PUBLICATIONS and PRESENTATIONS

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THESES

M.Sc.

Investigation of the Process of Synthesis of $YBa_2Cu_3O_{6+x}$ High-T_c Ceramics in the Presence of Silver (Moscow, 1991).

Ph.D.

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BOOKS

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2. Molecular Motor Dynamics, Modeling (*A.B.K.*) in "Encyclopedia of Applied and Computational Mathematics," Springer-Verlag, 2012.
3. Channel-Facilitated Molecular Transport Across Membranes (*A.B.K.*) in "Computational Modeling of Biological Systems: From Molecules to Pathways," Ed.: N. Dokholyan, Springer-Verlag, 2012.

INVITED REVIEW ARTICLES

1. Molecular Motors: A Theorist's Perspective (*A.B.K. and M.E. Fisher*), Annual Reviews of Physical Chemistry **58**, 675-695 (2007).

2. Through the Eye of the Needle: Recent Advances in Understanding Biopolymer Translocation (*D. Panja, G.T. Barkema and A.B.K.*), J. Phys.: Condens. Matter **25**, 413101 (2013).

3. Motor Proteins and Molecular Motors: How to Operate Machines at the Nanoscale (*A.B.K.*), J. Phys.: Condens. Matter **25**, 463101 (2013).

4. Collective Dynamics of Processive Cytoskeletal Motor Proteins (*R.T. McLaughlin, M.R. Diehl and A.B.K.*), Soft Matter **12**, 14-21 (2016).

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5. Exact Solutions for a Partially Asymmetric Exclusion Model with Two Species (*A.B.K.*), Physica A **245**, 523-533 (1997).

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130. Crowding in Protein Search for Targets on DNA (*A.A. Shvets and A.B.K.*), J. Phys. Chem. Lett. **7**, 2502-2506 (2016).

131. The Role of Static and Dynamic Obstacles in the Protein Search for Targets on DNA (*A.A. Shvets, M. Kochugaeva and A.B.K.*), J. Phys. Chem. B **120**, 5802-5809 (2016).

132. A Two-Step Method for smFRET Data Analysis (*J. Chen, J. R. Pyle, K. W. S. Piecco, A.B.K. and C.F. Landes*), J. Phys. Chem. B **120**, 7128-7132 (2016).

133. How Conformational Dynamics Influences the Protein Search for Targets on DNA (*M.P. Kochugaeva, A.A. Shvets and A.B.K.*), J. Phys. A: Math. Theor. **49**, 444004 (2016).

134. Theoretical Investigation of the Mechanisms of ERK2 Enzymatic Catalysis, (*M. M. Misiura and A.B.K.*), J. Phys. Chem. B **120**, 10508-10514 (2016).

135. Channel-Facilitated Molecular Transport: The Role of Strength and Spatial Distribution of Interactions, (*K. Uppulury and A.B.K.*), Chem. Phys. **481**, 34-41 (2016).

136. The Role of DNA Looping in the Search for Specific Targets on DNA by Multisite Proteins, (*A.A. Shvets and A.B.K.*), J. Phys. Chem. Lett **7**, 5022-5027 (2016).

137. Current-Generating 'Double Layer Shoe' with a Porous Sole, (*A.B.K. and A.A. Kornyshev*), J. Phys. Condens. Matter **28**, 464009 (2016).

138. Dependence of the Enzymatic Velocity on the Substrate Dissociation Rate (*A.M. Berezhkovskii, A. Szabo, T. Rotbart, M. Urbakh and A.B.K.*), J. Phys. Chem. B **121**, 3437-3442 (2017).

139. Current-Generating 'Double Layer Shoe' with a Porous Sole: Ion Transport Matters, (*A.A. Kornyshev, R. Twidale and A.B.K.*), J. Phys. Chem C **121**, 7584-7595 (2017).

140. On the Mechanism of Homology Search by RecA Protein Filaments, (*M.P. Kochugaeva, A.A. Shvets and A.B.K.*), Biophys. J. **112**, 859-867 (2017).

141. Elucidating Interplay of Speed and Accuracy in Biological Error Correction, (*K. Banerjee, A.B.K. and O. A. Igoshin*), Proc. Natl. Acad. Sci. USA **114**, 5183-5188 (2017).

142. Accuracy of Substrate Selection by Enzymes is Controlled by Kinetic Discrimination, (*K. Banerjee, A.B.K. and O. A. Igoshin*), J. Phys. Chem. Lett. **8**, 1552-1556 (2017).

143. How Viruses Enter Cells: A Story behind Bacteriophage T4 (*A.B.K.*), Biophys. J. **113**, 3-4 (2017).

144. The Effect of Side Motion in the Dynamics of Interacting Molecular Motors, (*T. Midha, A.K. Gupta and A.B.K.*), J. Stat. Mech., P073201 (2017).

145. Molecular Machines Open Cell Membranes, (*V. Garcia-Lopez, F. Chen, L.G. Nilewski, G. Duret, A. Alian, A.B.K., J.T. Robinson, G. Wang, R. Pal and J.M. Tour*), to appear in Nature (2017).

146. A Deterministic Model for One-Dimensional Excluded Flow with Local Interactions, (*M. Margaliot, Y. Zarai and A.B.K.*), to appear in PLOS ONE (2017).

147. Physical-Chemical Mechanisms of Pattern Formation during Gastrulation, (*B. Bozorgui, H. Teimouri and A.B.K.*), to appear in J. Chem. Phys. (2017).

148. Optimal Length of Conformational Transition Region in Protein Search for Targets on DNA, (*M.P. Kochugaeva, A.A. Berezhkovskii and A.B.K.*), submitted to J. Phys. Chem. Lett. (2017).

149. Mechanism of Genome Interrogation: How CRISPR RNA-guided Cas9 Proteins Locate Specific Targets on DNA, (*A.A. Shvets and A.B.K.*), submitted to Biophys. J. (2017).

150. NK Cell Lytic Granules at the Synapse Demonstrate Variable Motility Regulated by Diverse Cytoskeletal Function, (*P. Sinha, A.F. Carisey, D.S. Tsao, L.A. Gwalani, A.M. Meyer, T.E. Smith, M.K. Harper, J.T. Gunesch, C.M. Ireland, A.B.K., E.M. Mace, M.R. Diehl, and J.S. Orange*), submitted to J. Cell Science, (2017).

151. On the Mechanisms of Enhanced Diffusion of Unimolecular Submersible Nanomachines, (*V. Garcia-Lopez, J.M. Tour, A.B.K., G. Wang and R. Golestanian*), in preparation (2017).

INVITED TALKS

1. Domain-Wall Picture of Asymmetric Simple Exclusion Processes, Department of Chemistry, University of California, San Diego, January 1998.
2. Motor Proteins and the Forces They Exert, Department of Chemistry, Washington University, St. Louis, December, 1999.
3. Motor Proteins and the Forces They Exert, Department of Chemistry, University of Nevada, Reno, December, 1999.
4. Motor Proteins and the Forces They Exert, Department of Chemistry, Duke University, Durham, NC January, 2000.
5. Motor Proteins and the Forces They Exert, Department of Chemistry, Rice University,

Houston, January, 2000.

6. Motor Proteins and the Forces They Exert, Department of Chemistry, Virginia Polytechnic Institute and State University, Blacksburg, January, 2000.
7. Nanotechnology: What Can We Learn from Biology, The International Conference NANOSPACE 2001, Galveston, Texas, March, 2001.
8. Stochastic Models of Biological Transport, Department of Physics, Sam Houston State University, Huntsville, Texas, September, 2001.
9. Stochastic Models of Biological Transport, Department of Chemistry, University of Houston, October, 2001.
10. Stochastic Models of Biological Transport, Department of Biology, Moscow State University, Russia, December, 2001.
11. Polymer Translocation Through a Long Nanopore, Department of Chemistry, University of California at Berkeley, February, 2002.
12. Polymer Translocation Through a Long Nanopore, Department of Chemistry, University of California at Los Angeles, March, 2002.
13. Polymer Translocation Through a Long Nanopore, Department of Chemistry, University of Southern California, Los Angeles, March, 2002.
14. Stochastic Models of Biological Transport, Department of Chemistry, Moscow State University, Moscow, Russia, May, 2002.
15. Polymer Translocation Through a Long Nanopore, Institute for Physical Science and Technology, University of Maryland, College Park, August, 2002.
16. Lattice Models of Electrolytes, Department of Mathematics, Rice University, Houston, September, 2002.
17. Simple Stochastic Models Can Explain the Dynamics of Motor Proteins, Symposium COOPERATIVITY IN BIOPHYSICAL SYSTEMS, Institute für Festkörperforschung at the Forschungzentrum Jülich, Germany, October 2002.
18. Polymer Translocation Through a Long Nanopore, 19-th Southwestern Theoretical Chemistry Conference, University of Houston, November 2002.
19. Polymer Translocation Through a Long Nanopore, Department of Chemistry, Moscow State University, Moscow, Russia, December 2002.
20. Stochastic Models with Waiting-Time Distributions for Translocatory Motor Proteins 225th American Chemical Society National Meeting, New Orleans, March 2003.
21. Dynamics of Polymer Translocation Through a Long Nanopore, Department of Chemical Engineering, University of Houston, April 2003.
22. Effect of Detachments in Asymmetric Simple Exclusion Processes European Research Council Chemistry Committees Workshop on Computer Modeling of Chemical and Biological Systems, Porto, Portugal, May 2003.
23. Physical-Chemical Analysis of the Factors Influencing the Behavior of Flasks During the Heating in Jewelry Casting Process. Development of the Optimal model of Burnout Furnace. 2-nd International Jewelry Symposium JEWELRY MANUFACTURING: TECHNOLOGIES, MAIN PROBLEMS AND PROSPECTS, Saint Petersburg, Russia, July 2003.
24. Simple Models of the Growth of Microtubules, 15-th American Conference on Crystal Growth and Epitaxy, Keystone, Colorado, July 2003.
25. Dynamics of Polymer Translocation Through a Long Nanopore, Department of Chemistry University of Washington, Seattle, October 2003.
26. Lattice Models of Electrolytes, Department of Physics, University of Washington, Seattle, October 2003.

27 Phenomenological Theory of Protein Nucleation Phenomena, Institute for Physical Science and Technology, University of Maryland, College Park, November 2003.

28. Dynamics of Polymer Translocation Through a Long Nanopore, Department of Chemical Engineering, Princeton University, Princeton, December 2003.

29. Nucleation of Ordered Solid Phases of Proteins via Unstable and Metastable High-Density Sates: Phenomenological Approach, Spring 2004 Materials Research Society, San Francisco, April 2004.
30. Effect of Detachments in Asymmetric Simple Exclusion Processes, Fock School on Quantum and Computational Chemistry, Novgorod, Russia, April 2004.
31. Lattice Models of Electrolytes, Institute of Condensed Matter Physics, Ukrainian Academy of Science, Lviv, Ukraine, May 2004.
32. Understanding Mechanochemical Coupling in Kinesins Using First-Passage Times, Proteomics Workshop IV: Molecular Machines, Institute for Pure and Applied Mathematics, University of California Los Angeles, May 2004.
33. Physical-Chemical Analysis of the Factors Influencing the Behavior of Flasks During the Heating in Jewelry Casting Process: Development of the Optimal Model of Burnout Furnace, Santa Fe Symposium, Albuquerque, New Mexico, May 2004.
34. Simple Stochastic Models of Motor Protein Dynamics, SIAM Conference on Mathematical Aspects of Material Science, Los Angeles, May 2004.
35. Dynamics of Polymer Translocation Through a Nanopore: Theory Meets Experiments. International Conference on Biological Physics, Göteborg, Sweden, August 2004.
36. Dynamics of Polymer Translocation Through a Nanopore: Theory Meets Experiments, Department of Chemistry, Iowa State University, Ames, Iowa, September 2004.
37. Simple Models of Rigid Multifilament Biopolymer's Growth Dynamics, Department of Physics, Brandeis University, Waltham, Massachusetts, October 2004.
38. Can We Understand the Complex Dynamics of Motor Protein Using Simple Stochastic Models? BU-Harvard-MIT Theoretical Chemistry Lecture Series, Boston, October 2004.
39. Dynamics of Polymer Translocation Through a Nanopore: Theory Meets Experiments. Materials Research Laboratory, University of California, Santa Barbara, October 2004.
40. Simple Models of Rigid Multifilament Biopolymer's Growth Dynamics, Department of Chemical Engineering, University of California, Los Angeles, October 2004.
41. Dynamics of Polymer Translocation Through a Nanopore: Theory Meets Experiments, Department of Chemistry, University of Pennsylvania, Philadelphia, December 2004.
42. Coupling of Two Motor Proteins: a New Motor Can Move Faster, Department of Chemistry, Cornell University, Ithaca, New York, May 2005.
43. Coupling of Two Motor Proteins: a New Motor Can Move Faster, 6-th SIAM Conference on Control and its Applications, Symposium on Brownian Motors and Protein Dynamics, New Orleans, July 2005.
44. Coupling of Two Motor Proteins: a New Motor Can Move Faster, The Telluride Scientific Research Workshop: "Single-molecule measurements: kinetics, fluctuations, and non-equilibrium thermodynamics," Telluride, Colorado, August 2005.
45. Coupling of Two Motor Proteins: a New Motor Can Move Faster, McGovern Lecture in Biomedical Computing and Imaging, Texas Medical Center, September 2005.
46. Growth Dynamics of Cytoskeleton Proteins: Multiscale Theoretical Analysis, Workshop I: Multiscale Modeling in Soft Matter and Bio-Physics, Institute for Pure and Applied Mathematics, University of California Los Angeles, September 2005.
47. Coupling of Two Motor Proteins: a New Motor Can Move Faster, Institute for Physical Science and Technology, University of Maryland, College Park, December 2005.
48. Coupling of Two Motor Proteins: a New Motor Can Move Faster, University of Montreal, Canada, January 2006.
49. Asymmetric Exclusion Processes on Parallel Channels, Indian Institute of Technology, Kanpur, India, February 2006.
50. Coupling of Two Motor Proteins: a New Motor Can Move Faster, University of Wisconsin, Madison, March 2006.
51. Coupling of Two Motor Proteins: a New Motor Can Move Faster, University of California Santa Barbara, Kavli Institute of Theoretical Physics, May 2006.

52. Can We Understand the Complex Dynamics of Motor Proteins Using Simple Stochastic Models? International Workshop on *Stochastic Models in Biological Sciences*, Warsaw, Poland, May 2006.
53. Growth Dynamics of Cytoskeleton Proteins: Multiscale Theoretical Analysis, International Workshop on Multiscale Modeling of Complex Fluids, Prato, Italy, July 2006.
54. Channel-Facilitated Molecular Transport Across Membranes: Attraction, Repulsion and Asymmetry, Statistical Mechanics Meeting, Rutgers University, December 2006.
55. Coupling of Two Motor Proteins: a New Motor Can Move Faster, University of Nevada, Reno, February 2007.
56. Discrete Stochastic Models of Single-Molecule Motor Proteins Dynamics, Workshop *Theory, Modeling and Evaluation of Single-Molecule Measurements*, Lorentz Center, University of Leiden, Netherlands, April 2007.
57. Burnt-Bridge Model of Molecular Motor Transport, SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 2007.
58. Nucleation of Ordered Solid Phases of Proteins via Unstable and Metastable High-Density Sates: Phenomenological Approach, Gordon Research Conference on "Thin Films and Growth Mechanisms," Mount Holyoke College, South Hadley, Massachusetts, June 2007.
59. Channel-Facilitated Molecular Transport Across Membranes: Attraction, Repulsion and Asymmetry, Telluride Research Workshop: "Nonequilibrium Phenomena, Non-adiabatic Dynamics and Spectroscopy." Telluride, Colorado, July 2007.
60. Channel-Facilitated Molecular Transport Across Membranes: Attraction, Repulsion and Asymmetry, 234-th American Chemical Society Annual Meeting, Boston, August 2007.
61. How Proteins Find its Targets on DNA: Mechanism of Facilitated Diffusion, University of Texas, Austin, Texas, September 2007.
62. Can We Understand the Complex Dynamics of Motor Proteins Using Simple Stochastic Models? University of Texas Medical Branch, Galveston, Texas, September 2007.
63. How Proteins Find its Targets on DNA: Mechanism of Facilitated Diffusion, Bar-Ilan University, Department of Physics Colloquium, Ramat-Gan, Israel, November 2007.
64. How Proteins Find its Targets on DNA: Mechanism of Facilitated Diffusion, Technion, Department of Physics, Haifa, Israel, December 2007.
65. How Proteins Find its Targets on DNA: Mechanism of Facilitated Diffusion, University of Tel-Aviv, Department of Chemistry, Tel-Aviv, Israel, December 2007.
66. How Proteins Find its Targets on DNA: Mechanism of Facilitated Diffusion, Weizmann Research institute, Rehovot, Israel, December 2007.
67. Molecular Motors Interacting with Their Own Tracks, Annual SIAM Conference, San Diego, California, July 2008.
68. Molecular Motors Interacting with Their Own Tracks, International Conference on Statistical Physics SIGMAPHI2008, Crete, Greece, July 2008.
69. How Proteins Find its Targets on DNA: Mechanism of Facilitated Diffusion, Syracuse University, Department of Physics Colloquium, September 2008.
70. Can We Understand Complex Dynamics of Polymer Translocation Using Simple Models? Massachusetts Institute of Technology, Department of Chemistry, Boston, September 2008.
71. How Proteins Find its Targets on DNA: Mechanism of Facilitated Diffusion, Harvard University, Department of Chemistry, Boston, September 2009.
72. How Proteins Find its Targets on DNA: Mechanism of Facilitated Diffusion, Max-Planck Institute of Polymer Sciences, Mainz, Germany, November 2008.
73. How Proteins Find its Targets on DNA: Mechanism of Facilitated Diffusion, University of Stuttgart, Department of Physics, Germany, November 2008.
74. How Proteins Find its Targets on DNA: Mechanism of Facilitated Diffusion, Max-Planck Institute, Potsdam, Germany, December 2008.

75. Can We Understand Complex Dynamics of Polymer Translocation Using Simple Models? Research Center Juelich, Germany, December 2008.
76. How Proteins Find its Targets on DNA: Mechanism of Facilitated Diffusion, Technical University of Munich, Department of Physics, Germany, December 2008.
77. Motor Proteins: A Theorist's View, University of Munich, Center for Nanosciences, Germany, December 2008.
78. Can We Understand Complex Dynamics of Polymer Translocation Using Simple Models? Mesilla Workshop on Multi-scale Modeling of Biological Systems, Lac Cruces, New Mexico, February 2009.
79. Thermally-Driven Nanocars and Molecular Rotors: What can We Learn from Molecular Dynamics Simulations, 237 ACS National Meeting, Salt Lake City, March 2008.
80. Spatial Fluctuations Affect Dynamics of Motor Proteins, Max-Planck Institute for Physics of Complex Systems, Dresden, Germany, May 2009,
81. How Proteins Find and Recognize Their Targets on DNA, Laboratory of Statistical Physics, Ecole Normale Superieure, Paris, France, May 2009.
82. How Proteins Find Targets on DNA International Conference "From DNA-Inspired Physics to Physics-Inspired Biology" ICTP, Trieste, Italy, June 2009.
83. How Proteins Find and Recognize Their Targets on DNA, XIV Statistical Physics Minisymposium, Institute of Mathematics, Czestochowa University of Technology, Poland, June 2009.
84. Thermally-Driven Nanocars and Molecular Rotors: What can We Learn from Molecular Dynamics Simulations, Department of Physics, University of Zelena Gura, Poland, June 2009.
85. Can We Understand Complex Dynamics of Polymer Translocation Using Simple Models? Telluride Research Workshop "Single Molecules", Telluride, Colorado, June 2009.
86. Complex Dynamics of Motor Proteins: A Theorist's View, Laboratory of Statistical Physics, Ecole Normale Superieure, Paris, France, July 2009.
87. Thermally-Driven Nanocars and Molecular Rotors: What can We Learn from Molecular Dynamics Simulations, Department of Physics, University of Illinois, Chicago, September 2009.
88. How Proteins Find and Recognize Their Targets on DNA, Department of Chemistry, University of Chicago, September 2009.
89. Complex Dynamics of Motor Proteins: A Theorist's View, Center for Nonlinear Dynamics, University of Texas, Austin, November 2009.
90. Theoretical Studies of Coupled Parallel Exclusion Processes, Indian Institute of Technology, Conference on Non-Equilibrium Statistical Physics, Kanpur, India, January 2010.
91. Spatial Fluctuations Affect Dynamics of Motor Proteins, Indian Institute of Technology, Conference on Interaction, Instability, Transport and Kinetics, Kanpur, India, February 2010.
92. How Proteins Find and Recognize Their Targets on DNA, Indian Institute of Science, Bangalore, India, January 2010.
93. How Proteins Find and Recognize Their Targets on DNA, Tata Institute for Fundamental Research, Mumbai, India. February 2010.
94. Interactions Between Motor Proteins Can Explain Collective Transport of Kinesins, Biophysical Society Meeting, Mini-Symposium "Tug of War - Molecular Motors Interact," San Francisco, February 2010.
95. How Proteins Find and Recognize Their Targets on DNA, Center for Biological Physics, Arizona State University, Tempe, Arizona, March 2010.
96. Channel-Facilitated Molecular Transport Across Cellular Membranes, Mathematics Biosciences Institute, The Ohio State University, Columbus, Ohio, April 2010.

97. Can We Understand Complex Dynamics of Molecular Motors Using Simple Models?, Conference “Thermodynamics and Kinetics of Molecular Motors,” Santa Fe, New Mexico, May 2010.
98. How Proteins Find and Recognize Their Targets on DNA, Joseph Fourier University, Grenoble, France, June 2010.
99. Channel-Facilitated Molecular Transport Across Cellular Membranes, ESPCI, Paris, France, June 2010.
100. Dynamic Properties of Motor Proteins in the Divided-Pathway Model, SIAM Conference on Life Sciences, Pittsburgh, Pennsylvania, July 2010.
101. How Proteins Find and Recognize Their Targets on DNA, University of Illinois Urbana-Champaign, Department of Materials Sciences, November 2010.
102. Nanocars and Molecular Rotors: What are Fundamental Mechanisms of Motion? Department of Chemistry, University of California Los Angeles. May 2011.
103. What Are Fundamental Mechanisms for the Motion of Nanocars and Molecular Rotors on Surfaces? 43-rd IUPAC World Chemistry Congress, San Juan, Puerto Rico. July 2011.
104. Dynamics of Nanocars and Molecular Rotors on Surfaces: What Are Fundamental Mechanisms? Conference on Functional and Nanostructured Materials FNMA-11, Szczecin, Poland, September 2011.
105. How to Accelerate Protein Search for Targets on DNA: Location and Dissociation, Conference “DNA Search: From Biophysics to Cell Biology,” Safed, Israel, September 2011.
106. Physical-Chemical Aspects of Protein-DNA Interactions: Mechanisms of Facilitated Target Search, CECAM Workshop “Dynamics of Protein-Nucleic Acid Interactions: Integrating Simulations with Experiments,” Zurich, Switzerland, September 2011.
107. Formation of a Morphogen Gradient, NORDITA, Stockholm, Sweden, October 2011.
108. How Proteins Find and Recognize Their Targets on DNA, University of Science and Technology of China, Hefei, China, November 2011.
109. Dynamics of Nanocars and Molecular Rotors on Surfaces: What Are Fundamental Mechanisms? Institute of Chemical Physics, Dalian, China, December 2011.
110. Formation of Signaling Molecules Concentration Profiles, Department of Chemistry, Peking University, Beijing, China, December 2011.
111. How Proteins Find and Recognize Their Targets on DNA, Zheijang University, Hangzhou, China, December 2011.
112. Dynamics of Nanocars and Molecular Rotors on Surfaces: What Are Fundamental Mechanisms? Zheijang Gongshang University, Hangzhou, China, December 2011.
113. How Proteins Find and Recognize Their Targets on DNA, Department of Chemistry, Nanjing University, Nanjing, China, December 2011.
114. Can We Understand Complex Dynamics of Motor Proteins Using Simple Models? Conference “Multiscale Methods and Validation in Medicine and Biology” San Francisco, February 2012.
115. How Proteins Find and Recognize Their Targets on DNA, Department of Chemistry, University of Rochester, Rochester, March 2012.
116. Formation of Signaling Molecules Concentration Profiles, Department of Physics, Syracuse University, Syracuse, March 2012.
117. Formation of a Morphogen Gradient: Acceleration by Dissociation, Department of Chemistry, Cornell University, Ithaca, New York, March 2012.
118. Formation of a Morphogen Gradient: Acceleration by Dissociation, Department of Chemistry, University of California Irvine, California, April 2012.
119. Formation of a Morphogen Gradient: Acceleration by Dissociation, Department of Physics, University of Barcelona, Spain, May 2012.
120. Mechanism of Fast Protein Search for Targets on DNA: Strong Coupling between 1D and 3D Motions, International Workshop ”Search and Stochastic Phenomena in Complex Physical and Biological Systems,” Palma de Mallorca, Spain, June 2012.

121. How Interactions Control Transport through Channels, CECAM Workshop "Polymer Translocation through Nanopores", Mainz, Germany, September 2012.
122. How Interactions Control Transport through Channels, Department of Chemistry University of Utah, Salt Lake City, October 2012.
123. Mechanism of Fast Protein Search for Targets on DNA: Strong Coupling between 1D and 3D Motions, Michael E. Fisher's Symposium, University of Maryland, October 2012.
124. How Interactions Affect Multiple Kinesin Dynamics, American Physical Society Meeting, Baltimore, March 2013.
125. Random Hydrolysis Controls the Dynamic Instability in Microtubules, SIAM Conference on Applications of Dynamic Systems, Snowbird, Utah, May 2013.
126. Speed-Selectivity Paradox in the Protein Search for Targets on DNA: Is It Real or Not? Telluride Workshop on Biophysical Dynamics, Telluride, Colorado, July 2013.
127. How Interactions Control Transport through Channels, Telluride Workshop on Nonequilibrium Phenomena, Nonadiabatic Dynamics and Spectroscopy, Telluride, Colorado, July 2013.
128. Mechanisms and Topology Determination of Complex Networks from First-Passage Theoretical Approach, Kavli Institute of Theoretical Physics in China, Statphys Satellite Conference, Beijing, China, July 2013.
129. Mechanisms and Topology Determination of Complex Networks from First-Passage Theoretical Approach, International Conference on Multiscale Motility of Molecular Motors, Potsdam, Germany, September 2013.
130. How to Understand Signaling Mechanisms in Biological Development, Department of Chemical Engineering, Stanford University, Stanford, CA, September 2013.
131. How to Understand Complex Processes in Chemistry, Physics and Biology Using Simple Models, Norway-Texas Collaborative Research Seminar, Trondheim, Norway, October 2013.
132. Mechanisms and Topology Determination of Complex Networks from First-Passage Theoretical Approach, SWRM Regional Meeting of American Chemical Society, Waco, TX, November 2013.
133. How to Understand Signaling Mechanisms in Biological Development, Department of Chemistry, University of Southern California, Los Angeles, CA, April 2014.
134. Speed-Selectivity Paradox in the Protein Search for Targets on DNA: Is It Real or Not? Biomedical Center, Uppsala University, Sweden, June 2014.
135. How to Understand the Formation of Morphogen Gradients during Biological Development Mini-Symposium "Application of Statistical Physics in Quantitative Biology," 9-th European Conference on Mathematical and Theoretical Biology, Goteborg, Sweden, June 2014.
136. How to Understand Signaling Mechanisms in Biological Development, Department of Biochemistry and Molecular Biology, University of Texas Medical Branch, Galveston, TX, September 2014.
137. How to Understand Mechanism of Protein Search for Targets on DNA, Department of Physics, University of Sao Paulo, Brazil, October 2014.
138. How to Understand Mechanism of Protein Search for Targets on DNA, Department of Physics, University of Rio Grande du Sul, Porto Alegre, Brazil, October 2014.
139. How to Understand Signaling Mechanisms in Biological Development, Center for Fundamental Studies in Physics, Rio de Janeiro, Brazil, October 2014.
140. Dynamics of the Singlet Fission Process, Workshop "Biologically Inspired Light-Driven Processes," Rice University, Houston, TX, December 2014.
141. How to Understand Molecular Transport through Channels: The Role of Interactions Leiden Workshop on Nanothermodynamics and Stochastic Thermodynamics, Leiden, Netherlands, December 2014.
142. How to Understand Mechanism of Protein Search for Targets on DNA, Free University of Brussels, Department of Physics, Brussels, Belgium, June 2015.

143. Dynamics of Assembly and Disassembly of Microtubule Protein Filaments: Theoretical Analysis, Francqui Symposium on Aggregation of Biological Molecules, Brussels, Belgium, June 2015.
144. Dynamics of Assembly and Disassembly of Microtubule Protein Filaments: Theoretical Analysis, Telluride Workshop on Biophysical Dynamics, Telluride, Colorado, July 2015.
145. How to Understand Mechanism of Protein Search for Targets on DNA, Biophysics Seminar, Princeton University, Princeton, New Jersey, September 2015.
146. How to Understand Mechanism of Protein Search for Targets on DNA, Physics Colloquium, Oxford University, Oxford, UK, October 2015.
147. How to Understand Molecular Transport through Channels: The Role of Interactions Department of Physics, Cambridge University, Cambridge, UK, October 2015.
148. How to Understand Signaling Mechanisms in Biological Development, Department of Chemistry, Imperial College, London, UK, November 2015.
149. How to Understand Mechanism of Protein Search for Targets on DNA, Biochemistry and Biophysics Seminar, NIH, Bethesda, MD, February 2016.
150. How to Understand the Formation of Signaling Profiles in Biological Development, Statistical Physics Seminar, University of Maryland, College Park, MD, February 2016.
151. How to Understand Molecular Transport through Channels: The Role of Interactions, Department of Physics, University of Virginia, Charlottesville, VA, April 2016.
152. How to Understand Molecular Transport through Channels: The Role of Interactions, Department of Physics, Ben-Gurion University, Beersheva, Israel, May 2016.
153. Protein Search for Targets on DNA: The Role of Sequence Heterogeneity, Multiple Targets and Traps, Department of Chemistry, Ben-Gurion University, Beersheva, Israel, May 2016.
154. Collective Dynamics of Interacting Molecular Motors, Statistical Mechanics Seminar, Weizmann Institute of Science, Rehovot, Israel, May 2016.
155. How to Understand the Formation of Signaling Profiles in Biological Development, Soft Matter and Biophysics Seminar, Weizmann Institute of Science, Rehovot, Israel, May 2016.
156. How to Understand Molecular Transport through Channels: The Role of Interactions, Department of Physics, Bar Ilan University, Ramat Gan, Israel, May 2016.
157. How to Understand the Formation of Signaling Profiles in Biological Development, Lokey Distinguished Lecture, Technion, Haifa, Israel, May 2016.
158. How to Understand the Formation of Signaling Profiles in Biological Development, Department of Chemistry, Tel Aviv University, Israel, May 2016.
159. Protein Search for Targets on DNA: The Role of DNA Sequence Symmetry and Heterogeneity, Venice Meeting on Fluctuations in Small Complex Systems III, Venice, Italy, October 2016.
160. How to Understand the Formation of Signaling Profiles in Biological Development, Southwestern Regional Meeting, American Chemical Society, Galveston, Texas, November 2016.
161. Determining Mechanisms of Complex Chemical and Biological Processes Using Network Analysis, Workshop on Fluctuations in Nonequilibrium Systems, Pohang, POSTECH, Korea, December 2016.
162. Understanding Mechanisms of Complex Chemical and Biological Processes Using Network Analysis, Humboldt Colloquium, Washington, DC, March 2017.
163. Understanding Molecular Mechanisms of Biological Error Correction, Department of Chemistry, Beijing University (PKU), China, May 2017.
164. How to Understand the Formation of Signaling Profiles in Biological Development, Shanghai Jiaotong University, China, May 2017.
165. Collective Dynamics of Interacting Molecular Motors, Beijing Jiaotong University, Beijing, China, May 2017.
166. Understanding Molecular Mechanisms of Biological Error Correction, International Conference on Physics of Living Systems, Paris, France, June 2017.
167. How to Understand the Formation of Signaling Profiles in Biological Development, Department of Physics, Ludwig Maximilian University, Munich, Germany, May 2017.
168. Current-Generating “Double Layer Shoe” with a Porous Sole, Symposium on Liquid Theory

in honor of Ben Widom's 90-th birthday, ACS National Meeting, Washington DC, August 2017.

169. Understanding Molecular Mechanisms of Biological Error Correction, Department of Chemistry, MIT, Boston, September 2017.
170. Understanding Molecular Mechanisms of Biological Error Correction, Department of Physics, Arizona State University, October 2017.
171. Collective Dynamics of Interacting Molecular Motors, International Center for Theoretical Sciences, Tata Institute of Fundamental Research, Program "Collective Dynamics of-, on- and around Filaments in Living Cells: Motors, MAPs, TIPs and Tracks," Bangalore, India, October 2017.
172. Understanding Molecular Mechanisms of Biological Error Correction, Indian Institute of Science Education and Research, Department of Chemistry, Pune, India, November 2017.
173. How to Understand the Formation of Signaling Profiles in Biological Development, Department of Chemical Engineering, Indian Institute of Technology Mumbai, India, November 2017.

CONTRIBUTED PRESENTATIONS

1. High-Temperature Chemistry of Fullerenes, Gordon Research Conference on High-Temperature Chemistry , Meriden, NH, July 1992.
2. New Results in a Repton Model, Polymer Outreach Program, Cornell University, May 1995.
3. High-Field Dynamics of Polymers in a Repton Model, Polymer Outreach Program, Cornell University, May 1996.
4. Asymptotically Exact Results for a Repton Model of Polymer Dynamics, 76th Statistical Mechanics Meeting, Rutgers University, December 1996.
5. Asymmetric Simple Exclusion Model with Stochastic Defect, Polymer Outreach Program, Cornell University, May 1997.
6. Domain-Wall Picture of Asymmetric Simple Exclusion Processes, 78th Statistical Mechanics Meeting, Rutgers University, December 1997.
7. A Simplified "Ratchet" Model of Molecular Motors, Polymer Outreach Program, Cornell University, May 1998.
8. Debye-Hückel Theory of Electrolytes on a Lattice, Conf. on Electrostatic Properties in Complex Fluids, ITP, University of California, Santa Barbara, CA, October 1998.
9. Debye-Hückel Theory on a Lattice, 80th Statistical Mechanics Meeting, Rutgers University, December 1998.
10. Velocity and Diffusion of General Hopping Models and Tridiagonal Matrices, 81-st Statistical Mechanics Meeting, Rutgers University, May 1999.
11. Lattice Models for Ionic Systems, Gordon Research Conference on Chemistry and Physics of Liquids, Holderness, NH, August 1999.
12. Improved Kinetic Models for Processive Motor Proteins: Explicit Results for Periodic 1D Hopping, 82-nd Statistical Mechanics Meeting, Rutgers University, December 1999.
13. One-dimensional Kinetic Models with Death and Branching Processes, Pitzer Memorial Symposium on Theoretical Chemistry, University of California, Berkeley, January, 2000.
14. Exact Results for Parallel Chain Kinetic Models of Biological Transport, 83-rd Statistical Mechanics Meeting, Rutgers University, May 2000.
15. Describing Kinesin Dynamics Using Stochastic Models, National Academy of Sciences Colloquium, *Molecular Kinesis in Cellular Function and Plasticity*, Irvine, CA, December, 2000.
16. One-Layer Model of the Growth of Microtubules, 84-th Statistical Mechanics Meeting, Rutgers University, December 2000.
17. The Growth of Microtubules Against an External Force, 45-th Annual Biophysical Society Meeting, Boston, February, 2001.

18. Description of Motor Protein Motility Using Stochastic Models, International Conference on Mathematical and Theoretical Biology, Hilo, Hawaii, July, 2001.
19. Exact Results for Parallel-Chain Kinetic Models of Biological Transport, International Conference NANOBIOLOGY 2001, Emory University, Atlanta, October, 2001.
20. The Dynamics of Breaking of Weak Chemical Bonds. What is Measured in AFM Experiments, Statistical Mechanics Meeting, Rutgers University, December 2001.
21. A Simple Stochastic Model Can Explain the Motility of Myosin V Molecules, 46-th Annual Biophysical Society Meeting, San Francisco, February, 2002.
22. Polymer Translocation Through a Long Nanopore, Statistical Mechanics Meeting, Rutgers University, December 2002.
23. Dynamics of Polymer Translocation Through a Long Nanopore, 47-th Annual Biophysical Society Meeting, San Antonio, March 2003.
24. Nucleation of Ordered Solid Phases of Proteins via Unstable and Metastable High-Density States: Phenomenological Approach, Rutgers University, December 2003.
25. Simple Models of the Growth of Microtubules, 48-th Annual Biophysical Society Meeting, Baltimore, February 2004.
26. Thermodynamics and Phase transitions of Electrolytes on Lattices with Different Discretization Parameters, Annual March Meeting of American Physical Society, Montreal, Canada, March 2004.
27. Understanding Mechanochemical Coupling in Kinesins Using First-Passage Time Processes, 49-th Annual Biophysical Society Meeting, Long Beach, California, February 2005.
28. Nucleation of Proteins via Intermediate States: Phenomenological Approach, Liquid Matter Conference, Utrecht, Netherlands, July 2005.
29. Thermodynamics and Phase Transitions of Electrolytes on Lattices with Different Discretization Parameters, Liquid Matter Conference, Utrecht, Netherlands, July 2005.
30. ATP Hydrolysis Stimulates Large Length Fluctuations in Single Actin Filaments, 50-th Annual Biophysical Society Meeting, Salt Lake City, Utah, February 2006.
31. Interaction Between Motor Heads Strongly Effects Dynamical and Biophysical Properties of Motor Proteins, Biophysical Discussions Meeting, Asilomar, California, October 2006.
32. Effect of Orientation in Translocation of Inhomogeneous Polymers through Nanopores, 51-st Annual Biophysical Society Meeting, Baltimore, Maryland, March 2007.
33. Channel-Facilitated Molecular Transport Across Membranes: Attraction, Repulsion and Asymmetry, 23-rd International Conference on Statistical Physics, Genoa, Italy, July 2007.
34. How Proteins Find and Recognize Their Targets on DNA, 52-nd Annual Biophysical Society Meeting, Long Beach, California, February 2008.
35. How Interactions Control Molecular Transport in Channels, 55-th Annual Biophysical Society Meeting, Baltimore, Maryland, March 20011.
36. Random Hydrolysis Controls Dynamic Instability of Microtubules, 56-th Annual Biophysical Society Meeting, San Diego, California, February 2012.