Curriculum Vitae

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BIRTHDATE: September 9, 1965
CITIZENSHIP: US
LANGUAGES: English, Hebrew, French

EMPLOYMENT HISTORY:

— Staff Member, Los Alamos National Laboratory, 1998-present.

— Postdoctoral Research Associate, Los Alamos National Laboratory, 1996-1998.

— Postdoctoral Research Associate, University of Chicago, 1994-1996.

EDUCATION:

— **Ph.D.**, 1994, Boston University, in Physics.

— **B.Sc.**, *summa cum laude*, 1990, Hebrew University, Israel, in Physics and Mathematics.

RESEARCH:

— Statistical Physics.

— Nonlinear Dynamics.

— Random Processes.

PRIZES AND AWARDS:

— Alon Young Investigator Fellowship, Israel, 2003.

— Director's postdoctoral Fellowship, Los Alamos National Laboratory, 1996.

— Goldhaber Prize, Boston University, 1992.

— Rector Prize, Hebrew University, 1989, 1990.

— Israeli Parliament Prize, 1989, 1990.

— Freshman Award, Hebrew University, 1988 .

POSTDOCS/GRADUATE STUDENTS MENTORED:

— Matthew Hastings, Los Alamos National Laboratory, 2001-2002. Granular Chains [47].

— Zahir Daya, Los Alamos National Laboratory, 2000-2003. Granular Chains [42,47,56].

— Xiabo Nie, Johns Hopkins University, 1999-2002. Granular Materials [39, 51].

— Istvan Daruka, Notre Dame University, 1997. Surface growth [30].

— Elizabeth Grossman, University of Chicago, 1995-1996. Granular hydrodynamics [25].

— Tong Zhuo, University of Chicago, 1995-1996. Granular hydrodynamics [25].

CONFERENCES ORGANIZED:

— Statistical Physics of Macromolecules, May 12-17, 2004. Santa Fe, NM.

— Networks: Structure, Function, and Dynamics, June 12-16, 2003. Santa Fe, NM.

— Granular Flow and Kinetics, January 19-21, 2003. Argonne, IL.

— Principles of Soft Matter, May 21-25, 2001. Santa Fe, NM.

— Sciences Impacting our Future, June 5-8, 2000. Los Alamos, NM.

— Complex Interactions in Granular Materials, April 7-8, 2000. Argonne, IL.

— Granular Materials, June 20-22, 1998. Albuquerque, NM.

— Nonequilibrium Dynamics, April 20-22, 1998. Los Alamos, NM.

— Arizona Days, January 24-25, 1997. University of Arizona, Tucson, AZ.

PROFESSIONAL ORGANIZATIONS MEMBERSHIPS:

— American Physical Society, member.

— Institute of Physics, fellow.

BOARD MEMBERSHIPS:

— National Science Foundation, review panel.

— National Aeoronatics and Space Administration, review panel.

EDITORIAL SERVICE:

— Physical Review E, Editorial Board, 2004-.

— Journal of Physics A, Advisory Board, 2002-.

— Lecture Notes in Physics, Guest Editor.

REFEREEING:

— *Physical Review A,B,E,L*

— *Journal of Physics A*

— *Physica A,D*

— *European Physics Journal B*

— *Reviews of Modern Physics*

— *Europhysics Letters*

— *Physics Letters A*

— *Journal of Chemical Physics*

— *Journal of Statistical Physics*

— *Lecture Notes in Physics*

— *Journal of Computational Physics*

— *Proceedings of the Royal Society*

— *SIAM Journal of Applied Mathematics*

— *Granular Matter*

— *Journal of the Franklin Institute*

— *New Journal of Physics*

— *National Science Foundation*

— *Research Corporation*

INVITED TALKS AT CONFERENCES

— Transport phenomena and pattern formation, Paraiba Brazil, 2005.

— Granular Gases and Granular Glasses, Lyon, France 2005.

— APS March Meeting, Los Angeles CA, 2005.

— SIAM Materials, Los Angeles, CA 2004.

— Dynamics Days, Chapel Hill, NC, 2004.

— Nonequilibrium Statistical Physics, Dresden, Germany, 2003.

— European Union summer school and conference Pattern formation in Granular materials and Soft Matter, Benasque, Spain, 2003.

— Particulate Flow and Control, Cleveland, OH 2003.

— Granular Hydrodynamics and Related Topics, Albuquerque, NM 2003.

— Arizona Days, University of Arizona, Tucson AZ, 2003.

— 88th Statistical Mechanics Conference, Rutgers University, Piscataway NJ, 2002.

— Granular Gases, CECAM, Lyon, France, 2002.

— Formation of Structures in Granular Matter, Leiden University, Netherlands, 2002.

— Granular Flow and Kinetics, Argonne National Lab, Argonne IL, 2002.

— APS March meeting, Indianapolis IN, 2002.

— Soft Matter as Nonlinear Science, Irvine CA, 2001.

— Granular Matter, Argonne National Laboratory, Argonne IL, 2000.

— 82nd Statistical Mechanics Conference, Rutgers University, Piscataway NJ, 1999.

— Dynamics of Nonequilibrium Systems, Porto, Portugal, 1999.

— Arizona Days, Tucson AZ, 1999.

— Granular Matter, Argonne National Laboratory, Argonne IL, 1998.

— APS March Meeting, Los Angeles CA, 1998.

— Collective Phenomena in Physics, University of the West Indies, Barbados, 1998.

— Arizona Days, Tucson AZ, 1997.

INVITED SEMINARS AND COLLOQUIUA

— University of Arizona, Tucson AZ 2004.

— University of South Carolina, Columbia SC 2004.

— University of New Mexico, Albuquerque NM, 2002.

— Florida State University, Talahassee FL, 2002.
— Emory University, Atlanta Ga, 2001.
— University of Maryland, College Park MD, 2001.
— Tel Aviv University, Tel Aviv Israel, 2001.
— Yale University, New Haven CT, 2000.
— Boston University, Boston MA, 2000.
— Duke University, Durham NC, 2000.
— Johns Hopkins University, Baltimore MD, 2000.
— University of Toronto, Toronto OT, 2000.
— Princeton University, Princeton NJ, 1999.
— University of Virginia, Charlottesville VA, 1999.
— Duke University, Durham NC, 1999.
— Denver University, Denver CO 1999.
— Colorado State University, Fort Collins CO, 1999.
— CEA, Saclay, France, 1999.
— University of Colorado, Boulder CO, 1998.
— University of New Mexico, Albuquerque NM, 1998.
— University of Akron, Akron OH, 1998.
— Virginia Polytechnic University, Blacksburg VA, 1998.
— University of Missouri-Rolla, Rolla MO, 1998.
— Tel Aviv University, Tel Aviv Israel, 1997.
— University of Western Ontario, London OT, 1997.
— Central Michigan University, Mt. Pleasant MI, 1997.
— Penn State University, University Park PA, 1997.
— Lehigh University, Bethlehem PA, 1997.
— University of Arizona, Tucson AZ, 1997.
— Notre Dame University, Notre Dame IN, 1996.
— Center for Nonlinear Studies, Los Alamos NM, 1996.
— Boston University, Boston MA, 1995.
— The Technion, Israel, 1996.
— University of Chicago, Chicago IL, 1994.

PUBLICATIONS:

76. Percolation with Multiple Giant Clusters
J. Phys. A, **38**, L417 (2005).
E. Ben-Naim and P. L. Krapivsky.

75. Kinetic Theory of Random Graphs
AIP Proceedings "Complex Networks 04", in press (2005).
E. Ben-Naim and P. L. Krapivsky.

73. Opinion Dynamics: Rise and Fall of Political Parties
Europhys. Lett. **69**, 671 (2005).
E. Ben-Naim.

72. Stationary States and Energy Cascades in Inelastic Gases
Phys. Rev. Lett. **94**, 138001 (2005).
E. Ben-Naim and J. Machta.

70. Kinetic Theory of Random Graphs: from Paths to Cycles
Phys. Rev. E **71**, 026129 (2005).
E. Ben-Naim and P. L. Krapivsky.

71. Winning Quick and Dirty: the Greedy Random Walk
J. Phys. A **37**, 11321 (2004).
E. Ben-Naim and S. Redner.

69. Unicyclic Components in Random Graphs,
J. Phys. A **37**, L189 (2004),
E. Ben-Naim and P. L. Krapivsky.

68. Random Geometric Series,
J. Phys. A **37**, 5949 (2004),
E. Ben-Naim and P. L. Krapivsky.

67. Size of Outbreaks Near the Epidemic Threshold,
Phys. Rev. E **69**, 050901R (2004),
E. Ben-Naim and P. L. Krapivsky.

66. Finite size Fluctuations in Interacting Particle Systems,
Phys. Rev. E **69**, 046113 (2004),
E. Ben-Naim and P. L. Krapivsky.

65. Extremal Properties of Random Structures,
Lecture Notes in Physics **650**, 211 (2004),
E. Ben-Naim, P. L. Krapivsky, and S. Redner,

64. Stable Distributions in Stochastic Fragmentation,
J. Phys. A **37**, 2863-2880 (2004),
P. L. Krapivsky, E. Ben-Naim, and I. Grosse.

63. Leadership Statistics in Random Structures,
Europhys. Lett. **65**, 151-157 (2004),
E. Ben-Naim and P. L. Krapivsky.

62. Self-Similarity in Random Collision Processes,
Phys. Rev. E **68**, R050103-R050106 (2003),
D. ben-Avraham, E. Ben-Naim, K. Lindenberg, A. Rosas.

61. Unity and Discord in Opinion Dynamics,
Physica A **330**, 99-106 (2003),
E. Ben-Naim, P. L. Krapivsky, F. Vasquez, and S. Redner,

60. Exchange Driven Growth,
Phys. Rev. E **68**, 031104-031112 (2003),
E. Ben-Naim and P. L. Krapivsky.

59. Shattering Transitions in Collision-Induced Fragmentation,
Phys. Rev. E **68**, 021102-021108 (2003),
P. L. Krapivsky and E. Ben-Naim.

58. Bifurcations and Patterns in Compromise Processes,
Physica D **183**, 190-204 (2003),
E. Ben-Naim, P. L. Krapivsky, and S. Redner.

57. The Inelastic Maxwell Model,
Lecture Notes in Physics **624**, 65-94 (2003).
E. Ben-Naim and P. L. Krapivsky.

56. Spontanuous Spirals in Vibrated Granular Chains,
MRS Symposium Proceedings **759**, 129-134 (2003),
R. E. Ecke, Z. A. Daya, M. K. Rivera, and E. Ben-Naim.

55. Kinetic Thoery of Traffic Flows,
Traffic and Granular Flow '01 155-168 (Springer, Berlin, 2003),
E. Ben-Naim and P. L. Krapivsky.

54. Growth and Structure of Stochastic Sequences,
J. Phys. A **35**, L557-L563 (2002),
E. Ben-Naim and P. L. Krapivsky.

53. Dynamics of Freely Cooling Granular Gases,
Phys. Rev. Lett., **89**, 204301-204304 (2002),
X. Nie, E. Ben-Naim, and S. Y. Chen.

52. Impurity in a Maxwellian Unforced Granular Fluid,
Eur. Phys. J. E **8**, 507-515 (2002),
E. Ben-Naim and P. L. Krapivsky.

51. Scaling, Multiscaling, and Nontrivial Exponents in Inelastic Collision Processes.
Phys. Rev. E **66**, 011309-011318 (2002),
E. Ben-Naim and P. L. Krapivsky.

50. Nontrivial Velocity Distributions in Inelastic gases,
J. Phys. A **35**, L147-L153 (2002),
P. L. Krapivsky and E. Ben-Naim.

49. Entropic Tightening of Vibrated Chains,
Phys. Rev. E, **66**, R025102-R025105 (2002),
M. B. Hastings, Z. A. Daya, E. Ben-Naim, and R. E. Ecke.

48. Parity and Ruin in a Stochastic Game,
Eur. Phys. Jour. B **25**, 239-243 (2002),
E. Ben-Naim and P. L. Krapivsky.

47. Extremal Properties of Random Trees,
Phys. Rev. E, **64**, R35101-R35103 (2001),
E. Ben-Naim, P. L. Krapivsky, and S. N. Majumdar.

46. Knots and Random Walks in Vibrated Granular Chains,
Phys. Rev. Lett. **86**, 1414-1417 (2001),
E. Ben-Naim, Z. A. Daya, P. Vorobieff, and R. E. Ecke.

45. Fragmentation with a Steady Source,
Phys. Lett. A **275**, 48-53 (2000),
E. Ben-Naim and P. L. Krapivsky.

44. Stochastic Aggregation: Scaling Properties,
J. Phys. A **33**, 5477-5487 (2000),
E. Ben-Naim and P. L. Krapivsky.

43. Stochastic Aggregation: Rate Equations Approach,
J. Phys. A **33**, 5465-5475 (2000),
P. L. Krapivsky and E. Ben-Naim.

42. Dynamics of vibrated Granular Monolayers,
Europhys. Lett. **51**, 679-685 (2000),
X. Nie, E. Ben-Naim, and S. Y. Chen.

41. Scale Invariance and Lack of Self-Averaging in Fragmentation,
Phys. Rev. E **61**, R993-R996 (2000),
P. L. Krapivsky, I. Grosse, and E. Ben-Naim.

40. Multiscaling in Inelastic Collisions,
Phys. Rev. E **61**, R5-R8 (2000),
E. Ben-Naim and P. L. Krapivsky.

39. Shock-Like Dynamics of Inelastic Gases,
Phys. Rev. Lett., **83**, 4069-4072 (1999),
E. Ben-Naim, S. Y. Chen, G. D. Doolen, and S. Redner.

38. Comment on "Dynamic Scaling in the Spatial Distribution of Persistent Sites",
cond-mat/9902073,
E. Ben-Naim and P. L. Krapivsky.

37. Genetic Correlations in Mutation Processes,
Phys. Rev. E, **59**, 7000-7009 (1999),
E. Ben-Naim and A. S. Lapedes.

36. Maxwell Model of traffic flows,
Phys. Rev. E, **59** 88-97 (1999),
E. Ben-Naim and P. L. Krapivsky.

35. Domain number distribution in the nonequilibrium Ising model,
J. Stat. Phys. **93**, 583-601 (1998),
E. Ben-Naim and P. L. Krapivsky.

34. Slow Relaxation in Granular Compaction,
Physica D **123**, 380-385 (1998),
E. Ben-Naim, J.B. Knight, E. R. Nowak, H. M. Jaeger, and S. R. Nagel.

33. Steady State Properties of Traffic Flows,
J. Phys. A, **31** 8073-8080 (1998),
E. Ben-Naim and P. L. Krapivsky.

32. Mean Field Theory for Polynuclear Surface Growth,
J. Phys. A **31** 5001-5012 (1998),
E. Ben-Naim, A. R. Bishop, I. Daruka, and P. L. Krapivsky.

31. Density Fluctuations in Vibrated Granular Materials,
Phys. Rev. E **57**, 1971-1982 (1998),
E. R. Nowak, J. B. Knight, E. Ben-Naim, H. M. Jaeger, and S. R. Nagel.

30. Stationary Velocity Distributions in Traffic Flows,
Phys. Rev. E **56**, 6680-6686 (1997),
E. Ben-Naim and P. L. Krapivsky.

29. Studies of Granular Compaction,
Powders & Grains '97 377-380 (1997),
E. R. Nowak, M. Povinelli, H. M. Jaeger, S. R. Nagel, J. B. Knight, and E. Ben-Naim.

28. Domain Statistics in Coarsening Systems,
Phys. Rev. E **56**, 3788-3798 (1997),
P. L. Krapivsky and E. Ben-Naim.

27. Multiscaling in Fragmentation,
Physica D **107**, 156-160 (1997),
E. Ben-Naim and P. L. Krapivsky.

26. Towards Granular Hydrodynamics in Two-Dimensions,
Phys. Rev. E **55**, 4200-4206 (1997),
E. L. Grossman, T. Zhou, and E. Ben-Naim.

25. Species Segregation in a Model of Interacting Populations,
Physica A **239**, 437-446 (1997),
L. Frachebourg, P. L. Krapivsky, and E. Ben-Naim.

24. Spatial Organization in Lotka-Volterra Systems,
Phys. Rev. E **54**, 6186-6200 (1996),
L. Frachebourg, P. L. Krapivsky, and E. Ben-Naim.

23. Two Scales in Asynchronous Ballistic Annihilation,
J. Phys. A **29**, L561-L568 (1996),
E. Ben-Naim, S. Redner, and P. L. Krapivsky.

22. Nucleation-and-Growth in One Dimension,
Phys. Rev. E **54**, 3562-3568 (1996),
E. Ben-Naim and P. L. Krapivsky.

21. Segregation in a One-Dimensional Model of Interacting Species,
Phys. Rev. Lett. **77**, 2125-2128 (1996),
L. Frachebourg, P. L. Krapivsky, and E. Ben-Naim.

20. Space Covering by Growing Rays,
J. Phys. A **29**, 2959-2968 (1996),
P. L. Krapivsky and E. Ben-Naim.

19. Comment on Kinematic Scaling and Crossover to Scale Invariance in Martensite Growth,
Phys. Rev. Lett. **76**, 3234 (1996),
E. Ben-Naim and P. L. Krapivsky.

18. Coarsening and Persistence in the Voter Model,
Phys. Rev. E **53**, 3078-3087 (1996),
E. Ben-Naim, L. Frachebourg, and P. L. Krapivsky.

17. Individual Entanglement in a Simulated Polymer Melt,
Phys. Rev. E **53**, 1816-1822 (1996),
E. Ben-Naim, G. S. Grest, T. A. Witten, and A. R. C. Baljon.

16. Reaction Kinetics of Cluster Impurities,
Phys. Rev. E **53**, 1566-1571 (1996),
E. Ben-Naim.

15. Aggregation with Multiple Conservation Laws,
Phys. Rev. E **53**, 291-298 (1996),
P. L. Krapivsky and E. Ben-Naim.

14. Kinetics of Aggregation-Annihilation Processes,
Phys. Rev. E **52**, 6066-6070 (1995),
E. Ben-Naim and P. L. Krapivsky.

13. Multiscaling in Stochastic Fractals,
Phys. Lett. A **196**, 168-172 (1994),
P. L. Krapivsky and E. Ben-Naim.

12. Scaling and Multiscaling in Models of Fragmentation,
Phys. Rev. E **50**, 3502-3507 (1994),
P. L. Krapivsky and E. Ben-Naim.

11. Kinetics of Heterogeneous Single-Species Annihilation,
Phys. Rev. E **50**, 2474-2481 (1994),
P. L. Krapivsky, E. Ben-Naim, and S. Redner.

10. Kinetics of Ballistically Controlled Reactions,
J. Phys. Chem. **98**, 7284-7288 (1994),
E. Ben-Naim, P. L. Krapivsky, F. Leyvraz, and S. Redner.

9. Cluster Approximation for the Contact Process,
J. Phys. A **27**, L481-L487 (1994),
E. Ben-Naim and P. L. Krapivsky.

8. Kinetics of Clustering in Traffic Flows,
Phys. Rev. E **50**, 822-829 (1994),
E. Ben-Naim, P. L. Krapivsky, and S. Redner.

7. On Irreversible Deposition on Disordered Substrates,
J. Phys. A **27**, 3575-3577 (1994),
E. Ben-Naim and P. L. Krapivsky.

6. Collective Properties of Adsorption-Desorption Processes,
J. Chem. Phys. **100**, 6778-6782 (1994),
P. L. Krapivsky and E. Ben-Naim.

5. Time-Series Expansion for Reaction Processes,
Phys. Rev. E **48**, 2603-2609 (1993),
E. Ben-Naim and J. Zhuo.

4. Decay Kinetics of Ballistic Annihilation,
   Phys. Rev. Lett. **70**, 1890-1893 (1993),
   E. Ben-Naim, S. Redner, and F. Leyvraz.

3. Partial Absorption and "Virtual" Traps,
   J. Stat. Phys. **71**, 75-88 (1993),
   E. Ben-Naim, S. Redner, and G. H. Weiss.

2. Inhomogeneous Two-Species Annihilation in the Steady State,
   J. Phys. A **25**, L575-L583 (1992),
   E. Ben-Naim and S. Redner.

1. Bimodal Diffusion in Power-Law Shear Flows,
   Phys. Rev. A **45**, 7207-7213 (1992),
   E. Ben-Naim, S. Redner, and D. ben-Avraham.

BOOKS EDITED:

1. Complex Networks,
   Lecture Notes in Physics, (Springer, Berlin, 2004)
   E. Ben-Naim, H. Frauenfelder, Z. Toroczkai, Editors.

CHAPTERS IN BOOKS:

4. Complex Networks,
   E. Ben-Naim, H. Frauenfelder, Z. Toroczkai, Editors (Springer, Berlin, 2004). [65]

3. The Physics of Granular Media,
   H. Hinrichsen and D. Wolf, Editors (Wiley-VCH, Weinham, 2004). [57]

2. Granular Gas Dynamics,
   T. Poeschel and N.Brilliantov, Editors (Springer, Berlin, 2003). [57]

1. Jamming and Rheology: Constrained Dynamics on Microscopic and Macroscopic Scales,
   A. J. Liu and S. R. Nagel, Editors (Taylor & Francis, London, 2001). [31]