CURRICULUM VITAE

TIMOTHY J. NEWMAN

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EDUCATION

1985–1988 University of Oxford, New College, BA (Honours) in Physics, 1st class
1988–1991 University of Manchester, PhD in Theoretical Physics

POSITIONS

2009 (summer)	Visiting Professor, College of Life Sciences, University of Dundee
2008–present	Director, Arizona State University Center for Biological Physics
2007–present	Full Professor, Arizona State University, Department of Physics
2003–present	Affiliated Faculty, Arizona State University, School of Life Sciences
2002–2007	Associate Professor, Arizona State University, Department of Physics
2000–2002	University of Virginia, Departments of Physics and Biology Research Assistant Professor
1999–2000	University of Virginia, Department of Physics Post-doctoral fellow
1997–1999	Virginia Polytechnic Institute, Department of Physics Post-doctoral fellow,
1996–1997	University of Manchester, Department of Theoretical Physics Post-doctoral fellow
1994–1995	University of Cologne, Institute of Theoretical Physics SFB fellow
1993–1994	University of Oxford, Department of Theoretical Physics Post-doctoral research associate
1991–1993	University of Illinois at Urbana-Champaign, Department of Physics Post-doctoral research associate

RESEARCH INTERESTS

Computational and theoretical modeling of biological systems. Using methods from the theory of stochastic processes and non-equilibrium systems to better understand emergent phenomena in developmental biology, ecological and evolutionary dynamics, and systems biology.

TEACHING INTERESTS

Undergraduate and graduate courses in physics. Courses focusing on fundamental principles of physics, theoretical methods, and the application of theoretical physics methodology to other disciplines, e.g. the life sciences. Mentoring students at all stages of their professional development, and inspiring students to engage in a broad understanding of the natural sciences.

COURSES TAUGHT

Arizona State University

PHY 498/598	Topics in Biophysics, fall 2003–2008
PHY 531	Advanced Electricity and Magnetism, fall 2002, 2003
PHY 532	Electrodynamics, spring 2003, 2004
BIO 591	Calculus for Biologists, spring 2004
PHY 252	Physics III (Waves, Thermodynamics, and Optics), spring 2006, 2007
PHY 310	Classical Particles and Fields I (Mechanics), fall 2009
PHY 311	Classical Particles and Fields II (Electricity and Magnetism), spring 2010

University of Virginia

BIO 520	Calculus for Biologists, fall 2001

Virginia Polytechnic Institute

PHYS 5705	Advanced Statistical Mechanics, fall 1997

GRADUATE STUDENT MENTORING

Since joining ASU in August 2002:

Ramon Grima, PhD (received April 2005)
(currently junior faculty in Centre for Systems Biology, University of Edinburgh, UK)
Marianne Stefanini, PhD (received September 2005)
(currently a postdoc in the Department of Biomedical Engineering, Johns Hopkins University)
Ralph DeSimone, PhD (received May 2007)
(currently a postdoc in the Department of Plant Biology, University of Cambridge, UK)
Tedman Torres (co-advised with Prof Marcia Levitus), PhD (received September 2009)
(currently a postdoc in the Moffitt Cancer Research Institute, Tampa, Florida)

Sebastian Sandersius, PhD (expected fall 2010)

Paul Logan, MS (received August 2004)
Ankana Boondirek, one year visiting student from Mahidol University, Bangkok (2003)
Suchittra Sa-nguansin, one year visiting student from Mahidol University, Bangkok (2003)

Prior to joining ASU:

Harald Kallabis (Cologne), (co-advised) PhD 1997
Wannapong Triampo (VPI), (co-advised) PhD 2000

UNDERGRADUATE MENTORING

Jeff Ammon, Department of Physics, research student, 2006–07
Dawud Austin, Department of Physics, research student, 2004–05
Lisa Barge, Department of Physics, research student, 2006–07
Michael Cooper, Department of Physics, summer REU student, 2003
Yuliya Invanitskaya, Department of Physics, research student, 2005
Ryan Reynolds, Department of Physics, research student, 2008-09
Erick Smith, Department of Physics, research student, 2005
Jens Weismüller, Department of Physics, exchange student, 2006–07

EXTERNAL FUNDING

Detailed list of grant income (group has been continuously funded for the period 2001–present):

2009–2012 "GAANN Program at Arizona State University:
Physics and biological physics moving forward in the 21st century"
US Department of Education, $527,000
(PI: O. Sankey, Co-PI: T. Newman)

2008–2011 "Gastrulation in the chick embryo: a study using live imaging
and computer modeling"
Human Frontier Science Program, $750,000
(PI: T. Newman, Co-PI: Cornelis Weijer, Biology, U. of Dundee)

2007 "Workshop: Quantitative approaches to early development"
NSF (Division of Integrative Organismal Systems), $10,367
(PI: T. Newman)

2005–2007 "Correlated cell movement in embryogenesis" (Pilot study)
NSF (Division of Integrative Organismal Systems and
Division of Biological Physics), $130,357
(PI: T. Newman; Senior scientist: Cornelis Weijer, Biology, U. of Dundee)

2004–2008 "Towards an integrative and mechanistic theory of within-host disease dynamics"
NSF (Division of Mathematical Sciences) and NIH (NIGMS), $1,600,000
(PI: Yang Kuang, Math, ASU; Co-PI's: James Elser, SoLS, ASU, John Nagy,
Biology, SCC, T. Newman, and Marilyn & Val Smith, Biology, U. of Kansas)

2004–2008 "Interdisciplinary training for undergraduates in biological and mathematical
sciences at ASU"
NSF (Division of Mathematical Sciences), $640,000
(PI: Yang Kuang, Math, ASU; Co-PIs: T. Newman, and five other ASU faculty)

2001–2005 "Spatial dynamics and fluctuations in marginal populations"
NSF (Division of Environmental Biology), $149,988
(PI: T. Newman; Co-PI: Janis Antonovics, Biology, University of Virginia)

2001–2002 "Localization transitions in directed polymer systems"
Jeffress Memorial Trust, $21,500
(PI: T. Newman)

2001–2004 "Dynamics of low-dimensional Bose-Einstein condensates"
Department of Energy, $180,000
(PI: Eugene Kolomeisky, Physics, University of Virginia; Co-PI: T. Newman)

FELLOWSHIPS, AWARDS, AND ELECTED POSITIONS

2008 Elected Member at Large, Executive Committee of the Division of Biological Physics, American Physical Society
2007 Long-Term Visitor, IMA (Institute of Mathematics and its Applications), University of Minnesota, for thematic year on Molecular and Cellular Biology
2006 Distinguished Teacher Award, Department of Physics, ASU
2004 Fellow of the Institute of Physics (United Kingdom)
2002 University of Manchester, Tsang Award (enabling a US resident scholar to visit Manchester University for research collaboration)
1994 Invited Fellow, Isaac Newton Institute (University of Cambridge, April 94)
1989 John Birks award for outstanding 1st year physics graduate student
1986 New College Scholar (University of Oxford)

PUBLICATIONS

Publications in refereed journals

1. *Robustness of Cell Neighbor Statistics in Proliferating Epithelia*
   S. A. Sandersius, C. J. Weijer, and T. J. Newman, in preparation (2009).

2. *Steady-State Fluctuations in Fluorescence Correlation Spectroscopy*
   T. A. Torres and T. J. Newman, in preparation (2009).

3. *Modeling Cell Rheology with the Subcellular Element Model*
   S. A. Sandersius and T. J. Newman, Physical Biology **5**, 015002 (2008).

4. *Grid-free Models of Multi-cellular Systems, with an Application to Large-Scale Vortices Accompanying Primitive Streak Formation*
   T. J. Newman, Current Topics in Developmental Biology **81**, 157:182 (2007).

5. *Amplified Biochemical Oscillations in Cellular Systems*
   A. J. McKane, J. D. Nagy, T. J. Newman, and M. Stefanini, Journal of Statistical Physics, **128**, 165:191 (2007).

6. *Connecting Genotype with Phenotype using the Genome Template Model*
   R. E. DeSimone, A. Boondirek, and T. J. Newman, *Artificial Life X*, pp. 91:98 (MIT Press, 2006).

7. *Spatio-temporal Fluctuations at Population Margins*
   J. Antonovics, A. J. McKane, and T. J. Newman, American Naturalist **167**, 16:27 (2006).

8. *Modeling Multi-cellular Systems using Sub-cellular Elements*
   T. J. Newman, Mathematical Biosciences and Engineering **2**, 611:622 (2005).

9. *Predator-prey Cycles from Resonant Amplification of Demographic Stochasticity*
   A. J. McKane and T. J. Newman, Physical Review Letters **94,** 218102 (2005).

10. *Single Enzyme Pathways and Substrate Fluctuations*
    M. Stefanini, A. J. McKane, and T. J. Newman, Nonlinearity **18**, 1575:1595 (2005).

11. *Many-body Theory of Chemotactic Cell-Cell Interactions*
T. J. Newman and R. Grima, Physical Review E **70**, 051916 (2004).

12. *Stochastic Models of Population Dynamics and their Deterministic Analogs*
A. J. McKane and T. J. Newman, Physical Review E **70**, 041902 (2004).

13. *Accurate Discretization of Advection-Diffusion Equations*
R. Grima and T. J. Newman, Physical Review E **70,** 036703 (2004).

14. *Population Dynamics with Global Regulation: the Conserved Fisher Equation*
T. J. Newman, E. B. Kolomeisky, and J. Antonovics, Physical Review Letters **92**, 228103 (2004).

15. *Extinction Times and Moment Closure in the Stochastic Logistic Process*
T. J. Newman, J.-B. Ferdy, and C. Quince, Theoretical Population Biology **65**, 115:126 (2004).

16. *Population Dynamics with a Refuge: Fractal Basins and the Suppression of Chaos*
T. J. Newman, J. Antonovics, and H. M. Wilbur, Theoretical Population Biology **62**, 121:128 (2002).

17. *Negative Frequency Dependence and the Importance of Spatial Scale*
J. Molofsky, J. Bever, J. Antonovics, and T. J. Newman, Ecology **83**, 21-27 (2002).

18. *Reply to "Comment on `Low-dimensional Bose Liquids: Beyond the Gross-Pitaevskii Approximation'"*
E. B. Kolomeisky, T. J. Newman, J. P. Straley, and X. Qi, Physical Review Letters **86**, 4709 (2001).

19. *Sign-Time Distribution for a Random Walker with a Drifting Boundary*
T. J. Newman, Journal of Physics A **34**, L89:94 (2001).

20. *Critical Dimensions of the Diffusion Equation*
T. J. Newman and W. Loinaz, Physical Review Letters **86**, 2712:2715 (2001).

21. *Low-dimensional Bose Liquids: Beyond the Gross-Pitaevskii Approximation*
E. B. Kolomeisky, T. J. Newman, J. P. Straley, and X. Qi, Physical Review Letters **85**, 1146:1149 (2000).

22. *Quantum Revivals and Carpets in some Exactly Solvable Systems*
W. Loinaz and T. J. Newman, Journal of Physics A **32**, 8889:8895 (1999).

23. *Sign-Time Distributions for Interface Growth*
Z. Toroczkai, T. J. Newman, and S. Das Sarma, Physical Review E **60**, R1115:R1118 (1999).

24. *Binary Data Corruption due to a Brownian Agent II*
W. Triampo and T. J. Newman, Physical Review E **60**, 1450:1463 (1999).

25. *Binary Data Corruption due to a Brownian Agent*
T. J. Newman and W. Triampo, Physical Review E **59**, 5172:5186 (1999).

26. *Continuum Theory of Vacancy-Mediated Diffusion*
    T. J. Newman, Physical Review B **59**, 13754:13763 (1999).

27. *Reply to "Comment on `Non-universal Exponents in Interface Growth'"*
    T. J. Newman and M. R. Swift, Physical Review Letters **81**, 5472:5472 (1998).

28. *Three Manifestations of the Pulsed Harmonic Potential*
    T. J. Newman and R. K. P. Zia, Journal of Physics A **31**, 9621:9640 (1998).

29. *Diffusive Persistence and the Sign-Time Distribution*
    T. J. Newman and Z. Toroczkai, Physical Review E **58**, R2685:R2688 (1998).

30. *Mixed Phases in U(N) Superconductivity*
    M. A. Moore, T. J. Newman, A. J. Bray, and S.-K. Chin, Physical Review B **58**, 936:943 (1998).

31. *Non-universal Exponents in Interface Growth*
    T. J. Newman and M. R. Swift, Physical Review Letters **79**, 2261:2264 (1997).

32. *Dynamical Scaling in Dissipative Burgers Turbulence*
    T. J. Newman, Physical Review E **55**, 6989:6999 (1997).

33. *Directed Lines in Sparse Potentials*
    T. J. Newman and A. J. McKane, Physical Review E **55**, 165:175 (1997).

34. *Strong Coupling Behaviour in Discrete Kardar-Parisi-Zhang Equations*
    T. J. Newman and A. J. Bray, Journal of Physics A **29**, 7917:7928 (1996).

35. *Vortex Liquid - Vortex Crystal Transition in Type-II Superconductors*
    T. J. Newman and M. A. Moore, Physical Review B **54**, 6661:6675 (1996).

36. *Strong Coupling Probe for the Kardar-Parisi-Zhang Equation*
    T. J. Newman and H. Kallabis, Journal de Physique I **6**, 373:383 (1996).

37. *Absence of Non-trivial Asymptotic Scaling in the Kashchiev Model of Interface Growth*
    T. J. Newman and A. Volmer, Journal of Physics A **29**, 2285:2289 (1996)

38. *Critical Fluctuations and Disorder at the Vortex Liquid to Crystal Transition in Type-II Superconductors*
    M. A. Moore and T. J. Newman, Physical Review Letters **75**, 533:536 (1995).

39. *Exact Results for a Model of Interface Growth*
    T. J. Newman, Physical Review E **51**, 4212:4221 (1995).

40. *Continuously Varying Exponents in Reaction-Diffusion Systems*
    T. J. Newman, Journal of Physics A **28**, L183:L190 (1995).

41. *Exactly Solvable Model of Interface Growth*
    T. J. Newman, Physical Review E **49**, R2525:R2527 (1994).

42. *Exact Solutions for Stochastic Adsorption-Desorption Models and Catalytic Surface Processes*
M. D. Grynberg, T. J. Newman, and R. B. Stinchcombe, Physical Review E **50**, 957:971 (1994).

43. *Non-Equilibrium Dynamics of Finite Interfaces*
D. B. Abraham, T. J. Newman, and G. M. Schutz, Physical Review Letters **72**, 3266:3269 (1994).

44. *Burgers Turbulence and Interface Growth: The Problem of Random Initial Conditions*
S. E. Esipov and T. J. Newman, Physical Review E **48**, 1046:1050 (1993).

45. *New Formulation of Restricted Growth Processes*
S. E. Esipov and T. J. Newman, Journal of Statistical Physics **70**, 691:702 (1993).

46. *Fluctuations in Fragmentation Processes*
S. E. Esipov, L. P. Gorkov, and T. J. Newman, Journal of Physics A **26**, 787:806 (1993).

47. *Kinetics of Ordering for Correlated Initial Conditions*
A.J. Bray, K. Humayun, and T. J. Newman, Physical Review B **43**, 3699:3702 (1991).

48. *Growth of Order in Vector Spin Systems and Self-Organised Criticality*
T. J. Newman, A. J. Bray, and M. A. Moore, Physical Review B **42**, 4514:4523 (1990).

49. *Dynamic Correlations in Domain Growth: A 1/n Expansion*
T. J. Newman and A. J. Bray, Journal of Physics A **23**, 4491:4507 (1990).

50. *New Exponent for Dynamic Correlations in Domain Growth*
T. J. Newman and A. J. Bray, Journal of Physics A **23**, L279:L284 (1990).

51. *Inertial Effects on the Escape Rate of a Particle Driven by Coloured Noise: An Instanton Approach*
T. J. Newman, A. J. Bray, and A. J. McKane, Journal of Statistical Physics **59**, 357:369 (1990)

52. *Path Integrals and Non-Markov Processes II: Escape Rates and Stationary Distributions in the Weak-Noise Limit*
A.J. Bray, A. J. McKane, and T. J. Newman, Physical Review A **41**, 657:667 (1990)

Conference proceedings/reviews/book chapters

Modeling Multicellular Structures Using the Subcellular Element Model
T. J. Newman, in *Single Cell Based Models in Biology and Medicine*, eds. A. Anderson, M. Chaplain, and K. Rejniak (Birkhaüser, 2007).

Spatially Explicit Studies on the Ecology and Genetics of Population Margins
J. Antonovics, T. J. Newman, and B. J. Best, in *Integrating Ecological and Evolutionary Processes in a Spatial Context*, eds. J. Silvertown and J. Antonovics (Blackwell Science, Oxford, 2001).

Numerical Surprises in the Kardar-Parisi-Zhang Equation
T. J. Newman, in *Computer Simulation Studies in Condensed Matter Physics XI*, eds. D. P. Landau and H.-B. Schuettler (Springer-Verlag, Berlin, 1998).

Burgers' Turbulence and Dynamical Scaling
S. E. Esipov and T. J. Newman, in *Stochastic Dynamics*, eds. L. Schiemanskii-Geier and T. Poeschel (Springer-Verlag, Berlin, 1997).

Books

Multi-scale Modeling of Developmental Systems
Current Topics in Developmental Biology, **81** (2008).
Editors: S. Schnell, P. Maini, S. A. Newman, and T. J. Newman

Books in preparation

Modeling Fluctuations in Biological Systems
Contracted by Imperial College Press (London, UK)
Author: T. J. Newman, Scheduled for publication in 2010

PRESENTATIONS

Conference Presentations (since 2003)

Cell Rheology and Embryogenesis Using the Subcellular Element Model
Pittsburgh, American Physical Society March Meeting, invited talk, Mar 09

Looking Ahead: Connecting Scales in Models of Embryogenesis
Focused Research Group Meeting: Multiscale Methods in Biology
Mathematical Biosciences Institute, Ohio State University, invited talk, Nov 08

Using Many-Body Theory to Describe Statistical Correlations in Self-Organizing Populations
Workshop: Pattern Formation and Development in Colonial Organisms
Mathematical Biosciences Institute, Ohio State University, invited talk, Oct 08

Modeling Multicellularity: from Cell Rheology to Gastrulation
Montreal, 2008 SIAM Conference on Life Sciences, invited talk, Aug 08

Master Equations and the Many-Body Theory: Methods to Coarse-Grain from Individual to Population Level Descriptions of Biological Phenomena
Edinburgh, Annual Meeting, European Society for Mathematical and Theoretical Biology, invited talk, July 08

The Subcellular Element Model: a Grid-Free Approach to Modeling Multicellular Systems
Edinburgh, Annual Meeting, European Society for Mathematical and Theoretical Biology, invited talk, July 08

Strong Fluctuations and Cycling in Biology Systems
New Orleans, American Physical Society March Meeting, invited talk, Mar 08

Mechanisms Underlying Primitive Streak Formation in the Chick Embryo
Workshop: Physics and Biology of Morphogenesis
Kavli Institute of Theoretical Physics, UCSB, invited talk, Mar 08

Strong Fluctuations in Extinction and Population Cycles
Workshop: Large Deviations: Theory and Applications of Large Deviation Statistics
University of Michigan, invited talk, June 07

Grid-free Models of Multicellular Systems, and Applications to Primitive Streak Formation in the Chick Embryo
Workshop: Quantitative Approaches to Early Development
Arizona State University, invited talk, May 07

Modeling Multicellular Structures Using the Subcellular Element Model
Biocomplexity 9: Multiscale Modeling of Multicellular Systems
U. Indiana, invited talk, May 06

Modeling Multicellular Interactions with the Subcellular Element Model
Workshop: Computational Approaches to Cell Motility
U. Minnesota, invited talk, Apr 06

Modeling Multicellular Systems Using Many-Body Theory
Notre Dame, IN, 2005 Biocomplexity Conference, invited talk, Oct 05

Application of Individual-Based Models of Cell Movement to Primitive Streak Formation in the Chick Embryo
Snowbird, Utah, SIAM Dynamical Systems Meeting, invited talk, May 05

Using Many-Body Theory to Understand Chemotactic Movement in Cellular Systems, with Application to the Chick Embryo
Los Angeles, American Physical Society March Meeting, invited talk, Mar 05

A New Simple Mechanism for Cycles in Predator-Prey and Host-Pathogen Systems
FIBR meeting: "*Silene* and *Microbotryum*: Genome Dynamics and the Evolution of Sexual Systems," Mountain Lake Biological Station, Virginia, invited talk, Aug 04

Microbiology in the Context of Macrobiology
NSF Workshop on "The Role of Theory in Biological Physics and Materials,"
Tempe, contributed talk, May 04

Towards a Continuum Theory of Movement in Interacting Cellular Systems
APS Four Corners Meeting, Tempe, Arizona, invited talk, Oct 03

Stochastic Effects in Chemotaxis: Beyond the Keller-Segel Equations
Snowbird, Utah, SIAM Dynamical Systems Meeting, invited talk, May 03

Novel Dynamics of the Conserved Fisher Equation
Austin, Texas, APS March Meeting: contributed talk, Mar 03

Invited Departmental Seminars (since 2003)

Modeling Discreteness and Stochasticity in Biology: with Applications to Embryo Development and Population Dynamics
Northern Arizona University, Physics Colloquium, Nov 09
University of Oregon, Physics Colloquium, Nov 09
Arizona State University Polytechnic Campus, Applied Science Colloquium, Oct 09

Computational Models of Multicellular Systems: from Cell Rheology to Gastrulation
University College London, Cell and Developmental Biology Seminar, July 09

Modeling Discreteness and Fluctuations in Biological Systems: Noise-Induced Cycles in Biochemical Networks and Large-Scale Cell Flows in Embryo Development
St Andrews University, Physics Seminar, June 09

Using Theoretical Physics to Understand Embryonic Development
University College London, Physics Seminar, June 09

'Twixt Intuition and Reality: Modeling Discreteness and Stochasticity in Cells, Embryos, and Populations
Arizona State University, School of Life Sciences Colloquium, Apr 09

Fluctuation-Induced Cycles in Biological Systems
University of Illinois at Urbana-Champaign, Biophysics Seminar, Nov 08

Using Theoretical Physics to Understand Embryonic Development
Arizona State University, Department of Physics Colloquium, Oct 08

Computer Modeling of Multicellular Systems: from Cell Rheology to Gastrulation
University of Manchester, Theoretical Physics Seminar, June 08

Statistics of Polygonal Cells in Proliferating Epithelia
University of Minnesota, Mathematical Biology Seminar, June 08

Mechanisms Underlying Primitive Streak Formation in the Chick Embryo: a Computational Approach
Kansas University Medical Center, Developmental Biology Seminar, May 08

Fluctuation-Induced Cycles and Spatio-Temporal Feedback in Biological Systems
Princeton University, Biophysics Seminar, Apr 08

Stochastic Dynamics in Biological Systems: Applications to Embryogenesis and Biochemical Networks
Rensselaer Polytechnic Institute, Physics Colloquium, Mar 08

Modeling Multicellularity: from Cell Rheology to Gastrulation
Ohio State University Mathematical Biosciences Institute, Seminar, Jan 08

Strong Fluctuations and Cycling in Biological Systems
UC San Diego, Center for Theoretical Biological Physics, Nov 07
University of Minnesota, IMA Seminar, Nov 07

Discrete, Mesoscale, Stochastic Dynamics in Biological Systems
University of Minnesota, Department of Physics Colloquium, Nov 07
University of Dundee, Biocentre, Sept 07

Grid-free Models of Multicellular Systems: from Cell Rheology to Gastrulation
Stowers Institute (Kansas City, MO), Oct 07
University of Notre Dame, Physics Department Seminar, Oct 07
University of Minnesota, IMA Seminar, Oct 07
John Innes Centre (Norwich, UK), Sept 07
University of Aberdeen, Institute of Medical Sciences, July 07
University of Dundee, Biocentre, July 07

Modeling Multicellularity
Arizona State University, Biological Physics Seminar, Sep 06

Modeling Multicellular Systems Using Many-Body Theory
University of Missouri at Columbia, Condensed Matter Physics Seminar, Feb 06

Biological Fluctuations at Small and Large Scales
Indiana University, Biological Physics Seminar, Oct 05

Modeling Multicellular Systems Using Many-Body Theory
UCLA, Biomathematics Seminar, Oct 05

Using Tools from Theoretical Physics to Model Embryonic Systems
Amherst College, MA, Physics Colloquium, Oct 05
Mount Holyoke College, MA, Physics Colloquium, Oct 05
Smith College, MA, Physics Colloquium, Oct 05
Arizona State University, SPS Seminar, Sep 05

Modeling Multicellular Systems Using Many-Body Theory
SISSA, Trieste, Italy, Biophysics Seminar, June 05

Stochastic Effects in Extinction Time Estimation and Predator-Prey Cycles
Cambridge University, UK, Theoretical Biology Seminar, Nov 04

Using Many-body Theory to Explore Interacting Cellular Systems
Oxford University, UK, Theoretical Physics Seminar, Nov 04
Imperial College (London), UK, Applied Mathematics Seminar, Oct 04
Virginia Polytechnic Institute, Statistical Physics Seminar, Aug 04

A Stochastic Model of Interacting Cellular Systems
University of Dundee, UK, Developmental Biology Seminar, Nov 03

Michaelis-Menten Dynamics and Maxwell's Demon
Arizona State University, Soft Condensed Matter Seminar, Oct 03

Movement and Stochasticity in Biological Systems: Insights from Theoretical Physics
Arizona State University, Joint Physics/Biology Colloquium, Apr 03

Uncertainty in Extinction Times for Small Isolated Populations
Arizona State University, Mathematical Biology Seminar, Feb 03

SERVICE

Professional Service

Fellow of the Institute of Physics
Member of the American Physical Society
Member of the Biophysical Society

Member at Large, Executive Committee of the Division for Biological Physics, American Physical Society (2008–2011)

Editorial board of Reports on Progress in Physics (2002–2005)
Editorial board of Physical Biology (2008–present)

Referee for Nature, Proceedings of the National Academy of Sciences

Referee for physical science journals: Europhysics Letters, European Physical Journal B, Journal of Physics A, Journal of Statistical Physics, Nonlinearity, Physical Biology, Physics of Fluids, Physics Letters A, Physical Review B, Physical Review E, Physical Review Letters, Reports on Progress in Physics, Soft Matter (Royal Society of Chemistry).

Referee for life science journals: American Naturalist, Biophysical Journal, Bulletin for Mathematical Biology, European Biophysics Journal, Interface (Proceedings of the Royal Society), Journal of Theoretical Biology, Mathematical Biosciences and Engineering, Mathematical Modeling of Natural Phenomena, PLOS Computational Biology.

Referee for funding agencies: National Science Foundation, Divisions of Environmental Biology (2001–present), Applied Mathematics (2003–present), Integrative Organismal Systems (2005–present), Biological Physics (2007–present), Molecular and Cell Biology (2009); National Institutes of Health, NIGMS (2003), Israeli Science Foundation (2008).

Panelist for National Science Foundation:
- Emerging Modeling and Technologies (2006).
- Ecology of Infectious Disease (2007).
- Physics of Living Systems (2007, 2008).

Panelist for National Institutes of Health:
- National Centers for Systems Biology (2008).
- Modeling and Analysis of Biological Systems (2009).

Book reviewer for Institute of Physics Publishers, UK (2004).

Organizer of "*Dictyostelium* 2002" workshop, University of Virginia, February 2002.

Co-organizer of "Distributions, Diversity, and Evolutionary Dynamics" conference, University of Virginia, June 2002.

Organizer of "Advances in the Biological Physics of Morphogenesis" mini-symposium, American Physical Society, March Meeting, Los Angeles, 2005.

Co-organizer of "Biocomplexity 9: Multiscale Modeling of Multicellular Systems" workshop, Indiana University, May 2006.

Co-organizer of "Quantitative Methods in Early Development" workshop, Arizona State University, May 2007.

University Service
Director, ASU Center for Biological Physics (2008–present)
Member of the ASU Graduate Council (2006, 2008–present)
Member of Executive Committee for the Graduate Program in Biological Design (2007–present).
Member of Search Committee for Director of High Performance Computing Center (spring 2009)
Creator of the annual AZ Biophest meetings (held each May since 2003).

College Service
Member of Steering Committee, Computational Biosciences Program (2002–2003).
Member of Executive Committee, Theoretical Biology Program (2004–present).

Department Service
Director of Graduate Studies, 2006–2007
Instigated and managed major revisions of graduate curriculum and examinations
Director of Graduate Recruitment, 2005–2007
Recruited two incoming classes of ~25 national/international graduate students
Chair of Personnel Committee (fall 2008 – fall 2009)
Co-Chair of Biological Physics Search Committee (fall 2007 – spring 2008)
Member of Department Committees:
Graduate Program (fall 2002 – spring 2004, fall 2006 – spring 2007)
Graduate Recruitment (fall 2002 – spring 2004, fall 2005 – spring 2007)
Personnel (fall 2003 – spring 2005)
Colloquium (fall 2002 – spring 2004)
Astrobiology Search (spring 2003)
Biophysics/Biochemistry Search (fall 2003 – spring 2006)
Physics Chair Search (fall 2005 – spring 2006)
Creator and Organizer of the Physics Research Seminar series (spring 2003 – 2006).

Community Service
ASU Faculty Ambassador, fall 2004 – present.
Physics/biology curriculum adviser for Notre Dame Preparatory (Scottsdale), fall 2004.
Occasional science class teacher at the Desert Palm Preschool (Tempe), 2004–2006.
Science Fair judge for Broadmor Elementary School (Tempe), 2007.
Occasional science class teacher at Waggoner Elementary School (Tempe), 2009