/2008-9/2009) Cell migration on ridges
10. Ilya Zhitomirskiy (6/2008-12/2008) Analysis of shape deformations of membranes and cells
11. Alex Steinkamp (6/2008-8/2008) TREND student, Experiment and analysis of membrane shape deformations
12. Scott Robertson (2/2008-6/2008) – Effects of nanoparticles on mammalian cells
13. Steve Hung (2/2008-12/2008) – Deformations of vesicles in ternary mixtures
14. Khalid Ismail (2/2008-12/2008) – The Roboclam – imaging granular flow in three dimensions
15. Rael Kopace (6/2007-8/2008) – Cell motility at the edge of a cliff
16. Laura Beachy (9/2007-1/2008) – cell motility on patterned surfaces
17. Humza Kazmi (9/2007-1/2008) – Nanoparticle effect on cell motility
18. Becca Taft (Physics, Yale Univ, REU student, Summer 2007) – using experimental granular arrangements as input for simulations
19. Abby Goldman (Physics, Mt Holyoke, REU student, Summer 2007) – cell motion on patterned surfaces
20. Avner May (Physics and Math, Harvard Univ, Volunteer, Summer 2007) – Avalanches in excitable granular matter
21. Emmanuel Cephas (1/2007 – 10/2007) – Network theory applied to granular flow. Now grad student VA Tech – semifinalist NASA-Harriett G. Jenkins Pre-doctoral Fellowship Project.
22. Len Goff (6/2006 – 1/2007) – Extracting 3D particle positions from granular flow images. Graduate student in Physics University of British Columbia starting 8/2008
23. Chris Berardi (9/2005-Current) – The physics of jamming in antiplastizicers
24. Matt Wilkinson (1/2006-8/2006)
25. Debra Friedman (1/2006-summer 2006)
26. Elisheva Bresler (9/2005-summer 2006)
27. Justin Senseny (9/2005-12/2005)
28. Kenneth Desmond (RPI, TREND-REU Summer 2005)
29. Joe Meszaroz (1/2005 – 12/2006)
30. Kumar Saleh (1/2005 – 9/2006) Banneker/Key Scholar – Chemistry Major
31. Jacqueline Owens (12/2004 – 12/2005)
32. Matt Kelley (5/2003 – 12/2004 – BS) High School teacher
33. Andrew Porter (5/2004 – 12/2004)

34. Dave Jones (11/2003-8/2004),
35. Ricardo Pizarro (5/2002-12/2003 and 9/2004 – 12/2004 –BS, Monroe Martin Prize),
36. Ryan Smith (Physics, Illinois Wesleyan Univ) TREND REU Summer 2004
37. Katherine Newhall (RPI. TREND-REU Summer 2004),
38. Calli Vance (MRSEC-REU Summer 2004),
39. Zachary Smith (Physics, Colorado School of Mines) TREND-REU Summer 2003,
40. Andrew Pomerance – (Physics) Spring 2003 – graduate physics student since F 2003,
41. Nicole Harrison (Materials Science) MRSEC-REU Summer 2003,
42. Paul Freese (Materials Science) TREND-REU Summer 2003,
43. Rachel Headley (5/2003-12/2003, B.S., honors, graduate school geophysics at Berkeley),
44. Dominic Britti (B.S., Summer 2004, graduate school in Materials Science at UMD),
45. Sulima Elemam (Spring and Summer 2002),
46. Lucy Karpen (Spring 2002),
47. Elisabeth Schemm, (Summer 2001, Harvard Univ.), now graduate student Stanford University
48. Gene Kwon (8/2000 – 5/2002),

**ii. Master's**

1. Peter Bradford (M.S. 6/2004, Law School), Patent Lawyer.
2. Cory Poole (5/2004 – 12/2006), HS Teacher of AP Physics in CA.

**iii. Doctoral**

***Graduated***

1. Justin Stambaugh (5/2001-12/2004, Ph.D., Staff Scientist Lincoln Labs, MIT).
2. Kyuyong Lee (12/2000 - 12/2004, Ph.D., Postdoc, Pusan Univ. Korea).
3. Ron Skupsky (advised 2002 – 8/2005, Ph.D. Postdoc Berkeley).
4. Masahiro Toiya (5/2002 – 8/2006, Ph.D. Postdoc, Brandeis Univ., Waltham, MA).
5. Mike Newey (5/2002 – 12/2006, Ph.D, Staff Engineer, General Dynamics Robotics),
6. Matt Ferguson (11/2000 – 3/2007, Ph.D. Postdoctoral Researcher, France.)
7. Andrew Pomerance (8/2003-8/2009, Ph.D. Research Scientist, DOD Contractor.)
8. Sejin Han (1/2004 – 9/2009, Ph.D., Postdoc Hong Kong).
9. Kimberly Glass (w/ Ott/Girvan) (2/2010, Ph.D., Postdoc Harvard Medical School)
10. Beatriz Burrola Gabilondo (8/2010, Postdoc Georgetown University)
11. Brooke Hester (10/2010, Visiting Assistant Professor, Appalachian State University)

***Current Students***

1. Colin McCann (5/2005 - current)
2. Steven Slotterback (6/2006-current)
3. Meghan Driscoll (6/2007-current) – with Fourkas
4. John Platig (8/2008-current) with Girvan and Ott

5. Mark Herrera (6/2009-current) with Girvan
6. Can Guyen (2/2010-current)
7. Xiaoyu Sun (2/2010-current) with Fourkas
8. Eleanor Ory (6/2010-current)
9. Chenlu Wang (9/2010 – current)
10. Joshua Parker (1/2011-current)
11. Matt Kretschmer (6/2011-current)
12. Matt Harrington (6/2011-current)
13. Rachel Lee (6/2011-current)
14. Sagar Chowdhury (9/2009 – current) with SK Gupta

**iv. Postdoctoral**

1. Mitch Mailman (Ph.D. Brandeis University 1/2011)
2. Kerstin Nordstrom (PhD, University of Pennsylvania 2011)
3. Erin Rericha (Ph.D. Univ of Texas, Austin 8/2004 – 7/2011), who is in transition to Biophysics from Granular Physics research. Won Burroughs Wellcome Fellowship. Assistant Professor Vanderbilt University (8/2011-)
4. Co-advising of Daniel Wheeler, Assistant Research Scientist at NIST (with Dr Warren at NIST). Dr Wheeler is working on phase-field and other simulations of crystal growth and biological signaling pathways. To be appointed as Assistant Research Scientist.

Former Postdocs

1. Jennifer Galanis, Co-advised Postdoctoral Researcher in Dr Nossals group at NIH.

**g. Extension Activities.**

Director of a new Research and Graduate Partnership Program in Cancer Technology with the National Cancer Institute which will start in the summer of 2010. This partnership started as a Systems Biology Interaction between Physics Department and the National Cancer Institute. Six Physics graduate students have been involved in projects that started through this initiative. See a description from the NCI director of the start of this interaction: [http://www.cancer.gov/ncicancerbulletin/NCI\\_Cancer\\_Bulletin\\_050206/page3](http://www.cancer.gov/ncicancerbulletin/NCI_Cancer_Bulletin_050206/page3)

Organizer, Dynamics Days 2012 with M. Girvan Baltimore (January 2012)

Organizer, Summer school on Granular Materials: From Simulations to Astrophysical Applications (College Park, June 2011)

Co-Organizer: fluids2011 Conference in honor of Jerry Gollub (Haveford, May 2011)

Organizer - Dynamics Days 2006, Bethesda, MD ([www.chaos.umd.edu/DDays2006](http://www.chaos.umd.edu/DDays2006) ). The conference drew ~250 attendees. It was held near NIH and fostered interactions between theoretical nonlinear dynamics and experimental biological research.

Organizing Committee, 2004 Gordon Conference on Granular and Granular Fluid Flows.

Program Committee, Gordon conference on Physics Research and Education in Classical Mechanics and Non-linear Dynamics (PRE-CMNLD), 2004.

Invited talk at a QEM (Quality Education for Minorities) seminar on how to successfully apply for NSF-MRI funding in Fall 2003.

Co-Organizer of Dynamics Days 2002, Baltimore, MD. A four day meeting of over 200 researchers covering a wide range of topics in nonlinear dynamics (see <http://www.chaos.umd.edu/Ddays2002> ).

**Current Collaborations:**

R.P. Behringer, Duke University and Lou Kondic, NJIT – *High speed penetration into granular materials*

W. Briels, University of Twente – *Coarse grained simulations of cell signaling and dynamics*

M. Cicerone, NIST *Label free detection of cell signals*

R. Delanney and P. Richard. University of Rennes, France; – *Penetration in dense granular matter*

C.S. O’Hern, Department of Mechanical Engineering, Yale University – *Penetration in dense granular matter*

J.F. Douglas, Polymers Division, National Institute of Standards and Technology – *Theory string-like dynamics of systems close to jamming*

M. van Hecke, Leiden University – *3D imaging of Gravitational Suspensions*

P. Hosoi, MIT *Robotic digging in sand*

P. Michel, Planetology, CNRS, Nice, France – *Granular deformations of asteroids and meteorites – parabolic flight experiments*

J. Galanis, Laboratory of Integrative and Medical Biophysics, NIH – *rod patterns*

C. Parent, National Cancer Institute, NIH – *Dictyostelium Dynamics*

L. Staudt, National Cancer Institute, NIH - *Gene networks*

J. Urbach, Department of Physics, Georgetown University – *Non-equilibrium Actin polymerization dynamics*

W. van de Water, TU Enschede, Holland - *membrane deformations and fluctuations*

B. Bentley, Bioengineering, UMD - *bacterial motility.*

J. Fourkas, Chemistry and IPST – *Cell migration on nanotopography*

S.K. Gupta, Mechanical Engineering – *Cyber Physical Systems Research*

E. Ott, Physics and Electrical Engineering, UMD - *models of self assembly*

D. Richardson, Astro, UMD – *simulating granular dynamics with astrophysical applications*

B. Shapiro, Aerospace Engineering, UMD - *model based feedback control*

A. Wylie, Geology UMD – *Cell interaction with asbestos fibers*

**Pat Collaborations:**

P. Abshire, Electrical Engineering, UMD – *imaging neuronal activity with reflection confocal techniques.*

S. Akamatsu and G. Faivre, University of Paris, France – *control of Eutectic patterns through holographic laser tweezers*

W. Goldburg, University of Pittsburgh – *Differential Pressure sensor*

K. Helmerson, NIST and Joint Quantum Institute, Univ of MD – *Control of vesicle deformations with biopolymer gels and laser tweezers*

J. Glueckstaed, Riso National Laboratory, Denmark – *A new spatial light modulator technique;*

A. Karma, Department of Physics, Northeastern University – *Control of crystal growth patterns*

S. Leikin, Laboratory of Physical and Structural Biology, NIH – *Dynamics and Control of Collagen Self-Assembly*

D. Margetis, Mathematics – *models of vesicle deformation*

R. Nossal, Chief, and D. Sackett, Laboratory of Integrative and Medical Biophysics, NIH – *Cellular biophysics*

G. Payne, Biotech Institute, UMBC – *chitosan self assembly*

S. Raghavan, Chemical and Biomolecular Engineering – *rheology of gelatin*

P. Randazzo, National Cancer Institute, NIH - *Arf-GAP*

E. Smela, Electrical Engineering, UMD - *use of laser tweezer array for cell clinic*

J.A. Warren, Director, Center for theoretical and computational Materials Science, NIST – *Phase field models of grain boundary coarsening*

#### 4. **Service**

##### **a. Professional.**

##### **i. Offices and committee memberships held in professional organizations.**

APS Group in Statistical and Nonlinear Physics (GSNP) Executive Committee 2008-2011.

APS Division of Fluid Dynamics Program Committee (1/2006-12/2008)

APS Group in Statistical and Nonlinear Physics (GSNP) Nominations Committee 2003.

##### **ii. Reviewing activities for agencies.**

Reviewed proposals for Research Corporation, National Science Foundation (NSF), Royal Society, Marsden Fund, Dutch Science Foundation, Swiss Science Foundation, NASA, NSERC, ISTC, NIH, DOE.

Served on DOE, NSF and NASA review panels. Served on Argonne National Lab Site Visit Panel for the Materials Division.

##### **iii. Other unpaid services to local, state, and federal agencies.**

Volunteer at the NIH. Collaborate with S. Leikin (co-advising of one graduate student), C. Parent (co-advising of 1 graduate student), and P. Randazzo (co-advising of 1 graduate student).

Guest Researcher at NIST (~2006-2009). Collaborated with Kris Helmerson and Bill Phillips.

Arrangement of sessions (abstract sorting) for the Group in Statistical and Nonlinear Physics and the Division of Fluid Dynamics for the APS March meeting – one day each 2002-2010

- iv. **Other non-University committees, commissions, panels, etc.**
- v. **International activities not listed above.**
- vi. **Paid consultancies.**

**b. Campus.**

**i. Departmental.**

Director, Partnership for Cancer Technology with the National Cancer Institute (also listed under extension activities) (2010-)

Physics APT Committee (2010-)

IPST Burgers Board (2009-)

IPST facilities committee

Laboratory Committee Physics

Physics Salary Committee (2002, 2005, 2006, 2008)

IPST Salary Committee (2008)

Grading Qualifier exam questions (2002, 2004, 2010)

Development of an undergraduate biophysics concentration (ongoing effort)

2001-2008 - Organizer of the Applied Dynamics seminar with average attendance of 20-40 student and faculty ( see [www.chaos.umd.edu/talks](http://www.chaos.umd.edu/talks) ). The seminar features 1-2 talks per week and duties include hosting of a visitor and making a schedule for external visitors about every 2 weeks.

Organizer of Informal Biophysics study group meeting – a biweekly meetings starting in the Fall 2002 (for IPST). This meeting evolved into a bi-weekly biophysics seminar in the spring 2003 semester (organized by M. Fisher and W. Losert) and led to a weekly seminar that became a core part of the new biophysics program ( [www.marylandbiophysics.umd.edu](http://www.marylandbiophysics.umd.edu) )

Contributed to the successful Biophysics Faculty searches in 2005.

Maryland Days 2001-2010 Sand exhibit and hands on demonstrations.

Maryland Days 2010 “Physics of Cancer” Public Lecture

**ii. College.**

Director, Biophysics Graduate Program (7/2011-current)

**iii. University.**

Visit to congress (7/15/2004) with Dr Dragt (Physics), Dr Mote (Univ President), and UMD staff– talked to staffers from MD house and senate representatives about science funding.

Judge for Graduate Research Interaction Day (GRID) 2002, 2003, and 2007.

University Senator (5/2006-5/2009) (5/2011-5/2014)

University Senate Committee on Committees (5/2006-5/2008) (5/2011-5/2012)

iv. **Special administrative assignments.**

v. **Other.**

**c. Community, State, National.**

Interview for the Discovery Channel Online Edition (2008) (also on MSNBC and other online news) Name misspelled as Lohsert <http://www.msnbc.msn.com/id/28018543/>

Organizer of Dynamics Days 2006

Maryland Days 2001-2009 Sand exhibit and hands on demonstrations.

Labtours for Flowers High School (5/2004) – demonstrations of holographic laser tweezers and confocal microscopy for ~80 high school students.

Labtours for the Physics Department Summer Girls Program (2001, 2004).

Job “shadowing” for high school students interested in careers in the sciences (2003, 2005, 2006).

Two articles for the Univ of MD Physics Department Newsletter, the Photon.

Interview in major Danish newspaper (Politiken) on new collaborative project with J. Glueckstaed, Riso National Labs (Politiken – Mar 13 2005)

Yearlong lab research internship for high school students: Kandice Fields (2004/2005) - started at the University of Maryland in the Fall 2005 semester. Joi Logan (2006/2007). Kevin Smith (2007/2008)

Summer high school internships (2 students in 2008, 1 in 2010)

**d. Service Awards and Honors.**

Ferrell Award, Department of Physics, University of Maryland (2006)