

Biographical Sketch: Sergey V. Buldyrev

Department of Physics
Yeshiva University
500 West 185th Street
New York, New York 10033 United States
Belfer Hall, room 1112
Telephone: +1 212 960 5430
Fax Number: +1 212 960 0035
E-mail: buldyrev@yu.edu
URL: <http://polymer.bu.edu/~sergey>

Personal Information

Date of Birth: 06/22/1954
City, State/Province, Country of Birth: Saint Petersburg, Russia
Citizenship(s): USA
Language(s): English (fluent), Russian (native)
Marital Status Married, two children

Education

| | |
|-------------------------------------------|---------------------------------|
| Saint-Petersburg State University, Russia | Mathematical Physics M.S., 1977 |
| Saint-Petersburg State University, Russia | Polymer Physics Ph.D., 1988 |

Appointments/Affiliations

| | |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 2004-present | Professor, Department of Physics, Yeshiva University. |
| 2011-present | Professor, joint appointment with the Graduate Mathematics program, Department of Mathematical Science, Yeshiva University. |
| 2018-2019 | Visiting Researcher, Department of Management, Economics and Industrial Engineering, Polytechnic University of Milan, 20156 Milan, Italy. |
| 2011-2015 | Visiting Professor, IMT Institute of Advanced Studies, Lucca, Italy. |
| 2004-present | Visiting Scientist, Center for Polymer Studies and Physics Department, Boston University, Boston, USA |
| 2010-2011 | Visiting Researcher, Departament de Física Fonamental, Universitat de Barcelona |
| 2007-2010 | Department Chair, Department of Physics, Yeshiva University. |
| 2003-2004 | Senior Research Associate, Center for Polymer Studies and Physics Department, Boston University, Boston, USA |
| 1990-2003 | Research Associate, Center for Polymer Studies and Physics Department, Boston University, Boston, USA |
| 2002,2007 | Visiting Professor, Dipartimento di Fisica, Università di Roma La Sapienza, Rome, Italy. |
| 1984-1989 | Assistant Lecturer, Department of Physics, Saint Petersburg State University, Saint-Petersburg, Russia |

1977-1984 Junior Research Fellow, Institute of Physics, Saint Petersburg State University, Saint-Petersburg, Russia

Professional Experience

1977-1989 Research in physics: applied computer simulations in polymer physics, chemical engineering, and mathematical physics.
Teaching: calculus, linear algebra, mathematical physics, and computer programming.

1990-2004: Research in physics: applied concepts of statistical mechanics and computer simulations to (i) Protein Folding and Aggregation, (ii) Neuroscience Research, (iii) Physics of Lungs, (iv) Statistical Properties of DNA sequences and Molecular Evolution, (v) Behavior of Complex Systems, (vi) Nonlinear Surface Growth, (vii) Transport in Disordered Media, (viii) Polymer Physics, (ix) Transformations in Liquids, and (x) Econophysics.
Research in education: developed software and curriculum guides for high school science education.
Teaching: a course on Virtual Molecular Dynamics Laboratory at the summer institute for high school teachers.

2004-present: Taught courses at Yeshiva University:
MAT 5930 Stochastic Calculus,
MAT 5302 Topics: Network science
PHY 2052 General Physics IV (Modern Physics),
PHY 2051 General Physics III (Waves and Optics),
PHY 1120 Modern Physics,
PHY 1221 Classical Mechanics,
PHY 1621 Quantum Mechanics,
PHY 1510 Thermodynamics and Statistical Mechanics,
PHY 4931 Physics of Complex Systems,
PHY 3301 Computational Methods in Physical Sciences.
PHY 1041, PHY 1042 General Physics I and II.
Research in computational soft condensed matter, material science and complex systems.

2007-2010 Chairman, Department of Physics, Yeshiva University

Research Grants

2010-2014 Defense Threat Reduction Agency Grant No. HDTRA1-10-1-0014
“Robustness of Interdependent Networks Subject to Cascading Failures under WMD Attacks” with total budget of \$375,177.

2014-2019 Defense Threat Reduction Agency Grant No. HDTRA1-14-1-0017
“Availability, Interoperability, Robustness and Recovery of Interdependent Networks Under WMD Attacks” with total budget of \$419,854.

Honors

First Award at the XIVth Inter-University Conference of Young Scientists, “Modern Problems in the Physical Chemistry of Solutions” (sponsored by the All-Union Mendeleev Chemical Society), Leningrad, USSR, 1987.

Society of Tribologists and Lubrication Engineers Captain Alfred Hunt Award for the paper “A Combined Molecular Dynamics and Finite Element Analysis of Contact and Adhesion of a Rough Sphere and a Flat Surface”, 2013.

Workshop Organizing

1. NATO Advances Research Workshop on New Kinds of Phase Transitions: Transformations in Disordered Substances, Volga River, Russia, 24-28 May 2001.
2. Pan-American Scientific Institute (PASI) "From disordered systems to complex systems", Mar del Plata, Argentina, December 11-20, 2006.

Books

New Kinds of Phase Transitions: Transformations in Disordered Substances, V. V. Brazhkin, **S. V. Buldyrev**, V. N. Ryzhov, and H. E. Stanley [eds.], (Kluwer, Dordrecht, 2002). *The Rise and Fall of Business Firms: A Stochastic Framework on Innovation, Creative Destruction and Growth*, S.V. Buldyrev, F. Pammolli, M. Riccaboni and H. E. Stanley (Cambridge University Press, Cambridge, UK, in press)

Refereeing

5 scientific journals, including Physical Review Letters and Proceedings of National Academy of Sciences of the United States.

Student Training

Trained over 15 graduate students, 20 undergraduate students, and 10 high school interns in the Center for Polymer Studies (BU). Supervised 20 undergraduates in independent study and research at Yeshiva College.

Course Development

Developed and taught a new graduate course “Topics: Stochastic Calculus in Finance”, (Yeshiva University, Math Graduate Program, Fall 2017)

Developed and taught a new graduate course “Topics in Applied Economics” (IMT, Lucca, Italy, 2010-2012).

Developed computer simulations for course curriculum PHY1510-261 “Thermodynamics and Statistical Mechanics” (Fall 2004, YU);

Developed a new course PHY 4931-341 “Physics of Complex Systems” (Fall 2004, YU)

Developed computational projects in C/C++ for course curriculum PHY 3301-231, “Computational Methods in Physical Sciences” (Spring 2005, YU).

Developed computer simulations for course curriculum PY744 A1 “Polymer Physics” (Fall 2002, BU);

As a Co-PI on the NSF grant ESI-9553883, developed course curriculum for “Virtual Molecular Dynamics Laboratory” Summer Institutes for high school teachers.
Develop Computer Simulations and Curriculum guides for an educational Web site “Virtual Molecular Dynamics Laboratory”, <http://polymer.bu.edu/vmdl/>.

Software Development

Authored a CD, published in: Giant Molecules, A. Yu. Grosberg and A. R. Khokhlov (Academic Press, 1997)

Memberships

American Physical Society, 1990-present.

Collaborators

(a) Collaborators:

G. G. Adams (NorthEastern U), A. Alencar (U SaoPaulo), L. A. N. Amaral (Northwestern U), A.C. Angell (Arizona U), R. Bansil (BU), A.-L. Barabasi (NorthEastern U), M. C. Barbosa (U Rio Grande, Brasil), G. Benedek (MIT), L. A. Braunstein (U Mar del Plata, Argentina), V.V. Brazhkin (HPI, Moscow), T.M. Birshtein (IHMC, St. Petersburg), S.-H. Chen (MIT), L. Cruz (Boston U), G. Cwilich (YU), P.G. Debenedetti (Princeton), N. V. Dokholyan (UNC-CH), S. Erramilli (BU), G. Franzese (U Barcelona), P. Gallo (U Rome 3), N. Giovambattista (CUNY), A. L. Goldberger (Harvard), A.Yu. Grosberg (NYU), S. Havlin (Bar-Ilan U), B. T. Hyman (Harvard), P. King (Imperial), Y. Lereah (U Tel-Aviv), A. Lomakin (MIT), H. Makse (CUNY), N. E. McGruer (NorthEastern U), P. Poole (STFX), F. Pommolli (IMT, Lucca), M. Riccaboni (IMT, Lucca), P. J. Rossky (U Texas), I. Saika-Voivod (MUN), S. Sastri TIFR, Hyderabad), F. Sciortino (U Rome 1), M.A. Salinger (Boston U), E.I. Shakhnovich (Harvard), D. Srolovitz (UPenn), H. E. Stanley (Boston U), F. Starr (Wesleyan U), B. Suki (Boston U), P. Tartaglia (U Roma 1), D. Teplow (UCLA), P. Trunfio (Boston U), B. Urbanc (Boston U), G. M. Viswanathan (U Alagoas, Brasil), K. Yamasaki (U Tokyo), F. Zypman (Yeshiva U), G. Zussman (Columbia).

(b) Graduate and Postdoctoral Advisors:

Tatiana M. Birshtein, Saint Petersburg State University – graduate advisor, thesis: “Collapse and Adsorption of a Two-Dimensional Macromolecule: The Monte-Carlo Method,”

H. Eugene Stanley, Boston University – postdoctoral sponsor.

List of Publications (328 total):

Original Research Articles (213):

(i) Protein Folding and Aggregation:

1. N. Dokholyan, **S. V. Buldyrev**, H. E. Stanley and E. I. Shakhnovich, “Discrete molecular dynamics studies of the folding of a protein-like model,” *Folding & Design* **3**, 577-587 (1998).

2. N. V. Dokholyan, **S. V. Buldyrev**, H. E. Stanley, and E. I. Shakhnovich, "Identifying the protein folding nucleus using molecular dynamics," *J. Mol. Biol.* **296**, 1183-1188 (2000).
3. A. Scala, N. V. Dokholyan, **S. V. Buldyrev**, H. E. Stanley, and E. I. Shakhnovich, "Thermodynamically important contacts in folding of model proteins," *Phys. Rev. E* **63**, 032901-4 (2001).
4. J. M. Borreguero, N. V. Dokholyan, **S. V. Buldyrev**, H. E. Stanley, and E. I. Shakhnovich, "Thermodynamics and folding kinetics analysis of the SH3 domain from Discrete Molecular Dynamics," *J. Mol. Biol.* **318**, 863-876 (2002).
5. F. Ding, N. V. Dokholyan, **S. V. Buldyrev**, H. E. Stanley, and E. I. Shakhnovich, "Direct molecular dynamic observation of protein folding transition state ensemble," *Biophys. J.* **83**, 3525-3532 (2002).
6. F. Ding, N. V. Dokholyan, **S. V. Buldyrev**, H. E. Stanley, and E. I. Shakhnovich, "Molecular dynamic simulation of the SH3 domain aggregation suggests a generic amyloidogenesis mechanism," *J. Mol. Biol.* **324**, 851-857 (2002).
7. F. Ding, J. M. Borreguero, **S. V. Buldyrev**, H. E. Stanley, and N. V. Dokholyan, "A Mechanism for the alpha-helix to beta-hairpin Transition," *Proteins: Structure, Function, and Genetics* **53**, 220-228 (2003).
8. J. M. Borreguero, F. Ding, **S. V. Buldyrev**, H. E. Stanley and N. V. Dokholyan, "Multiple Folding Pathways of the SH3 Domain," *Biophys. J.* **87**, 521-533 (2004).
9. S. Peng, F. Ding, B. Urbanc, **S. V. Buldyrev**, L. Cruz, H. E. Stanley, and N. V. Dokholyan, "Discrete molecular dynamics simulations of peptide aggregation," *Phys. Rev. E* **69**, 041908, (2004).
10. B. Urbanc, L. Cruz, S. Yun, **S. V. Buldyrev**, G. Bitan, D. B. Teplow, and H. E. Stanley, "In Silico Study of Amyloid Beta Protein Folding and Oligomerization," *Proc. Natl. Acad. Sci.* **101**, 17345-17350 (2004).
11. B. Urbanc, L. Cruz, F. Ding, D. Sammond, S. Khare, **S. V. Buldyrev**, H. E. Stanley, and N. V. Dokholyan, "Molecular Dynamics Simulation of Amyloid β Dimer Formation," *Biophys. J.* **87**, 2310-2321 (2004).
12. F. Ding, **S. V. Buldyrev**, and N. V. Dokholyan, "Folding Trp-Cage to NMR Resolution Native Structure Using a Coarse-Grained Protein Model," *Biophys. J.* **88**, 147-155 (2005).

13. J. M. Borreguero, B. Urbanc, N. D. Lazo, **S. V. Buldyrev**, D. B. Teplow, and H. E. Stanley, "Folding events in the 21-30 region of amyloid-beta-protein (A beta) studied in silico," *Proc. Natl. Acad. Sci.* **102**, 6015-6020 (2005).

14. A. R. Lam, J. M. Borreguero, F. Ding, N. V. Dokholyan, **S. V. Buldyrev**, H.E. Stanley, and E. Shakhnovich, "Parallel Folding Pathways in the SH3 Domain Protein," *J. Mol. Biol.* **373**, 1348-1360 (2007).

15. F. Mallamace, Francesco, C. Corsaro, D. Mallamace, S. Vasi, C. Vasi, P. Baglioni, S.V. Buldyrev, S.H. Chen, H.E. Stanley, "Energy landscape in protein folding and unfolding", *Proc. Natl. Acad. Sci.* **113**, 3159-3163 (2016).

(ii) Neuroscience Research:

1. F. Caserta, W. D. Eldred, E. Fernandez, R. E. Hausman, L. R. Stanford, **S. V. Buldyrev**, S. Schwarzer and H. E. Stanley, "Determination of Fractal Dimension of Physiologically Characterized Neurons in Two and Three Dimensions," *J. Neurosci. Methods* **56**, 133-144 (1995).

2. B. T. Hyman, H.L. West, G. W. Rebeck, **S. V. Buldyrev**, R. N. Mantegna, M. Ukleja, S. Havlin, and H. E. Stanley, "Quantitative analysis of senile plaques in Alzheimer disease: Observation of log-normal size distribution and of differences associated with apolipoprotein E genotype and trisomy 21 (Down syndrome)," *Proc. Natl. Acad. Sci.* **92**, 3586-3590 (1995).

3. L. Cruz, B. Kutnjac-Urbanc, **S. V. Buldyrev**, R. Christie, T. Gomez-Isla, S. Havlin, M. McNamara, H. E. Stanley, and B. T. Hyman, "Aggregation and Disaggregation of Senile Plaques in Alzheimer Disease," *Proc. National Acad. Sci.* **94**, 7612-7616 (1997).

4. B. Urbanc, L. Cruz, **S. V. Buldyrev**, S. Havlin, H. E. Stanley and B. T. Hyman, "Dynamics of Plaque Formation in Alzheimer Disease," *Biophys. J.* **76**, 1330-1334 (1999).

5. R. B. Knowles, C. Wyart, **S. V. Buldyrev**, L. Cruz, B. Urbanc, M.E. Hasselmo, S. Havlin, H. E. Stanley and B. T. Hyman, "Plaque-induced neural network disruption in Alzheimer's disease," *Proc. National Acad. Sci.* **96**, 5274-5279 (1999).

6. B. Urbanc, L. Cruz, **S. V. Buldyrev**, S. Havlin, B. T. Hyman, and H. E. Stanley, "Dynamic Feedback in an Aggregation-Disaggregation Model," *Phys. Rev. E* **60**, 2120-2126 (1999).

7. **S. V. Buldyrev**, L. Cruz, T. Gomez-Isla, S. Havlin, H. E. Stanley, B. Urbanc and B. T. Hyman, "Description of Microcolumnar Ensembles in Association Cortex and their Disruption in Alzheimer and Lewy Body Dementias," *Proc. National Academy of Sciences* **97**, 5039-5043 (2000).

8. L. Cruz, **S. V. Buldyrev**, S. Peng, D. L. Roe, B. Urbanc, H. E. Stanley, and D. L. Rosene, "A Statistically-Based Density Map Method for Identification and Quantification of Regional Differences in Microcolumnarity in the Monkey Brain," *J. Neurosci. Methods* **141**, 321-332 (2005).

(iii) Physics of Lungs:

1. A.-L. Barabasi, **S. V. Buldyrev**, H. E. Stanley, and B. Suki, "Avalanches in the Lung: A Statistical Mechanical Approach," *Phys.Rev. Lett.* **76**, 2192-2195 (1996).
2. M. K. Sujeer, **S. V. Buldyrev**, S. Zapperi, J. Andrade, H. E. Stanley, and B. Suki, "Volume Distributions of Avalanches in Lung Inflation: A Statistical Mechanical Approach," *Phys. Rev. E* **56**, 3385-3394 (1997).
3. J. S. Andrade Jr., A. M. Alencar, M. P. Almeida, J. Mendez, **S. V. Buldyrev**, S. Zapperi, H. E. Stanley, and B. Suki, "Asymmetric flow in symmetric branched structures," *Phys.Rev. Lett.* **81**, 926-929 (1998).
4. A. M. Alencar, Z. Hantos, F. Hantos, F. Petak, J. Tolnai, T. Asztalos, S. Zapperi, J. S. Andrade, **S. V. Buldyrev**, H. E. Stanley, and B. Suki, "Scaling Behavior in Crackle Sound during Lung Inflation," *Phys. Rev E* **60**, 4659-4663 (1999).
5. M. P. Almeida, J. S. Andrade Jr., **S. V. Buldyrev**, F. S. A. Cavalcante, H. E. Stanley, and B. Suki, "Fluid Flow through Ramified Structures," *Phys. Rev. E* **60**, 5486-5494 (1999).
6. A. M. Alencar, **S. V. Buldyrev**, A. Majumdar, H. E. Stanley, and B. Suki, "Avalanche Dynamics of Crackle Sound in the Lung," *Phys. Rev. Lett.* **87**, 088101-4 (2001).
7. A. Majumdar, A. M. Alencar, **S. V. Buldyrev**, Z. Hantos, H. E. Stanley and B. Suki, "Characterization of the Branching Structure of the Lung from Macroscopic Pressure-Volume Measurements," *Phys. Rev. Lett.* **87**, 058102-4 (2001).
8. A. M. Alencar, S. Arold, **S. V. Buldyrev**, A. Majumdar, D. Stamenovic, H. E. Stanley, and B. Suki, "Dynamic Instabilities in the Inflating Lung," *Nature* **417**, 809-811 (2002).
9. A. Majumdar, A. M. Alencar, **S. V. Buldyrev**, Z. Hantos, H. E. Stanley, and B. Suki, "Fluid transport in branched structures with temporary closures: A model for quasistatic lung inflation," *Phys. Rev. E* **67**, 031912 (2003).
10. A. M. Alencar, **S. V. Buldyrev**, A. Majumdar, H. E. Stanley, and B. Suki, "Perimeter Growth of a Branched Structure: Application to Crackle Sounds in the Lung," *Phys. Rev. E* **68**, 11909 (2003).

11. A. Majumdar, A. M. Alencar, **S. V. Buldyrev**, Z. Hantos, K.R. Lutchen, H. E. Stanley, and B. Suki, "Relating airway diameter distributions and branching asymmetry in the lung," *Phys. Rev. Lett.* **95**, 168101 (2005).

12. A. M. Alencar, E. Wolfe, and **S.V. Buldyrev**, "Monte Carlo simulation of liquid bridge rupture: Application to lung physiology," *Phys. Rev. E* **74**, 026311 (2006).

(iv) Statistical Properties of DNA sequences and Molecular Evolution:

1. C. K. Peng, **S. V. Buldyrev**, A. Goldberger, S. Havlin, F. Sciortino, M. Simons and H. E. Stanley, "Long-Range Correlations in Nucleotide Sequences," *Nature* **356**, 168-171 (1992).

2. **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, C.-K. Peng, M. Simons, and H. E. Stanley, "Generalized Levy Walk Model for DNA Nucleotide Sequences," *Phys. Rev. E* **47**, 4514-4523 (1993).

3. **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, C.-K. Peng, H. E. Stanley and M. Simons, "Fractal Landscapes and Molecular Evolution: Modeling the Myosin Heavy Chain Gene Family," *Biophys. J.* **65**, 2675-2681 (1993).

4. **S. V. Buldyrev**, A. Goldberger, S. Havlin, C.-K. Peng, F. Sciortino, M. Simons and H. E. Stanley, "Long-Range Power Law Correlations in DNA," *Phys. Rev. Lett.* **71** 1776-1776 (1993).

5. C. K. Peng, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, M. Simons, and H. E. Stanley, "Finite Size Effects on Long-Range Correlations: Implications for Analyzing DNA Sequences," *Phys. Rev. E* **47**, 3730-3733 (1993).

6. C. K. Peng, **S. V. Buldyrev**, S. Havlin, M. Simons, H. E. Stanley and A. L. Goldberger, "Mosaic Organization of DNA Sequences," *Phys. Rev. E* **49**, 1685-1689 (1994).

7. S. M. Ossadnik, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, R.N. Mantegna, C.-K. Peng, M. Simons, and H. E. Stanley, "Correlation Approach to Identify Coding Regions in DNA Sequences," *Biophys. J.* **67**, 64-70 (1994).

8. R. N. Mantegna, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, C.-K. Peng, M. Simons, and H. E. Stanley, "Linguistic Features of Noncoding DNA-Sequences," *Phys. Rev. Lett.* **73**, 3169-3172 (1994).

9. **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, R. N. Mantegna, M. E. Matsa, C.-K. Peng, M. Simons, and H. E. Stanley, "Long-Range Correlation Properties of Coding and Noncoding DNA Sequences: GenBank Analysis," *Phys. Rev. E* **51**, 5084-5091 (1995).

10. R. N. Mantegna, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, C.-K. Peng, M. Simons, and H. E. Stanley, "Systematic Analysis of Coding and Noncoding DNA Sequences Using Methods of Statistical Linguistics," *Phys. Rev. E* **52**, 2939-2950 (1995).
11. R. N. Mantegna, S. V. Buldyrev, A. L. Goldberger, S. Havlin, C.-K. Peng, M. Simons, and H. E. Stanley, "Linguistic Features of Noncoding DNA-Sequences – Reply," *Phys. Rev. Lett.* **76**, 1979-1981 (1996).
12. G. M. Viswanathan, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Quantification of DNA Patchiness using Correlation Measures," *Biophys. J.* **72**, 866-875 (1997).
13. N. V. Dokholyan, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Distribution of Base Pair Repeats in Coding and Noncoding DNA Sequences," *Phys. Rev. Lett.* **79**, 5182-5185 (1997).
14. R. H. R. Stanley, N. V. Dokholyan, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Clustering of Identical Oligonucleotides in Coding and Noncoding DNA Sequences," *J. Biomol. Structure and Dynamics* **17**, 79-87 (1999).
15. N. Dokholyan, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Distributions of Dimeric Tandem Repeats in Non-coding and Coding DNA Sequences," *J. Theor. Biol.* **202**, 273-282 (2000).
16. I. Grosse, H. Herzel, **S. V. Buldyrev**, and H. E. Stanley, "Species Independence of Mutual Information in Coding and Noncoding DNA," *Phys. Rev. E* **61**, 5624-5629 (2000).

(v) Behavior of Complex Systems:

1. B. Jovanovic, **S. V. Buldyrev**, S. Havlin, H. E. Stanley, "Punctuated Equilibrium and 'History Dependent' Percolation," *Phys. Rev. E* **50**, R2403-R2406 (1994).
2. S. Rabinovich, G. Berkolaiko, **S. V. Buldyrev**, and A. Shekhter, "Logistic Map – an Analytical Solution," *Physica A* **218**, 457-460 (1995).
3. G. M. Viswanathan, V. Afanasyev, **S. V. Buldyrev**, E. J. Murphy, P. A. Prince, and H. E. Stanley, "Levy Flight Search Patterns of Wandering Albatrosses," *Nature* **381**, 413-415 (1996).
4. G. M. Viswanathan, **S. V. Buldyrev**, S. Havlin, M. G. E. da Luz, E. Raposo, and H. E. Stanley, "Optimizing the Success of Random Searches," *Nature* **401**, 911-914 (1999).
5. G. M. Viswanathan, **S. V. Buldyrev**, E. Garger, V. A. Kashpur, L. S. Lucena, A. Shlyakhter, J. Tschiersch, and H. E. Stanley, "Log-Normal Behavior of ¹³⁷Cs Concentration Fluctuations Around Chernobyl," *Phys. Rev. E* **62**, 4389-4392 (2000).

6. **S. V. Buldyrev**, S. Havlin, A. Ya. Kazakov, M. G. E. da Luz, E. P. Raposo, H. E. Stanley, and G. M. Viswanathan, “Average Time Spent by Levy Flights and Walks on an Interval with Absorbing Boundaries,” *Phys. Rev. E* **64**, 041108-11 (2001).
7. **S. V. Buldyrev**, M. Gitterman, S. Havlin, A. Ya. Kazakov, M. G. E. da Luz, E. P. Raposo, H. E. Stanley, and G. M. Viswanathan, “Properties of Levy flights on an interval with absorbing boundaries,” *Physica A* **302**, 148-161 (2001).
8. E. Raposo, **S. V. Buldyrev**, M. G. da Luz, M. C. Santos, H. E. Stanley, G. M. Viswanathan, “Dynamical robustness of Levy search strategies,” *Phys. Rev. Lett.* **91**, 240601-4 (2003).
9. **S. V. Buldyrev**, J. Ferrante, F. R. Zypman, “Dry friction avalanches: Experiment and theory,” *Phys. Rev. E* **74**, 066110 (2006).
10. A. M. Edwards, R. A. Phillips, N. W. Watkins, M. P. Freeman, E. J. Murphy, V. Afanasyev, **S. V. Buldyrev**, M. G. E. da Luz, E. P. Raposo, H. E. Stanley, G. M. Viswanathan, “Revisiting Levy flight search patterns of wandering albatrosses, bumblebees and deer,” *Nature* **449**, 1044-U5 (2007).
11. D. Rybski, **S. V. Buldyrev**, S. Havlin, F. Liljeros, and H.A. Makse, “Scaling laws of human interaction activity,” *Proc. Natl. Acad. Sci.* **106**, 12640-12645 (2009).
12. D. Rybski, **S. V. Buldyrev**, S. Havlin, F. Liljeros, and H.A. Makse, “Communication activity in social networks: growth and correlations,” *Europ. Phys J. B* **84**, 147-159 (2011).
13. D. Rybski, **S.V. Buldyrev**, S. Havlin, F. Liljeros, H.A. Makse, “Communication activity in a social network: relation between long-term correlations and inter-event clustering,” *Sci. Rep.* **2**, 560 (2012).
14. A. Belmonte, R. Di Clemente, and **S. V. Buldyrev**, “The Italian primary school-size distribution and the city-size: a complex nexus “, *Sci. Rep.* | **4**, 5301 (2014).
15. V. Afanasyev, S. V. Buldyrev, M. J. Dunn, J. Robst, M. Preston, S. F. Bremner, D. R. Briggs, R. Brown, S. Adlard, H. J. Peat , “Increasing Accuracy: A New Design and Algorithm for Automatically Measuring Weights, Travel Direction and Radio Frequency Identification (RFID) of Penguins” *PLoS ONE* **10**. e0126292, doi:10.1371/journal.pone.0126292 (2015).

(vi) Nonlinear Surface Growth:

1. **S. V. Buldyrev**, S. Havlin, J. Kertesz, H. E. Stanley, and T. Vicsek, “Ballistic Deposition with Power Law Noise: A Variant of the Zhang Model,” *Phys. Rev. A* **43**, 7113 (1991).

2. S. Havlin, **S. V. Buldyrev**, H. E. Stanley, and G. H. Weiss, "Probability Distribution of the Interface Width in Surface Roughening: Analogy with a Levy Flight," *J. Phys. A* **24**, L925-L931 (1991).
3. **S. V. Buldyrev**, A.-L. Barabasi, F. Caserta, S. Havlin, H. E. Stanley, and T. Vicsek, "Anomalous Interface Roughening in Porous Media: Experiment and Model," *Phys. Rev. A* **45**, R-8313 (1992).
4. Y. Lereah, I. Zarudi, E. Grunbaum, G. Deutscher, **S. V. Buldyrev**, and H. E. Stanley, "Morphology of Ge:Al Thin Films: Experiments and Model," *Phys. Rev. E* **49**, 649-656 (1994).
5. L. A. N. Amaral, A.-L. Barabasi, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "A New Exponent Characterizing the Effect of Evaporation on Imbibition Experiments," *Phys. Rev. Lett.* **72**, 641-644 (1994).
6. L. A. N. Amaral, A.-L. Barabasi, **S. V. Buldyrev**, S. T. Harrington, S. Havlin, R. Sadr and H. E. Stanley, "Avalanches and the Directed Percolation Depinning Model: Experiments, Simulations and Theory," *Phys. Rev. E* **51**, 4655-4673 (1995).
7. **S. V. Buldyrev**, S. Havlin, J. Kertesz, R. Sadr, A. Shehter, and H. E. Stanley, "Surface Roughening with Quenched Disorder in High Dimensions: Exact Results for the Cayley Tree," *Phys. Rev. E* **52**, 373-388 (1995).
8. S. Havlin, L. A. N. Amaral, **S. V. Buldyrev**, S. T. Harrington, and H. E. Stanley, "Dynamics of Surface Roughening with Quenched Disorder," *Phys. Rev. Lett.* **74**, 4205-4208 (1995).
9. H. A. Makse, **S. V. Buldyrev**, H. Leschhorn, and H. E. Stanley, "The Pinning Paths of an Elastic Interface," *Europhys. Lett.* **41**, 251-256 (1998).
10. Y. Lereah, A. Gladkikh, **S. V. Buldyrev**, and H. E. Stanley, "Nanometer scale avalanche dynamics in diffusion limited propagation of Interfaces in Random Ge:Al Alloys," *Phys. Rev. Lett.* **83**, 784-787 (1999).
11. A. Fortini, M. I. Mendeleev, **S. Buldyrev**, and D. Srolovitz, "Asperity contacts at the nanoscale: Comparison of Ru and Au," *J. Appl. Phys.* **104**, 074320 (2008).
12. A. B. de Oliveira, A Fortini, **S. V. Buldyrev**, and D. Srolovitz, "Dynamics of the contact between a ruthenium surface with a single nanoasperity and a flat ruthenium surface: Molecular dynamics simulations," *Phys. Rev. B* **83**, 134101 (2011).
13. H. Eid, G. G. Adams, N. E. McGruer, A. Fortini, **S. Buldyrev** and D. Srolovitz,

“A Combined Molecular Dynamics and Finite Element Analysis of Contact and Adhesion of a Rough Sphere and a Flat Surface”, *Tribology Transactions* **54**, 920-928, (2011)

(vii) Transport in Disordered Media:

1. S. V. Siparov, **S. V. Buldyrev**, I. O. Protodyakonov, “Kinetics Of Desorption In Biporous Grain Of Sorbent For The Case Of A Nonlinear Thermal Sorption Equation,” *J. Appl. Chemistry USSR* **56**, 2482-2486 (1983).
2. **S. V. Buldyrev**, ”Calculation Of The Coefficients Of Formal Expansion Of The Green-Function Of A Multidimensional Parabolic Equation And The Diagram Technique,” *Vestnik Leningrad. Univ. Ser. Mat. Mekh. Astronom.* (1) 10-16 (1983).
3. **S. V. Buldyrev**, “Results Of Computer Calculations Of Coefficients Of The Asymptotic Of The Heat-Conductivity Equation Green-Function,” *Vestnik Leningrad. Univ. Ser. Mat. Mekh. Astronom.* (1) 109-110 (1984).
4. N. V. Dokholyan, Y. Lee, **S. V. Buldyrev**, S. Havlin, P. R. King, and H. E. Stanley, “Distribution of Shortest Paths in Percolation,” *J. Stat. Phys.* **93**: 603-613 (1998).
5. Y. Lee, J. S. Andrade, **S. V. Buldyrev**, N. Dokholyan, S. Havlin, P. R. King, G. Paul, and H. E. Stanley, “Traveling Time and Traveling Length for Flow in Porous Media,” *Phys. Rev. E* **60**, 3425-3428 (1999).
6. M. Barthelemy, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, “Scaling for the critical percolation backbone,” *Phys. Rev. E* **60**, R1123-R1126 (1999)
7. M. Barthelemy, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, “Are the Low Currents in the Random Resistor Network Multifractal?” *Phys. Rev. E* **61**, R3283-R3286 (2000).
8. G. Paul, S. V. Buldyrev, N. V. Dokholyan, S. Havlin, P. R. King, Y. Lee, and H. E. Stanley, “Dependence of Conductance on Percolation Backbone Mass” *Phys. Rev. E* **61**: 3435 (2000).
9. J. S. Andrade Jr., **S. V. Buldyrev**, N. Dokholyan, P. R. King, Y. Lee, S. Havlin, and H. E. Stanley, “Flow between Two Sites in Percolation Systems,” *Phys. Rev. E* **62**, 8270 (2000).
10. J. S. Andrade Jr., A. D. Araujo, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, “The Dynamics of Viscous Penetration in Percolation Porous Media,” *Phys. Rev. E* **63**, 051403-5 (2001).

11. L. A. Braunstein, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Universality Classes for Self Avoiding Walks in a Strongly Disordered System," *Phys. Rev. E* **65**, 056128 (2002).
12. L. A. Braunstein, **S. V. Buldyrev**, R. Cohen, S. Havlin, and H. E. Stanley, "Optimal Paths in Disordered Complex Networks," *Phys. Rev. Lett.* **61**, 168701-4 (2003).
13. E. Lopez, **S. V. Buldyrev**, N. V. Dokholyan, S. Havlin, and H. E. Stanley, "Post-Breakthrough Behavior in Flow through Disordered Media," *Phys. Rev. E* **67**, 056314-16 (2003)
14. **S. V. Buldyrev**, S. Havlin, E. Lopez, and H. E. Stanley, "Universality of the Optimal Path in the Strong Disorder Limit," *Phys. Rev. E* **70**, 035102(R) (2004).
15. S. Sreenivasan, T. Kalisky, L. A. Braunstein, **S. V. Buldyrev**, S. Havlin and H. E. Stanley, "Effect of disorder strength on optimal paths in complex networks," *Physical Review E* **70**, 046133-6 (2004).
16. E. Lopez, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Anomalous transport in complex networks," *Phys. Rev. Lett.* **94**, 248701 (2005).
17. Z. Wu, E. López, **S. V. Buldyrev**, L. A. Braunstein, S. Havlin, and H. E. Stanley, "Current flow in random resistor networks: The role of percolation in weak and strong disorder," *Phys. Rev. E* **71**, 045101(R) (2005).
18. T. Kalisky, L. A. Braunstein, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Scaling of Optimal-Path-Lengths Distribution in Complex Networks," *Phys. Rev. E* **72**, 025102 (2005).
19. E. Lopez, **S. V. Buldyrev**, L. Braunstein, S. Havlin, and H. E. Stanley, "Possible Connection between the Optimal Path and Flow in Percolation Clusters," *Phys. Rev. E* **72**, 056131 (2005).
20. T. Kalisky, S. Sreenivasan, L. A. Braunstein, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Scale-Free Networks Emerging from Weighted Random Graphs," *Phys. Rev. E* **73**, 025103(R) (2006).
21. **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Optimal paths in strong and weak disorder: a unified approach," *Phys. Rev. E* **73**, 036128 (2006).
22. G.-L. Li, L. A. Braunstein, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Transport and percolation theory in weighted networks," *Phys. Rev. E* **75**, 045103 (2007).
23. J. Shao, **S. V. Buldyrev**, R. Cohen, M. Kitsak, S. Havlin and H. E. Stanley, "Fractal boundaries of complex networks," *EPL* **84**, 48004-6 (2008).

24. J. Shao, **S. V. Buldyrev**, L. A. Braunstein, S. Havlin, and H. E. Stanley, "Structure of shells in complex networks," *Phys. Rev. E* **80**, 036105-13 (2009).
25. **S. V. Buldyrev**, R. Parshani, G. Paul, H. E. Stanley, and S. Havlin, "Catastrophic cascade of failures in interdependent networks," *Nature* **464**, 1025-1028 (2010)
26. R. Parshani, **S. V. Buldyrev**, and S. Havlin, "Interdependent Networks: Reducing the Coupling Strength Leads to a Change from a First to Second Order Percolation Transition", *Phys. Rev. Lett.* **105**, 048701 (2010)
27. R. Parshani, **S. V. Buldyrev**, and S. Havlin, "Critical effect of dependency groups on the function of networks," *Proc. Nat. Acad. Sci.* **108**, 1007-1010 (2010).
28. **S. V. Buldyrev**, N. W. Shere, and G. A. Cwlich, "Interdependent networks with identical degrees of mutually dependent nodes", *Phys. Rev. E* **83**, 016112 (2011).
29. J. Shao, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Cascade of failures in coupled network systems with multiple support-dependence relations", *Phys. Rev. E* **83**, 036116 (2011).
30. X. Huang, J. Gao, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Robustness of interdependent networks under targeted attack", *Phys. Rev. E* **83**, 065101 (2011).
31. J. Gao, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Robustness of a Network of Networks", *Phys. Rev. Lett.* **107**, 195701 (2011).
32. J. Gao, **S. V. Buldyrev**, H. E. Stanley, and S. Havlin, "Networks formed from interdependent networks", *Nature Physics* **8**, 40-48 (2012).
33. W. Li, A. Bashan, **S. V. Buldyrev**, H. E. Stanley, and S. Havlin, "Cascading Failures in Interdependent Lattice Networks: The Critical Role of the Length of Dependency Links", *Phys. Rev. Lett.* **108**, 228702 (2012).
34. J. Gao, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Robustness of a network formed by n interdependent networks with a one-to-one correspondence of dependent nodes", *Phys. Rev. E* **85**, 066134 (2012).
35. X. Q. Huang, S. Shao, H. J. Wang, **S.V. Buldyrev**, H. E. Stanley, S. Havlin, "The robustness of interdependent clustered networks", *EPL* **101**, 18002 (2013).
36. A. Bashan, Y. Berezin, **S. V. Buldyrev**, and S. Havlin, "The extreme vulnerability of interdependent spatially embedded networks", *Nature Physics* **9**, 667-672 (2013)
37. J. Gao, **S. V. Buldyrev**, H. E. Stanley, X. Xu, and S. Havlin, "Percolation of a general network of networks," *Phys. Rev. E* **88**, 062816 (2013).

38. A. Majdandzic, B. Podobnik, **S.V. Buldyrev**, D. Y. Kenett, S. Havlin, and H. E. Stanley, “Spontaneous recovery in dynamical networks,” *Nature Physics*. **10**, 34-38 (2014).
39. Y. Kornbluth, S. Lowinger, G. Cwilich, and **S. V. Buldyrev**, “Cascading failures in networks with proximate dependent nodes”, *Phys. Rev. E* **89**, 032808 (2014).
40. M. A. Di Muro, **S. V. Buldyrev**, H. E. Stanley, and L. A. Braunstein
“Cascading failures in interdependent networks with finite functional components”, *Phys. Rev. E* **94**, 042304 (2016).
41. S. Lowinger, G. A. Cwilich, **S. V. Buldyrev**, “Interdependent lattice networks in high dimensions”, *Phys. Rev. E* **94**, 052306 (2016).
42. M. A. Di Muro, L. D. Valdez, H. H. Aragão Rêgo, **S. V. Buldyrev**, H. E. Stanley, and L. A. Braunstein, "Cascading Failures in Interdependent Networks with Multiple Supply-Demand Links and Functionality Thresholds," *Scientific Reports* **7**, 15059 (2017).
43. Y. Kornbluth, G. Barach, Y. Tuchman, B. Kadish, G. A. Cwilich, and S. V. Buldyrev, “Network overload due to massive attacks”, *Phys. Rev. E* **97**, 052309 (2018).
44. L. M. Shekhtman, M. M. Danziger, I. Bonamassa, S. V. Buldyrev, G. Caldarelli, V. Zlatić and S. Havlin, “Critical field-exponents for secure message-passing in modular networks”, *New J. Phys.* **20** 053001 (2018).
45. R. Spiewak, S. Soltan, Y. Forman, S. V. Buldyrev, and G. Zussman,
“A study of cascading failures in real and synthetic power grid topologies”, *Network Science* **6**, 448–468 (2018).
46. M. A. Di Muro, L. D. Valdez, H. E. Stanley, S. V. Buldyrev, and L. A. Braunstein,
“Insights into bootstrap percolation: Its equivalence with k-core percolation and the giant component,” *Phys. Rev. E* **99**, 022311 (2019)

(viii) Polymer Physics:

1. T. M. Birshtein, **S. V. Buldyrev**, and A. M. Elyashevitch, “Monte-Carlo Simulation of the Collapse Transition of a Two-Dimensional Polymer,” *Polymer* **26**, 1814-1824 (1985).
2. T. M. Birshtein, **S. V. Buldyrev**, A. M. Yelyashevich, “Monte-Carlo Study of the Coil-Globula Transition for the Two-Dimensional Lattice Model of a Macromolecule,” *Vysokom. Soed. A* **28**, 634-642 (1986).
3. **S. V. Buldyrev**, T. M. Birshtein, A. M. Yelyashevich, “Universality Of Characteristics Of The Coil-Clobule Transition In Two-Dimensional Lattice Models Of Macromolecules,” *Vysokom. Soed. B* **30**, 1244-1252 (1988).

4. **S. V. Buldyrev**, T. M. Birshstein, "Adsorption Of The Two-Dimensional Macromolecule In q-Conditions And Percolation Problem," *Vysokom. Soed. B* **30**, 392-395 (1988).
5. T. M. Birshstein , **S. V. Buldyrev**, "Phase-Transitions In The Course Of Adsorption Of Macromolecules - Monte-Carlo Study Of Adsorption Of Two-Dimensional Chains," *Vysokom. Soed. A* **31**, 104-111 (1989).
6. T. M. Birshstein and **S. V. Buldyrev**, "Universality of Properties of Coil-Globule Transitions in Different Two-Dimensional Lattice Models of a Macromolecule," *Polymer* **32**, 3387-3407 (1991).
7. **S. V. Buldyrev** and F. Sciortino, "Theta-point Temperature and Exponents for the Bond Fluctuation Model," *Physica A* **182**, 346-352 (1992).
8. N. V. Dokholyan, E. Pitard, **S. V. Buldyrev**, and H. E. Stanley, "Glassy Behavior of a Homopolymer from Molecular Dynamics Simulations," *Phys. Rev. E* **65**, 030801(R)-4 (2002);

(ix) Transformations in Liquids:

1. M. R. Sadr-Lahijany, A. Scala, **S. V. Buldyrev**, and H. E. Stanley, "Liquid state anomalies for the Stell-Hemmer core-softened potential," *Phys. Rev. Lett.* **81**, 4895-4898 (1998).
2. A. Skibinsky, **S. V. Buldyrev**, A. Scala, S. Havlin, and H. E. Stanley, "Quasicrystal Phase Formation," *Phys. Rev. E* **60**, 2664-2668 (1999).
3. M. R. Sadr-Lahijany, A. Scala, **S. V. Buldyrev**, and H. E. Stanley, "Water-Like Anomalies for Core-Softened Models of Fluids: One Dimension," *Phys. Rev. E* **60**, 6714-6721 (1999).
4. A. Scala, M. R. Sadr-Lahijany, N. Giovambattista, **S. V. Buldyrev**, and H. E. Stanley, "Water-Like Anomalies for Core-Softened Models of Fluids: Two Dimensional Systems," *Phys. Rev. E* **63**, 041202-8 (2001).
5. G. Franzese, G. Malescio, A. Skibinsky, **S. V. Buldyrev**, and H. E. Stanley, "Generic mechanism for generating a liquid-liquid phase transition," *Nature* **409**, 692-695 (2001)
6. G. Foffi, K. A. Dawson, **S.V. Buldyrev** , F. Sciortino, E. Zaccarelli, and P. Tartaglia, "Evidence for an unusual dynamical-arrest scenario in short-ranged colloidal systems," *Phys. Rev. E* **65**, 050802-6 (2002).
7. N. Giovambattista, F. W. Starr, F. Sciortino, **S. V. Buldyrev**, and H. E. Stanley, "Transitions between Inherent Structures in Water," *Phys. Rev. E* **65**, 041502-6 (2002).

8. E. Zaccarelli, G. Foffi, K. A. Dawson, **S. V. Buldyrev**, F. Sciortino, and P. Tartaglia, "Confirmation of anomalous dynamical arrest in attractive colloids: A molecular dynamics study," *Phys. Rev. E* **66**, 041402 (2002).
9. G. Franzese, G. Malescio, A. Skibinsky, **S. V. Buldyrev**, and H. E. Stanley, "Metastable liquid-liquid phase transition in a single-component system with only one crystal phase and no density anomaly," *Phys. Rev. E* **66**, 051206-14 (2002).
10. G. Malescio, G. Franzese, G. Pellicane, A. Skibinsky, **S. V. Buldyrev**, and H. E. Stanley, "Liquid liquid phase transition in one-component fluids," *J. Phys.-Condens. Matt.* **14**, 2193-2200 (2002).
11. N. Giovambattista, **S.V. Buldyrev**, F. W. Starr, and H. E. Stanley, "Connection between Adam-Gibbs theory and spatially heterogeneous dynamics," *Phys. Rev. Lett.* **90**, 085506-4 (2003).
12. **S. V. Buldyrev** and H. E. Stanley, "A System with Multiple Liquid-Liquid Critical Points," *Physica A* **330**, 124-129 (2003).
13. G. Foffi, E. Zaccarelli, **S. V. Buldyrev**, F. Sciortino, and P. Tartaglia, "Static and dynamical correlation functions behaviour in attractive colloidal systems from theory and simulation," *J. Chem. Phys.* **120**, 8824-8830 (2004).
14. A. Skibinsky, **S. V. Buldyrev**, G. Franzese, G. Malescio, and H. E. Stanley, "Liquid-Liquid Phase Transitions for Soft-Core Attractive Potentials," *Phys. Rev. E* **69**, 61206-15 (2004).
15. I. Saika-Voivod, E. Zaccarelli, F. Sciortino, **S. V. Buldyrev**, and P. Tartaglia, "Effect of bond lifetime on the dynamics of a short-range attractive colloidal system," *Phys. Rev. E* **70**, 041401-8 (2004).
16. N. Giovambattista, **S. V. Buldyrev**, H. E. Stanley, and F. W. Starr, "Clusters of mobile molecules in supercooled water," *Phys. Rev E* **72**, 011202 (2005).
17. G. Malescio, G. Franzese, A. Skibinsky, **S. V. Buldyrev**, and H. E. Stanley, "Liquid-liquid phase transition for an attractive isotropic potential with wide repulsive range," *Phys. Rev. E* **71**, 061504 (2005).
18. P. Kumar, **S.V. Buldyrev**, F. Sciortino, E. Zaccarelli, and H. E. Stanley, "Static and dynamic anomalies in a repulsive spherical ramp liquid: Theory and simulation," *Phys. Rev. E* **72**, 021501 (2005)
19. E. Zaccarelli, **S. V. Buldyrev**, E. La Nave, A. J. Moreno, I. Saika-Voivod, F. Sciortino, and P. Tartaglia, "Model for Reversible Colloidal Gelation," *Phys. Rev. Lett.* **94**, 218301 (2005).

20. Z. Yan, **S. V. Buldyrev**, N. Giovambattista, and H. E. Stanley, "Structural Order for One-Scale and Two-Scale Potentials," *Phys. Rev. Lett.* **95**, 130604 (2005).
21. A. J. Moreno, **S. V. Buldyrev**, E. La Nave, I. Saika-Voivod, F. Sciortino, P. Tartaglia, and E. Zaccarelli, "Energy Landscape of a Simple Model for Strong Liquids," *Phys. Rev. Lett.* **95**, 157802 (2005).
22. L. Xu, P. Kumar, **S. V. Buldyrev**, S.-H. Chen, P. H. Poole, F. Sciortino, and H. E. Stanley, "Relation between the Widom Line and the Dynamic Crossover in Systems with a Liquid-Liquid Critical Point," *Proc. Natl. Acad. Sci.* **102**, 16558-16562 (2005).
23. P. Kumar, **S. V. Buldyrev**, F. Starr, N. Giovambattista, and H. E. Stanley, "Thermodynamics, Structure, and Dynamics of Water Confined between Hydrophobic Plates," *Phys. Rev. E* **72**, 051503 (2005).
24. E. Zaccarelli, I. Saika-Voivod, **S. V. Buldyrev**, A. J. Moreno, P. Tartaglia, F. Sciortino, "Gel to glass transition in simulation of a valence-limited colloidal system," *J. Chem. Phys.* **124**, 124908 (2006).
25. A. J. Moreno, I. Saika-Voivod, E. Zaccarelli, E. La Nave, **S. V. Buldyrev**, P. Tartaglia, and F. Sciortino, "Non-Gaussian energy landscape of a simple model for strong network-forming liquids: Accurate evaluation of the configurational entropy," *J. Chem. Phys.* **124**, 204509 (2006).
26. Z. Yan, **S. V. Buldyrev**, N. Giovambattista, P. G. Debenedetti, and H. E. Stanley, "Family of tunable spherically symmetric potentials that span the range from hard spheres to waterlike behavior," *Phys. Rev. E* **73**, 051204 (2006).
27. P. Kumar, G. Franzese, **S. V. Buldyrev**, and H. E. Stanley, "Molecular dynamics study of orientational cooperativity in water," *Phys. Rev. E* **73**, 041505 (2006).
28. P. A. Netz, **S. V. Buldyrev**, M. C. Barbosa, and H. E. Stanley, "Thermodynamic and dynamic anomalies for dumbbell molecules interacting with a repulsive ramplike potential," *Phys. Rev. E* **73**, 061504 (2006).
29. L. Xu, **S. V. Buldyrev**, C. A. Angell, and H. E. Stanley, "Thermodynamics and dynamics of the two-scale spherically symmetric Jagla ramp model of anomalous liquids," *Phys. Rev. E* **74**, 031108 (2006).
30. P. Kumar, Z. Yan, L. Xu, M. G. Mazza, **S. V. Buldyrev**, S.-H. Chen, S. Sastry, and H. E. Stanley, "Glass Transition in Biomolecules and the Liquid-Liquid Critical Point of Water," *Phys. Rev. Lett.* **97**, 177802 (2006).
31. S. Zhou, A. Jamnik, E. Wolfe, **S.V. Buldyrev**, "Local structure and thermodynamics of a core-softened potential fluid: Theory and simulation," *Chemphyschem* **8**, 138-147 (2007).

32. P. Kumar, F. W. Starr, **S. V. Buldyrev**, and H. E. Stanley, "Effect of water-wall interaction potential on the properties of nanoconfined water," *Phys. Rev. E* **75**, 011202 (2007).
33. P. Kumar, **S. V. Buldyrev**, S. R. Becker, P. H. Poole, F. W. Starr, and H. E. Stanley, "Relation between the Widom line and the breakdown of the Stokes-Einstein relation in supercooled water," *Proc. Natl. Acad. Sci.* **104**, 9575-9579 (2007).
34. **S. V. Buldyrev**, P. Kumar, P. G. Debenedetti, P. J. Rossky and H. E. Stanley, "Water-like solvation thermodynamics in a spherically symmetric solvent model with two characteristic lengths," *Proc. Natl. Acad. Sci.* **104**, 20177-20182 (2007).
35. Z. Yan, **S. V. Buldyrev**, P. Kumar, N. Giovambattista, P. G. Debenedetti, and H. E. Stanley, "Structure of the first- and second-neighbor shells of simulated water: Quantitative relation to translational and orientational order," *Phys. Rev. E* **76**, 051201 (2007).
36. Z. Yan, **S. V. Buldyrev**, P. Kumar, N. Giovambattista, and H. E. Stanley, "Correspondence between phase diagrams of the TIP5P water model and a spherically symmetric repulsive ramp potential with two characteristic length scales," *Phys. Rev. E* **77**, 042201 (2008).
37. B. J. Hrnjez, A. Kabarriti, B. I. Dach, **S. V. Buldyrev**, N. Asherie, G. R. Natanov, and J. Balderman, "Pyrazine in Supercritical Xenon: Local Number Density Defined by Experiment and Calculation," *J. Phys. Chem. B* **112**, 15431-15441 (2008).
38. Z.Y. Yan, **S. V. Buldyrev**, and H. E. Stanley, "Relation of water anomalies to the excess entropy," *Phys Rev E* **78**, 051201 (2008).
39. L. Xu, **S. V. Buldyrev**, N. Giovambattista, C. A. Angell, and H. E. Stanley, "A monatomic system with a liquid-liquid critical point and two distinct glassy states," *J. Chem. Phys.* **130**, 054505 (2009).
40. L. Xu, F. Mallamace, Z. Yan, F. W. Starr, **S. V. Buldyrev**, and H. E. Stanley, "Appearance of a Fractional Stokes-Einstein Relation in Water and a Structural Interpretation of Its Onset," *Nature Physics* **5**, 565-569 (2009).
41. P. Kumar, **S.V. Buldyrev**, H. E. Stanley, "Tetrahedral entropy for water", *Proc. Natl. Acad. Sci.* **106**, 22130-22134 (2009).
42. E. Lascaris, G. Malescio, **S. V. Buldyrev**, and H. E. Stanley, "Cluster formation, waterlike anomalies, and re-entrant melting for a family of bounded repulsive interaction potentials," *Phys. Rev. E* **81**, 031201 (2010).

43. D. Corradini, **S. V. Buldyrev**, P. Gallo, and H. E. Stanley, “Effect of hydrophobic solutes on the liquid-liquid critical point”, *Phys. Rev. E* **81**, 061504 (2010).
44. L. M. Xu, N. Giovambattista, S. V. Buldyrev, P. G. Debenedetti, and H. E. Stanley, “Waterlike glass polyamorphism in a monoatomic isotropic Jagla model”, *J. Chem. Phys.* **134**, 064507 (2011)
45. J.Y. Abraham, **S. V. Buldyrev**, and N. Giovambattista, “Liquid and Glass Polymorphism in a Monatomic System with Isotropic, Smooth Pair Interactions”, *J. Phys. Chem. B* **115**, 14229-14239 (2011).
46. Z. Su, **S. V. Buldyrev**, P. G. Debenedetti, P. J. Rossky, and H. E. Stanley, “Modeling simple amphiphilic solutes in a Jagla solvent,” *J. Chem. Phys.* **136**, 044511 (2012).
47. M. Maiti, S. Weiner, **S. V. Buldyrev**, H. E. Stanley, and S. Sastry, “Potential of mean force between hydrophobic solutes in the Jagla model of water and implications for cold denaturation of proteins,” *J. Chem. Phys.* **136**, 044512 (2012).
48. Y. Tu, S. V. Buldyrev, Z. Liu, H. Fang, and H. E. Stanley, “Different water scenarios for a primitive model with two types of hydrogen bonds”, *EPL* **97**, 56005 (2012) .
49. T. A. Kesselring, G. Franzese, **S. V. Buldyrev**, H. J. Herrmann and H. E. Stanley “Nanoscale Dynamics of Phase Flipping in Water near its Hypothesized Liquid-Liquid Critical Point”, *Nature Scientific Reports* **2**, 474 (2012).
50. L. Xu, **S. V. Buldyrev**, H. E. Stanley, and G. Franzese “Homogeneous Crystal Nucleation Near a Metastable Fluid-Fluid Phase Transition”, *Phys Rev. Lett.* **109**, 095702 (2012).
51. E. G. Strelakova, J. Luo, H. E. Stanley, G. Franzese, and **S. V. Buldyrev**, “Confinement of Anomalous Liquids in Nanoporous Matrices”, *Phys Rev. Lett.* **109**, 105701 (2012).
52. A. M. Almudallal, **S. V. Buldyrev**, and I. Saika-Voivod, “Phase diagram of a two-dimensional system with anomalous liquid properties”, *J. Chem. Phys.* **137**, 034507 (2012).
53. D. Corradini, P. Gallo, **S. V. Buldyrev**, H. E. Stanley, “Fragile-to-strong crossover coupled to the liquid-liquid transition in hydrophobic solutions”, *Phys. Rev. E* **85**, 051503 (2012).
54. J. R. Dowdle, **S.V. Buldyrev**, H. E. Stanley, P. G. Debenedetti, P. J. Rossky, “Temperature and length scale dependence of solvophobic solvation in a single-site water-like liquid”, *J. Chem. Phys.* **138**, 064506 (2013).

55. S. Sharma, K. Sanat, **S. V. Buldyrev**, P. G. Debenedetti, P. J. Rossky, H. E. Stanley, “A Coarse-Grained Protein Model in a Water-like Solvent”, *Sci. Rep.* **3**, 1841 (2013).
56. T. A. Kesselring, E. Lascaris, G. Franzese, **S. V. Buldyrev**, H. J. Herrmann, H. E. Stanley, “Finite-size scaling investigation of the liquid-liquid critical point in ST2 water and its stability with respect to crystallization,” *J. Chem. Phys.* **138**, 244506 (2013).
57. A. M. Almodallal, **S. V. Buldyrev**, and I. Saika-Voivod, “Inverse melting in a two-dimensional off-lattice model”, *J. Chem. Phys.* **140**, 144505 (2014);
58. J. Luo, L. Xu, E. Lascaris, H. E. Stanley, and **S. V. Buldyrev**, “Behavior of the Widom Line in Critical Phenomena”, *Phys. Rev. Lett.* **112**, 135701 (2014)
59. E. Lascaris, M. Hemmati, **S. V. Buldyrev**, H. E. Stanley, and C. A. Angell, ”Search for a liquid-liquid critical point in models of silica”, *J. Chem. Phys.* **140**, 224502 (2014).
60. **S. V. Buldyrev** and G. Franzese, ”Two types of dynamics crossovers in a network-forming liquid with tetrahedral symmetry”, *J. Non-Crystalline Solids* **407**, 392 (2015).
61. J. Luo, L. Xu, C. A. Angell, H. E. Stanley and **S. V. Buldyrev**, “Physics of the Jagla model as the liquid-liquid coexistence line slope varies”, *J. Chem. Phys.* **142**, 224501 (2015).
62. E. Lascaris, M. Hemmati, **S. V. Buldyrev**, H. E. Stanley and C. A. Angell, “Diffusivity and short-time dynamics in two models of silica”, *J. Chem. Phys.* **142**, 104506 (2015);
63. J. Wedekind, L. Xu, **S. V. Buldyrev**, H. E. Stanley, D. Reguera, and G. Franzese, ”Optimization of crystal nucleation close to a metastable fluid-fluid phase transition” *Sci. Rep.* **5**, 11260 (2015).
64. N. Giovambattista, A. B. Almeida, A. M. Alencar, and **S. V. Buldyrev**, “Validation of Capillarity Theory at the Nanometer Scale by Atomistic Computer Simulations of Water Droplets and Bridges in Contact with Hydrophobic and Hydrophilic Surfaces”, *J. Phys. Chem. C*, **120** 1597–1608, (2016).
65. S. Gang , W. Ying, A. Lomakin, G. B. Benedek, H.E. Stanley, L. Xu, **S. V. Buldyrev**, “The phase behavior study of human antibody solution using multi-scale modeling”, *J. Chem. Phys.* **145**, 194901 (2016).
66. A. B. Almeida, N. Giovambattista, **S. V. Buldyrev**, and A. M. Alencar, “Validation of Capillarity Theory at the Nanometer Scale. II: Stability and Rupture of Water Capillary Bridges in Contact with Hydrophobic and Hydrophilic Surfaces”, *J. Phys. Chem. C* **122**, 556–1569 (2018).

(x) Econophysics

1. M. H. R. Stanley, **S. V. Buldyrev**, S. Havlin, R. Mantegna, M.A. Salinger, and H. E. Stanley, "Zipf plots and the size distribution of Firms," *Eco. Lett.* **49**, 453-457 (1995).
2. M. H. R. Stanley, L. A. N. Amaral, **S. V. Buldyrev**, S. Havlin, H. Leschhorn, P. Maass, M. A. Salinger, and H. E. Stanley, "Scaling Behavior in the Growth of Companies," *Nature* **379**, 804-806 (1996).
3. L. A. N. Amaral, **S. V. Buldyrev**, S. Havlin, H. Leschhorn, P. Maass, M. A. Salinger, H. E. Stanley, and M. H. R. Stanley, "Scaling Behavior in Economics: I. Empirical Results for Company Growth," *J. Phys. I France* **7**, 621-633 (1997).
4. **S. V. Buldyrev**, L. A. N. Amaral, S. Havlin, H. Leschhorn, P. Maass, M. A. Salinger, H. E. Stanley, and M. H. R. Stanley, "Scaling Behavior in Economics: II. Modeling of Company Growth," *J. Phys. I France* **7**, 635-650 (1997).
5. L. A. N. Amaral, **S. V. Buldyrev**, S. Havlin, M. A. Salinger, and H. E. Stanley, "Power law scaling for a system of interacting units with complex internal structure," *Phys. Rev. Lett.* **80**, 1385-1388 (1998).
6. **S. V. Buldyrev**, N. V. Dokholyan, S. Erramilli, M. Hong, J. Y. Kim, M. Malessio, and H. E. Stanley, "Hierarchy in Social Organization," *Physica A* **330**, 653-659 (2003).
7. K. Matia, D. Fu, **S. V. Buldyrev**, F. Pammolli, M. Riccaboni, and H. E. Stanley, "Statistical Properties of Business Firm Structure and Growth," *Europhys. Lett.* **67**, 493-503 (2004).
8. D.F. Fu, F. Pammolli, **S.V. Buldyrev**, M. Riccaboni, K. Matia, K. Yamasaki, and H. E. Stanley, "The growth of business firms: Theoretical framework and empirical evidence," *Proc. Natl. Acad. Sci.* **102**, 18801-18806 (2005).
9. D. Fu, **S. V. Buldyrev**, M. A. Salinger, and H. E. Stanley, "Percolation model for growth rates of aggregates and its application for business firm growth," *Phys. Rev. E* **74**, 036118 (2006).
10. K. Yamasaki, K. Matia, **S. V. Buldyrev**, D. Fu, F. Pammolli, M. Riccaboni, and H. E. Stanley, "Preferential attachment and growth dynamics in complex systems," *Phys. Rev. E* **74**, 035103 (2006).
11. M. Riccaboni, F. Pammolli, **S. V. Buldyrev**, L. Ponta, and H. E. Stanley, "The size variance relationship of business firm growth rates," *Proc. Natl. Acad. Sci.* **105**, 19595-19600 (2008).

12. **S. V. Buldyrev**, M. A. Salinger, and H. E. Stanley, "A Statistical Physics Implementation of Coase's Theory of the Firm," *Research in Economics* **70**, 536-557 (2016).

13. G. Morrison, **S. V. Buldyrev**, M. Imbruno, O. A. D. Arrieta, A. Rungi, M. Riccaboni, F. Pammolli, "On Economic Complexity and the Fitness of Nations", *Sci. Rep.* **7**, 15332 (2017).

14. A. Flori, F. Pammolli, S. V. Buldyrev, L. Regis, and H. E. Stanley, "Communities and regularities in the behavior of investment fund managers", *Proc. Natl. Acad. Sci.* **116**, xxxx-xxxx (2019).

Book Chapters (4)

1. **S. V. Buldyrev**, "Power Law Correlations in DNA Sequences" in: *Power Laws, Scale-Free Networks and Genome Biology. Series: Molecular Biology Intelligence Unit*, E. V. Koonin, G. Karev, and Yu. Wolf (Eds.) p. 123 - 164 (Springer, Berlin 2006).

2. **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, C.-K. Peng, and H. E. Stanley, "Fractals in Biology and Medicine: From DNA to the Heartbeat" in: *Fractals in Science*, A. Bunde and S. Havlin, eds. (Springer, Berlin, 1994), Chapter 2, pages 48-87

3. **S.V. Buldyrev**, "Application of Discrete Molecular Dynamics to Protein Folding and Aggregation" in: *Aspects of Physical Biology. Series: Lecture Notes in Physics*, G. Franzese and M. Rubi (Eds.) p.97 -132 (Springer-Verlag Berlin Heidelberg 2008)

4. **S.V. Buldyrev**, "Fractals in Biology" in *Encyclopedia of Complexity and Systems Science*, Robert A. Meyers (Ed.) p. 3779-3802 (Springer, New York, 2009)

Reviews and Conference Proceedings (108)

1. A.-L. Barabasi, **S. V. Buldyrev**, S. Havlin, G. Huber, H. E. Stanley, and T. Vicsek, "Imbibition in Porous Media: Experiment and Theory" in *Surface Disorder: Growth, Roughening, and Phase Transitions*, edited by R. Jullien, J. Kertesz, P. Meakin, and D. E. Wolf, (Nova Science, New York, 1992).

2. H. E. Stanley, **S. V. Buldyrev**, A. L. Goldberger, J. M. Hausdorff, S. Havlin, J. Mietus C.-K. Peng, and M. Simons, "Fractal Landscapes in Biological Systems, Long-Range Correlations in DNA and Interbeat Heart Intervals," *Physica A* **191**, 1-12 (1992).

3. C.-K. Peng, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, F. Sciortino, M. Simons, and H. E. Stanley, "Fractal Landscape Analysis of DNA Walks," *Physica A* **191**, 25-29 (1992).

4. **S. V. Buldyrev**, A.-L. Barabasi, S. Havlin, J. Kertesz, H. E. Stanley and H. S. Xenias, "Anomalous Interface Roughening in 3D Porous Media: Experiment and Model," *Physica A* **191**, 220-226 (1992).

5. L. A. N. Amaral, A.-L. Barabasi, **S. V. Buldyrev**, S. Havlin and H. E. Stanley, "Anomalous Interface Roughening: The Role of a Gradient in the Density of Pinning Sites," *Fractals* **1**, 818-826 (1993).
6. **S. V. Buldyrev**, S. Havlin and H. E. Stanley, "Anisotropic Percolation and the d-Dimensional Surface Roughening Problem," *Physica A* **200**, 200-211 (1993).
7. S. Havlin, A.-L. Barabasi, **S. V. Buldyrev**, C. K. Peng, M. Schwartz, H. E. Stanley, and T. Vicsek, "Anomalous Surface Roughening: Experiment and Models" in *Growth Patterns in Physical Sciences and Biology*, edited by E. Louis, L. Sander and P. Meakin, (Plenum, New York, 1993), pp. 85-98.
8. H. E. Stanley, **S. V. Buldyrev**, F. Caserta, G. Daccord, W. Eldred, A. Goldberger, R. E. Hausman, Havlin, H. Larralde, J. Nittmann, C. K. Peng, F. Sciortino, M. Simons, P. A. Trunfio, and G. H. Weiss, "Fractal Landscapes in Physics and Biology" in *Growth Patterns in Physical Sciences and Biology* edited by E. Louis, L. Sander and P. Meakin (Plenum, NY, 1993), pp. 127-136.
9. H. E. Stanley, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, F. Sciortino, C.-K. Peng, and M. Simons, "Scaling Concepts and Complex Fluids - Long-Range Power Law Correlations in DNA," *J. Physique IV* **3**, 15-25 (1993).
10. H. E. Stanley, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, C.-K. Peng, and M. Simons, "Long-Range Power Law Correlations in Condensed Matter Physics and Biophysics," *Physica A* **200**, 4-24 (1993).
11. C. K. Peng, **S. V. Buldyrev**, J. M. Hausdorff, S. Havlin, J. E. Mietus, M. Simons, H. E. Stanley, and A. L. Goldberger, "Fractal Landscapes in Physiology and Medicine: Long-Range Correlations in DNA Sequences and Heart Rate Intervals" in *Fractals in Biology and Medicine*, edited by G. A. Losa, T. F. Nonnenmacher and E. R. Weibel, (Birkhauser Verlag, Boston, 1994), pp. 55-65.
12. H. E. Stanley, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, R. N. Mantegna, S. M. Ossadnik, C.-K. Peng, F. Sciortino and M. Simons, "Fractals in Biology and Medicine" in *Diffusion Processes: Experiment, Theory, Simulations*, edited by A. Pcekalski, (Springer-Verlag, Berlin, 1994), pp. 147-178.
13. C. K. Peng, **S. V. Buldyrev**, J. M. Hausdorff, S. Havlin, J. E. Mietus, M. Simons, H. E. Stanley, and A. L. Goldberger, "Non-Equilibrium Dynamics as an Indispensable Characteristic of a Healthy Biological System," *Integr. Physiol. Behavioral Sci.* **29**, 283-293 (1994).
14. H. E. Stanley, **S. V. Buldyrev**, A. L. Goldberger, Z. D. Goldberger, S. Havlin, R. N. Mantegna, S. M. Ossadnik, C.-K. Peng, and M. Simons, "Statistical Mechanics in

Biology – How Ubiquitous are Long-Range Correlations,” *Physica A* **205**, 214-253 (1994).

15. H. E. Stanley, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, R. N. Mantegna, C.-K. Peng, and M. Simons, “Statistical and Linguistic Features of Noncoding DNA,” *Nuovo Cimento D* **16**, 1339-1356 (1994).

16. S. Havlin, **S. V. Buldyrev**, A. L. Goldberger, R. N. Mantegna, C.-K. Peng, M. Simons, and H. E. Stanley, “Statistical Properties of DNA Sequences” in *Fractal Reviews in the Natural and Applied Sciences*, edited by M. M. Novak, (Chapman and Hall, London, 1995), pp. 1--11.

17. H. E. Stanley, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, R. N. Mantegna, C.-K. Peng, M. Simons, and M. H. R. Stanley, “Long-Range Correlations and Generalized Levy Walks in DNA Sequences” in *Levy Flights and Related Topics in Physics*, edited by M. F. Shlesinger, G. M. Zaslavsky, and U. Frisch (Springer, Berlin, 1995), pp. 331-347.

18. S. Havlin, **S. V. Buldyrev**, A. L. Goldberger, R. N. Mantegna, S. M. Ossadnik, C.-K. Peng, M. Simons, and H. E. Stanley, “Statistical and Linguistic Features of DNA-Sequences,” *Fractals* **3**, 269-284 (1995).

19. S. Havlin, **S. V. Buldyrev**, A. L. Goldberger, R. N. Mantegna, S. M. Ossadnik, C.-K. Peng, M. Simons, and H. E. Stanley, “Fractals in Biology and Medicine,” *Chaos Sol. & Fractals* **6**, 171-201 (1995).

20. C.-K. Peng, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, R. N. Mantegna, M. Simons, and H. E. Stanley, “Statistical Properties of DNA sequences,” *Physica A* **221**, 180-192 (1995).

21. H. E. Stanley, V. Afanasyev, L. A. N. Amaral, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, H. Leschhorn, P. Maass, R. N. Mantegna, C.-K. Peng, P. A. Prince, M. A. Salinger, M. H. R. Stanley, and G. M. Viswanathan, “Anomalous Fluctuations in the Dynamics of Complex Systems: From DNA and Physiology to Econophysics,” *Physica A* **224**, 302-321 (1996).

22. H. E. Stanley, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, R. N. Mantegna, C.-K. Peng, and M. Simons, “Scale Invariant Features of Coding and Noncoding DNA Sequences” in *Fractal Geometry in Biological Systems: An Analytical Approach*, edited by P. Iannacone and M. K. Khokha (CRC Press, Boca Raton, 1996). pp. 15-30.

23. H. E. Stanley, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, R. N. Mantegna, C.-K. Peng, and M. Simons, “Statistical and Linguistic Features of DNA Sequences” in *Physics of Biomaterials: Fluctuations, Selfassembly, and Evolution*, edited by T. Riste and D. Sherrington (Kluwer, Dordrecht, 1996), pp. 219-234.

24. H. E. Stanley , L. A. N. Amaral, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, H. Leschhorn, P. Maass, H. A. Makse, C. K. Peng, M. A. Salinger, M. H. R. Stanley, and G. M. Viswanathan, "Scaling and universality in animate and inanimate systems," *Physica A* **231**, 20-48 (1996).
25. **S. V. Buldyrev**, L. A. N. Amaral, A.-L. Barabasi, S. T. Harrington, S. Havlin, R. Sadr and H. E. Stanley, "Avalanches and the Directed Percolation Depinning Model," *Fractals* **4**, 307-319 (1996).
26. H. E. Stanley , L. A. N. Amaral, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, B. T. Hyman, H. Leschhorn, P. Maass, H. A. Makse, C. K. Peng, M. A. Salinger, M. H. R. Stanley, and G. M. Viswanathan, "Scaling and universality in living systems," *Fractals* **4**, 427-451 (1996).
27. M. H. R. Stanley, L. A. N. Amaral, **S. V. Buldyrev**, S. Havlin, H. Leschhorn, P. Maass, M. A. Salinger, and H. E. Stanley, "Can statistical physics contribute to the science of economics?" *Fractals* **4**, 415-425 (1996).
28. L. A. N. Amaral, **S. V. Buldyrev**, S. Havlin, P. Maass, M. A. Salinger, H. E. Stanley, and M. H. R. Stanley, "Scaling behavior in economics: The problem of quantifying company growth," *Physica A* **244**, 1-24 (1997).
29. S. Rabinovich, G. Berkolaiko, **S. V. Buldyrev**, A. Shekhter, and S. Havlin, "Analytical solution of the logistic equation," *Inter. J. Bifurcation & Chaos* **7**, 837-838 (1997).
30. S. Havlin, **S. V. Buldyrev**, A. L. Goldberger, P. Ch. Ivanov, C.-K. Peng, H. E. Stanley and G. M. Viswanathan, "Scaling Properties of DNA Sequences and Heartbeat Rate" in *The Physics of Complex Systems* , edited by F. Mallamace and H. E. Stanley (IOS Press, Amsterdam, 1997), pp. 445-472.
31. **S. V. Buldyrev**, H. Leschhorn, P. Maass, H. E. Stanley, M. H. R. Stanley, L. A. N. Amaral, S. Havlin, and M. A. Salinger, "Scaling Behavior in Economics: Empirical Results and Modeling of Company Growth," in *The Physics of Complex Systems*, edited by F. Mallamace and H. E. Stanley (IOS Press, Amsterdam, 1997), pp. 145-174.
32. R. H. R. Stanley, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Clumping of Base Pairs in DNA" in *The Physics of Complex Systems*, edited by F. Mallamace and H. E. Stanley (IOS Press, Amsterdam, 1997), pp. 687-694.
33. G. M. Viswanathan, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Long-range correlation measures for quantifying patchiness: Deviations from uniform power-law scaling in genomic DNA," *Physica A* **249**, 581-586 (1998).

34. **S. V. Buldyrev**, N.V. Dokholyan, A.L. Goldberger, S. Havlin, C.-K. Peng, H.E. Stanley and G.M. Viswanathan, "Analysis of DNA Sequences Using Methods of Statistical Physics," *Physica A* **249**, 430-438 (1998).
35. N. Dokholyan, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Model of unequal chromosomal crossing over," *Physica A* **249**, 594-599 (1998).
36. H. E. Stanley, **S. V. Buldyrev**, L. Cruz, T. Gomez-Isla, S. Havlin, B. T. Hyman, R. B. Knowles, B. Urbanc, and C. Wyart, "Statistical physics and Alzheimer's disease," *Physica A* **249**, 460-471 (1998).
37. L. A. N. Amaral, **S. V. Buldyrev**, S. Havlin, M. A. Salinger, and H. E. Stanley, "Modeling Scaling Behavior in the Growth Dynamics of Organizations" in *Econophysics: An Emerging Science*, edited by J. Kertesz and I. Kondor (Kluwer, Dordrecht, 1998).
38. H. E. Stanley, L. A. N. Amaral, **S. V. Buldyrev**, S. Havlin, T. H. Keitt, H. A. Makse and G. Viswanathan, "Scale-Invariant Correlations in the Social Sciences" in *Econophysics: An Emerging Science*, edited by J. Kertesz and I. Kondor (Kluwer, Dordrecht, 1998).
39. H. E. Stanley, **S.V. Buldyrev**, M. Canpolat, M. Meyer, O. Mishima, M. R. Sadr-Lahijany, A. Scala, and W. F. Starr, "The puzzling statistical physics of liquid water," *Physica A* **257**, 213-232 (1998).
40. H. E. Stanley, L. A. N. Amaral, J. S. Andrade, **S. V. Buldyrev**, S. Havlin, H. A. Makse, C.-K. Peng, B. Suki, G. Viswanathan, "Scale-invariant correlations in the biological and social sciences," *Philosophical Magazine B* **77**, 1373-1388 (1998).
41. H. E. Stanley, **S.V. Buldyrev**, M. Canpolat, S. Havlin, O. Mishima, M. R. Sadr-Lahijany, A. Scala, and W. F. Starr, "The puzzle of liquid water: a very complex fluid," *Physica D* **133**, 453-462 (1999).
42. P. R. King, J. S. Andrade, **S. V. Buldyrev**, N. V. Dokholyan, Y. Lee, S. Havlin, and H. E. Stanley, "Predicting Oil Recovery Using Percolation," *Physica A* **266**, 107-114 (1999).
43. N. V. Dokholyan, **S. V. Buldyrev**, S. Havlin, P. R. King, Y. Lee, and H. E. Stanley, "Scaling of the Distribution of Shortest Paths in Percolation," *Physica A* **266**, 55-61 (1999).
44. P. R. King, **S. V. Buldyrev**, N. V. Dokholyan, S. Havlin, Y. Lee, G. Paul, and H. E. Stanley, "Applications of statistical physics to the oil industry: predicting oil recovery using percolation theory," *Physica A* **274**, 60-66 (1999).

45. Y. Lereah, **S. V. Buldyrev**, H. E. Stanley, "The propagation of crystalline-amorphous interface: Experiment and model," *Materials Science Forum* **294**, 525-528 (1999)
46. **S. V. Buldyrev**, M. Canpolat, S. Havlin, O. Mishima, M. R. Sadr-Lahijany, A. Scala, F. W. Starr, and H. E. Stanley, "Physics of Supercooled Water: Possibility of Two Liquid Phases" in *Slow Dynamics in Complex Systems* edited by M. Tokuyama and I. Oppenheim (AIP Conference Series, 1999), pp. 243-256
47. S. Havlin, **S. V. Buldyrev**, A. Bunde, A. L. Goldberger, P. C. Ivanov, C.-K. Peng, and H. E. Stanley, "Scaling in nature: from DNA through heartbeats to weather," *Physica A* **273**, 46-69 (1999).
48. H. E. Stanley, **S. V. Buldyrev**, A. L. Goldberger, S. Havlin, C.-K. Peng, and M. Simons, "Scaling features of noncoding DNA," *Physica A* **273**, 1-18 (1999).
49. **S. V. Buldyrev**, N. V. Dokholyan, S. Havlin, H. E. Stanley, and R. H. R. Stanley, "Expansion of Tandem Repeats and Oligomer Clustering in Coding and Noncoding DNA Sequences," *Physica A* **273**, 19-32 (1999).
50. N. V. Dokholyan, **S. V. Buldyrev**, H. E. Stanley, and E. I. Shakhnovich, "Kinetics of the Protein Folding Transition" in *Statistical Physics - 3rd Tohwa University International Conference* edited by M. Tokuyama (AIP Conference Series, Volume 519, 2000), pp. 419-425.
51. **S. V. Buldyrev**, M. Canpolat, S. Havlin, M. Meyer, O. Mishima, M. R. Sadr-Lahijany, A. Scala, H. E. Stanley, and F. W. Starr, "Theoretical and Computational Studies of Possible Relevance to the Hypothesized Low-Temperature, High-Pressure Second Critical Point in Liquid Water" in *Science and Technology of High Pressure* edited by M. H. Manghni, W. J. Nellis, and M. F. Nicol (Universities Press, Bangalore, 2000), pp. 99-102.
52. G. M. Viswanathan, V. Afanasyev, **S. V. Buldyrev**, S. Havlin, M. G. E. da Luz, E. Raposo, and H. E. Stanley, "Levy Flights in Random Searches," *Physica A* **282**, 1-12 (2000).
53. H. E. Stanley, **S. V. Buldyrev**, O. Mishima, M. R. Sadr-Lahijany, A. Scala, and W. F. Starr, "Unsolved mysteries of water in its liquid and glassy phases," *J. Phys.-Cond. Mat.* **12**, A403-A412 (2000).
54. H. E. Stanley, **S. V. Buldyrev**, M. Canpolat, O. Mishima, M. R. Sadr-Lahijany, A. Scala, and W. F. Starr, "The puzzling behavior of water at very low temperature," *Phys. Chem. Chem. Phys.* **2**, 1551-1558 (2000).
55. A. Scala, M. Reza Sadr-Lahijany, N. Giovambattista, **S. V. Buldyrev**, and H. E. Stanley, "Applications of the Stell-Hemmer Potential to Understanding Second Critical Points in Real Systems," *J. Stat. Phys.* **100**, 97-106 (2000).

56. G. M. Viswanathan, V. Afanasyev, **S. V. Buldyrev**, S. Havlin, M. G. E. da Luz, E. Raposo, and H. E. Stanley, "Statistical physics of random searches," *Brazilian J. Phys.* **31**, 102-108 (2001).
57. M. G. E. da Luz, **S. V. Buldyrev**, S. Havlin, E. Raposo, H. E. Stanley, and G. M. Viswanathan, "Improvements in the statistical approach to random Levy flight searches," *Physica A* **295**, 89-92 (2001).
58. G. M. Viswanathan, V. Afanasyev, **S. V. Buldyrev**, S. Havlin, M. G. E. da Luz, E. Raposo, and H. E. Stanley, "Levy flight search patterns of biological organisms," *Physica A* **295**, 85-88 (2001).
59. P. R. King, **S. V. Buldyrev**, N. V. Dokholyan, S. Havlin, Y. Lee, G. Paul, H. E. Stanley, and N. Vandesteeg, "Predicting Oil Recovery using Percolation Theory," *Petroleum Geoscience* **7**, S105-S107 (2001).
60. H. E. Stanley and **S. V. Buldyrev**, "Statistical physics – The salesman and the tourist", *Nature* **413**, 373-374 (2001).
61. **S. V. Buldyrev**, G. Franzese, N. Giovambattista, G. Malescio, M. R. Sadr-Lahijany, A. Scala, A. Skibinsky, and H. E. Stanley, "Models for a Liquid-Liquid Phase Transition," *Physica A* **304**, 23-42 (2002).
62. H. E. Stanley, **S. V. Buldyrev**, N. Giovambattista, E. La Nave, A. Scala, F. Sciortino, and F. W. Starr, "Statistical Physics and Liquid Water: What Matters," *Physica A* **306**, 230-242 (2002).
63. P. R. King, **S. V. Buldyrev**, N. V. Dokholyan, S. Havlin, E. Lopez, G. Paul, and H. E. Stanley, "Uncertainty in Oil Production, Predicted by Percolation Theory," *Physica A* **306**, 376-380 (2002).
64. G. M. Viswanathan, F. Bartumeus, **S. V. Buldyrev**, J. Catalan, U.N. Fulco, S. Havlin, M. G. E. da Luz, M. L. Lyra, E. P. Raposo, H. E. Stanley, "Levy flight search in biological phenomena," *Physica A* **314**, 208-213 (2002).
65. T. H. Keitt, L. A. N. Amaral, **S. V. Buldyrev**, and H. E. Stanley, "Scaling in the Growth of Geographically Subdivided Populations: Scale-Invariant Patterns from a Continent-Wide Biological Survey," *Phil. Trans. Royal Soc. B: Biological Sciences* **357**, 627-633 (2002).
66. M. Barthelemy, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Scaling and Finite-Size Effects for the Critical Backbone" in *Scaling and Disordered Systems*, edited by F. Family, M. Daoud, H. Herrmann and H. E. Stanley (World-Scientific Publishers, Singapore, 2002).

67. H. E. Stanley, **S. V. Buldyrev**, N. Giovambattista, E. La Nave, A. Scala, F. Sciortino, F. W. Starr, “Unsolved Problems of Liquid Water: Static and Dynamic Puzzles” in *New Kinds of Phase Transitions: Transformations in Disordered Substances*, edited by V. Brazhkin. S. V. Buldyrev, V. Ryzhov, and H. E. Stanley (Kluwer, Dordrecht, 2002), pp. 309-324.
68. **S. V. Buldyrev**, G. Franzese, N. Giovambattista, G. Malescio, M. R. Sadr-Lahijany, A. Scala, A. Skibinsky, and H. E. Stanley, “Double-Step Potential Models of Fluids: Anomalies and a Liquid-Liquid Phase Transition” in *New Kinds of Phase Transitions: Transformations in Disordered Substances* edited by V. Brazhkin. S. V. Buldyrev, V. Ryzhov, and H. E. Stanley, (Kluwer, Dordrecht, 2002), pp. 97-120.
69. P. R. King, **S. V. Buldyrev**, N. V. Dokholyan, S. Havlin, E. Lopez, G. Paul, and H. E. Stanley, “Using Percolation Theory to Predict Oil Field Performance,” *Physica A* **314**, 103-108 (2002).
70. H. E. Stanley, L. A. N. Amaral, **S.V. Buldyrev**, P. Gopikrishnan, V. Plerou, and M. A. Salinger, “Self-organized complexity in economics and finance,” *Proc. Natl. Acad. Sci.* **99**, 2561-2565 (2002).
71. H. E. Stanley, **S. V. Buldyrev**, N. Giovambattista, E. La Nave, S. Mossa, A. Scala, F. Sciortino, F. W. Starr, M. Yamada, “Application of statistical physics to understand static and dynamic anomalies in liquid water,” *J. Stat. Phys.* **110**, 1039-1054 (2003).
72. **S. V. Buldyrev**, L. A. Braunstein, R. Cohen, S. Havlin, and H. E. Stanley, “Length of Optimal Path in Random Networks with Strong Disorder,” *Physica A* **330**, 246-252 (2003).
73. M. Barthelemy, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, “Scaling and Finite-size Effects for the Critical Backbone,” *Fractals* **11**, 19-27 Suppl. S (2003).
74. G. Viswanathan, U. L. Fulco, M. L. Lyra, F. Bartumeus, J. Catalan, **S. V. Buldyrev**, H. E. Stanley, S. Havlin, M. G. E. da Luz, and E. P. Raposo, “Vantagens relativas dos voos de Levy para buscas aleatorias em fenomenos biologicos,” in *Tendencias da Fisica Estatistica no Brasil*, edited by T. Tome, C. C. do Prado, A. Hamburger, A. Vieira, T. liHaddad, A. Santana, R. Andrade, and S. Pinho (Editora Livraria da Fisica, San Paulo, 2003), pp. 154-157.
75. N. V. Dokholyan, J. M. Borreguero, **S. V. Buldyrev**, F. Ding, H. E. Stanley, and E. I. Shakhnovich, “Identifying importance of amino acids for protein folding from crystal structures,” *Methods in Enzymology*, **374**, 616 (2003).
76. B. Suki, A. M. Alencar, U. Frey, P. Ch. Ivanov, **S. V. Buldyrev**, A. Majumdar, H. E. Stanley, C. A. Dawson, G. S. Krenz, and M. Mishima, “Fluctuations, Noise, and Scaling in the Cardio-Pulmonary System,” *Fluctuations and Noise Letters* **3**, R1-R25 (2003).

77. E. Zaccarelli, G. Foffi, K. A. Dawson, **S. V. Buldyrev**, F. Sciortino, and P. Tartaglia, "Static and dynamical correlation functions behaviour in attractive colloidal systems from theory and simulation," *J. Phys.-Condens. Mat.* **15**, S367-S374 (2003).
78. N. Giovambattista, M. G. Mazza, **S. V. Buldyrev**, F. W. Starr, and H. E. Stanley, "Heterogeneities in the Dynamics of Supercooled Water," in *Unifying Concepts in Granular Media and Glasses*, edited by A. Coniglio, A. Fierro, H. J. Herrmann, and M. Nicodemi (Elsevier, Amsterdam, 2004), pp. 145-161.
79. L. A. Braunstein, **S. V. Buldyrev**, S. Sreenivasan, R. Cohen, S. Havlin, and H. E. Stanley, "The Optimal Path in an Erdos-Renyi Random Graph," *Springer-Verlag Lec. Notes Phys.* **650**, 127-137 (2004).
80. N. Giovambattista, **S. V. Buldyrev**, F. Starr, and H. E. Stanley, "Dynamic Heterogeneities in Liquid Water" in *Slow Dynamics in Complex Systems: 3rd International Symposium* edited by M. Tokuyama and I. Oppenheim (AIP Conference Proceedings, Melville NY, 2004), pp. 483-490.
81. H. E. Stanley, **S. V. Buldyrev** and N. Giovambattista, "Static heterogeneities in liquid water," *Physica A* **342**, 40-47 (2004).
82. N. Giovambattista, M. G. Mazza, **S. V. Buldyrev**, F. W. Starr, and H. E. Stanley, "Dynamic Heterogeneities in Supercooled Water," *J. Phys. Chem. B* **108**, 6655-6662 (2004).
83. H. E. Stanley, **S. V. Buldyrev**, G. Franzese, N. Giovambattista, and F. Starr, "Static and Dynamic Heterogeneities in Liquid Water," *Phil. Trans. Royal Soc. A: Mathematical, Physical, and Engineering Sciences* **363**, 509-523 (2005).
84. S. Havlin, E. Lopez, **S. V. Buldyrev**, and H. E. Stanley, "Anomalous Conductance and Diffusion in Complex Networks," *Diffusion Fundamentals* **2**, 4.1-4.11 (2005).
85. S. Sreenivasan, T. Kalisky, L. A. Braunstein, **S. V. Buldyrev**, S. Havlin and H. E. Stanley, "Transition between strong and weak disorder regimes for the optimal path," *Physica A* **346**, 174-182 (2005).
86. S. Havlin, L. A. Braunstein, **S. V. Buldyrev**, R. Cohen, T. Kalisky, S. Sreenivasan and H. E. Stanley, "Optimal path in random networks with disorder: A mini review," *Physica A* **346**, 82-92 (2005).
87. A. M. Alencar, A. Majumdar, Z. Hantos, **S. V. Buldyrev**, H. E. Stanley, and B. Suki, "Crackles and Instabilities during Lung Inflation," *Physica A* **357**, 18-26 (2005).
88. F. Sciortino, **S. V. Buldyrev**, C. De Michele, G. Foffi, N. Ghofraniha, E. La Nave, A. Moreno, S. Mossa, I. Saika-Voivod, P. Tartaglia, and E. Zaccarelli, "Routes to colloidal gel formation," *Comp Phys. Comm.* **169**, 166-171 (2005).

89. L. Xu, I. Ehrenberg, **S. V. Buldyrev**, and H. E. Stanley, "Relation between the liquid-liquid phase transition and dynamic behaviour in the Jagla model," *J. Phys.-Condens. Matt.* **18**, S2239-S2246 (2006).
90. P. Kumar, **S. V. Buldyrev**, and H. E. Stanley, "Dynamic Crossover and Liquid-Liquid Critical Point in the TIP5P Model of Water" in *Soft Matter under Extreme Pressures: Fundamentals and Emerging Technologies* edited by Sylwester J. Rzoska, V. Mazur (Springer, Berlin, 2006).
91. L. A. Braunstein, Z. Wu, T. Kalisky, Y. Chen, S. Sreenivasan, R. Cohen, E. Lopez, **S. V. Buldyrev**, S. Havlin, and H. E. Stanley, "Optimal Path and Minimal Spanning Trees in Random Weighted Networks," *International Journal of Bifurcation and Chaos*, **17**, 2215-2255 (2007).
92. E. Lopez, S. Carmi, **S. V. Buldyrev**, and H. E. Stanley, "Anomalous Electrical and Frictionless Flow Conductance in Complex Networks," *Physica D* **224**, 69-76 (2006).
93. F. Pammolli, F. D. Fu, **S. V. Buldyrev**, M. Riccaboni, K. Matia, K. Yamasaki, H. E. Stanley, "A generalized preferential attachment model for business firms growth rates I. Empirical evidence," *Europ. Phys. J. B* **57**, 127-130 (2007).
94. **S. V. Buldyrev**, F. Pammolli, M. Riccaboni, K. Yamasaki, D.-F. Fu, K. Matia, H. E. Stanley, "A generalized preferential attachment model for business firms growth rates II. Mathematical treatment," *Europ. Phys. J. B* **57**, 131-138 (2007).
95. **S. V. Buldyrev**, M. Riccaboni, J. Growiec, H. E. Stanley, F. Pammolli, "The growth of business firms: Facts and theory," *J. Euro. Econ. Assoc.* **5**, 574-584 (2007).
96. H. E. Stanley, P. Kumar, L. Xu, Z. Yan, M. G. Mazza, **S. V. Buldyrev**, S.-H. Chen and F. Mallamace, "The puzzling unsolved mysteries of liquid water: Some recent progress," *Physica A* **386**, 729-743 (2007).
97. H. E. Stanley, P. Kumar, L. Xu, Z. Yan, M. G. Mazza, **S. V. Buldyrev**, S.-H. Chen, and F. Mallamace, "New Results on Water in Bulk, Nanoconfined, and Biological Environments" in *Proceedings of CTNEXT07, Complexity, Metastability and Nonextensivity, Catania, Italy, 1-5 July 2007*, edited by S. Abe, H. J. Herrmann, P. Quarati, A. Rapisarda, and C. Tsallis (American Institute of Physics, 2007), pp. 193-212.
98. H. E. Stanley, P. Kumar, G. Franzese, L. Xu, Z. Yan M. G. Mazza, **S. V. Buldyrev**, S.-H. Chen, F. Mallamace, "Liquid polyamorphism: Possible relation to the anomalous behaviour of water," *Euro. Phys. J.-Special Topics* **161**, 1-17 (2008).
99. E. P. Raposo, **S. V. Buldyrev**, M. G. E. Da Luz, G. M. Viswanathan, and H. E. Stanley, "Levy Flights and Random Searches," *J. Phys. A: Math. Theor.* **42**, 434003 (2009).

100. H. E. Stanley, P. Kumar, S. Han, M. G. Mazza, K. Stokely, **S. V. Buldyrev**, G. Franzese, F. Mallamace, and L. Xu, “Heterogeneities in Confined Water and Protein Hydration Water,” *J. Phys. Condensed Matter* **21**, 504105 (2009).
101. **S. V. Buldyrev**, G. Malescio, C. A. Angell, N. Giovambattista, S. Prestipino, F. Saija, H. E. Stanley and L. Xu, “Unusual phase behavior of one-component systems with two-scale isotropic interactions,” *J. Phys. Condensed Matter* **21**, 504106 (2009).
102. **S. V. Buldyrev**, P. Kumar, S. Sastry, H. E. Stanley and S. Weiner, “Hydrophobic collapse and cold denaturation in the Jagla model of water”, *J. Phys.: Condens. Matter* **22** 284109 (2010).
103. H. E. Stanley, **S. V. Buldyrev**, G. Franzese, P. Kumar, F. Mallamace, M. G. Mazza, K. Stokely and L. Xu, “Liquid polymorphism: water in nanoconfined and biological environments,” *J. Phys.: Condens. Matter* **22**, 284101 (2010).
104. L. M. Xu, **S. V. Buldyrev**, N. Giovambattista, and H.E. Stanley, “Liquid-Liquid Phase Transition and Glass Transition in a Monoatomic Model System,” *Int. J. Mol. Sci.* **11**, 5185-5201 (2010).
105. H. E. Stanley, **S. V. Buldyrev**, G. Franzese, S.Havlin, F. Mallamace, P. Kumar, V. Plerou, T. Preis, “Correlated randomness and switching phenomena”, *Physica A* **389**, 2880-2893 (2010) .
106. H. E. Stanley, **S. V. Buldyrev**, P. Kumar, F. Mallamace, M. Mazza, K. Stokely, L. Xu, G. Franzese, “Water in nanoconfined and biological environments” , *J. Non-Cryst. Sol.* **357**, 629-640 (2011).
107. E. G. Strelakova, D. Corradini, M. G. Mazza, **S. V. Buldyrev**, P. Gallo, G. Franzese, H. E. Stanley, “Effect of hydrophobic environments on the hypothesized liquid-liquid critical point of water”, *J. Biol. Phys.* **38**, 97-111 (2012).
108. E. Lascaris, T. A. Kesselring, G. Franzese, **S. V. Buldyrev**, H. J. Herrmann, H.E. Stanley, “Response functions near the liquid-liquid critical point of ST2 water” in M. Tokuyama, I. Oppenheim, ed. *4th International Symposium On Slow Dynamics In Complex Systems: Keep Going Tohoku Book Series: AIP Conference Proceedings* **1518**, 520-526 (2013).

Research on science education(3):

1. **S. V. Buldyrev**, P. Garik, S. Glotzer, G. Huber, T. Mekonen, R. Selinger, M. H. Shann, L. S. Shore, H. E. Stanley, D. Stauffer, E. F. Taylor, and P. A. Trunfio, in *Das zufällige Universum: forschendes Lernen für Wahrscheinlichkeit und Fraktale* (Glatt Publishing Co., Frankfurt, Germany, 1993).

2. E. F. Taylor, **S. V. Buldyrev**, P. Garik, H. E. Stanley and P. Trunfio, "Science Research Models Used by High School Students: Comparison of Two Cases," *Interactive Learning Environments* **4**, 258-270 (1994).

3. **S. V. Buldyrev**, M. J. Erickson, P. Garik, L. S. Shore, H. E. Stanley, E. F. Taylor, P. A. Trunfio, and P. Hickman, "Science Research in the Classroom," *The Physics Teacher* **32**, 411-415 (1995).

Invited Talks (30):

1. "Avalanches and the Directed Percolation Depinning Model," *International Conf. on "Future of Fractals"*, Nagoya, Japan, 25-27 July, 1995.

2. "Scaling Behavior in Economics: Empirical Results and Modeling of Company Growth," *Enrico Fermi School on Physics, Course CXXXIV*, Varenna, Italy, 9-19 July, 1996.

3. "Analysis of DNA Sequences Using Methods of Statistical Physics," *Fifth International Bar-Ilan Conference on Frontiers in Condensed Matter Physics*, Ramat-Gan, Israel, 31 March -3 April, 1997.

4. "Long Range Correlations in Noncoding DNA and Simple Repeat Expansion," *XIII Max Born Symposium, Wroclaw, Poland*, 26-30 May, 1999.

5. "Properties of Levy flights on an interval with absorbing boundaries: Application to biological foraging," *Second Minerva Workshop "Frontiers in the Physics of Complex Systems"* Dead Sea, Israel, 25-28 March, 2001.

6. "Levy Flights with Absorbing Boundary Conditions: a Model for Biological Foraging," *85th Statistical Mechanics Conference*, Rutgers University, May 6-8, (2001).

7. "Models for a Liquid-Liquid Phase Transition," *NATO Advances Research Workshop on New Kinds of Phase Transitions: Transformations in Disordered Substances*, Volga River, Russia, 24-28 May 2001

8. "Liquid anomalies and Liquid-Liquid Phase Transitions," *International workshop on Randomness and Complexity*, Eilat, Israel, 5-9 January 2003.

9. "Application of Discrete Molecular Dynamics to Protein Folding and Aggregation," *eCheminfo Web-based conference session*, May 2005 Protein Folding & Misfolding: Applications to Drug Discovery, chaired by Nikolay V. Dokholyan (University of North Carolina) and Marc Fasnacht (Columbia University)

10. "Molecular Dynamics Simulations of Protein Folding and Aggregation: What Coarse Grained Models Can Teach Us?" *XX Sitges Conference on Statistical Mechanics:*

Physical Biology: from Molecular Interactions to Cellular Behavior, Sitges, Barcelona, Spain, 5-9 June 2006.

11. "The Growth of Business Firms: Theoretical Framework," *Applications of Physics in Financial Analysis*, Villa Gualino, Torino, Italy, 29 June 29- 1 July 2006.

12. "A Monatomic System with a Liquid-Liquid Critical Point and Two Distinct Glassy States," *Arrested Matter*, Taormina, Italy, November 22nd-26th, 2008.

13. "The structure of shells in complex networks," *The Science of Complexity, International Minerva Workshop*, Eilat, Israel, March 29th-April 1st, 2009.

14. "Collapse transition of hydrophobic polymers in a simplified water model," *CECAM workshop "Modeling and Simulation of Water at Interfaces from Ambient to Supercooled Conditions"*, Lausanne, Switzerland, June 29th to July 1st, 2009

15. "Nature of hydrophobic collapse and cold denaturation in a simple model of water," *6th International Discussion Meeting on Relaxations in Complex Systems*, Rome, Italy, August 30th- September 4th 2009

16. "What can simple models teach us about protein folding?" *Conference On Multiscale Modeling And Simulations Of Hard And Soft Materials*, Bangalore, India, December 17th December 20 2009

17. "Modeling anomalous liquids by spherically symmetric potentials,"
AIMMS sponsored lecture series:
May 17, 2010, Dalhousie University, Halifax Canada
May 18, 2010, Acadia University in Wolfville, Canada
May 20, 2010, Memorial University, St. John's, Canada

18. "Water-like glass polyamorphism in a monoatomic isotropic Jagla model"
Dynamic Crossover Phenomena In Water And Other Glass-Forming Liquids. Fiesole, Florence, Italy, 11-13 November, 2010

19. "Catastrophic cascade of failures in interdependent networks"
Workshop on "Applications of statistical mechanics to complex systems"
Budapest, 11-13 January, 2011

20. "Widom line in a Liquid-Liquid phase transition"
International conference "Frontiers in statistical physics and complex systems", Catania (Italy), 2-5 June, 2012

21. "The fragility of interdependency: Coupled networks and switching phenomena",
108th Statistical Mechanics Conference, Rutgers University, 16 December, 2012

22. "New insights on simulations, theory and experiments in supercooled water"

CECAM-HQ-EPFL, Lausanne, Switzerland, July 3-5, 2013.

23. “Liquid-liquid phase transition in a family of simple models of tetrahedral liquid”, 7th International *Discussion Meeting on Relaxations in Complex Systems*, Universitat Politècnica de Catalunya Barcelona, Catalonia (Spain) July 21-26, 2013.

24. “Anomalous Properties of Liquids with Tetrahedral Interactions”, International Conference on Water Sciences, Beijing (China), April 14th–17th, 2014,

25. “Catastrophic cascade of failures in interdependent networks”, NetONets 2014, Berkeley, June 3-rd, 2014.

26. “Catastrophic cascade of failures in interdependent networks”, ECCS’14 European Conference on Complex Systems, Lucca (Italy) September 22-26, 2014.

27. “Multi-scale modeling and molecular dynamics simulation study of phase behavior of human antibody solutions”, *The Physics of Protein Self-Assembly*, *CECAM-HQ-EPFL*, Lausanne, Switzerland, June 22-24, 2015.

28. “Cascading failures in real and synthetic power grid topologies using DC power flows”, *NetSci-X 2017*, January 16-18, 2017, Tel-Aviv, Israel

29. “Cascading failures in interdependent networks with finite functional components”, *NetSci-X 2017*, January 16-18, 2017, Tel-Aviv, Israel

30. "Cascading failures in real and synthetic power grid topologies using direct current approximation", Network Science Institute NORTHEASTERN UNIVERSITY, Oct. 27, 2017.