Scientific Leadership, Committees and Professional Service

Leadership

1999–2004 Founding Member of *Physionet*, a Research Resource for Complex Physiologic Signals (Physionet – www.physionet.org)

Worked on the development and was a founding member of the Research Resource for Complex Physiologic Signals (Physionet;—www.physionet.org), a National Resource funded by the NIH/Center for Research Resources. Physionet is based on a collaboration between the Institute for Nonlinear Dynamics and Medicine at Harvard Medical School, HST at MIT, and the Center for Polymer Studies at Boston University. I contributed software for the analysis of physiologic data employing methods derived from biomedical engineering, signal processing, statistical physics and nonlinear mathematics. I helped create a database of surrogate signals with specific embedded properties useful for modeling physiologic processes, which has become well known in the field. This research resource is freely available in order to facilitate interdisciplinary research; it has given rise to numerous collaborations and exchanges of physiologic data and analytic techniques.

1996–1997	Organizer, Summer Term Workshops	Center for Polymer Studies Boston University

Workshops organized for a selected group of high school teachers representing schools from all US states. These workshops exposed teachers to new developments at the frontier of physics research. My task was to introduce concepts from the theory of spin glasses and neural networks, and then search for and discuss the optimal approaches for presenting these concepts to high school students. Working closely with educators and supervising undergraduate students, I found that the most efficient way to teach students is to involve them actively in the material, and to pose achievable challenges allowing them to discover by themselves (with the guidance of the instructor) the most important concepts of the subject. I also worked on developing teaching manuals to be used in the teachers' classrooms.

2005	Organizer, Summer Term Workshops Sponsored by the NSF	Center for Polymer Studies, Boston University

Organized two summer term Virtual Molecular Dynamics Laboratory Workshops for faculty teaching college/university undergraduate courses. Developed modeling tools and tutorials which enable the student to visualize atomic and molecular motion, manipulate atomic interactions, and quantitatively investigate the resulting macroscopic properties while changing the parameters for a range of chemical and physical systems. Developed lesson plans and curriculum guides provided to the participating faculty for use in their home institutions.

Committees and Professional Service

2003	Program committee member	Conference on *Fluctuations and Noise in Biological, Biophysical, and Biomedical Systems*, 1-4 June 2003, Santa Fe, New Mexico, USA.
2004	Proposed and organized a Symposium and a Focused Session	*Statistical Physics Approaches to Physiology under Health and Disease*, American Physical Society March Meeting, Montreal, 2004.
2004	Program committee member	SPIE 2004 Second International Symposium on Fluctuations and Noise: Conference on *Fluctuations and Noise in Biological, Biophysical, and Biomedical Systems*, 26-28 May 2004, Canary Islands, Spain.
2004	International advisory committee member	*The Tenth International Symposium on Motor Control*, 25-27 September 2004, Sofia, Bulgaria.
2005	Program committee member	SPIE 2005 Third International Symposium on Fluctuations and Noise: Conference on *Fluctuations and Noise in Biological, Biophysical, and Biomedical Systems*, Austin, Texas, 2005.
2005	Organizer and Chair	Symposium on *Multiscale Aspects and Dynamical Networks in Integrated Physiologic Systems*, American Physical Society March Meeting, Los Angeles, CA, 2005.
2005	Program Committee Member	SPIE International Symposium on Microelectronics, MEMS and Nanotechnology: *Complex Systems I*, 12-15 Dec 2005, Brisbane, Australia.
2006	Organizer and Chair	Special Conference Session on: *"Physics in Physiology"*, 6th International Conference on Complex Systems ICCS2006, Marriott Boston Quincy, Boston, MA, USA, June 25-30, 2006.
2006	Program Committee Member	SPIE Complexity and Nonlinear Dynamics, SPIE International Symposium on Smart Materials, Nano- and Micro-Smart Systems, 10-13 December 2006, University of Adelaide,

		Adelaide, Australia.
2007	Program Committee Member	SPIE International Symposium on Microelectronics, MEMS, Nanotechnology and Biological Systems: *Complex Systems II (AU05)*, 4-7 Dec 2007, The Australian National University, Canberra, Australia.
2008	Program Committee Member	Complexity and Nonlinear Dynamics II, SPIE International Symposium on Smart Materials, Nano- and Micro-Smart Systems, 10 December 2008, RMIT University, Melbourne, Australia.
2009	Organizer and Chair	Workshop on Future and Emergent Technologies (FET) Cordis/FP7 European Commission Program for Information and Communication Technologies, 21-22 October, 2009, Bulgarian Academy of Sciences.
2014	Program Committee Member	International Work-Conference on Time Series, ITISE 2014, 25-27 June, 2014, Granada, Spain.
2014	Advisory Committee Member	International Conference on Statistical Physics 2014 7-12 July, 2014, Rhodes, Greece.
2014	Organizer and General Chair	22nd International Conference on Nonlinear Dynamics of Electronic Systems, NDES 2014 4-7 July, 2014, Albena, Bulgaria.
2016	Organizer and Chair	Special Conference Session on: *"Network Physiology"*, International Conference on Biological Oscillations and 9th Conference of the European Study Group on Cardiovascular Oscillations, 10-14 April 2016, Lancaster, UK
2017	Organizer and Director	First International Summer Institute on Network Physiology (ISINP), Lake Como School for Advanced Studies Como, Italy, July 24-29, 2017
2018	Scientific Committee Member	26th International Conference on Nonlinear Dynamics of Electronic Systems, NDES 2018 11-13 June, 2018, Acireale, Italy.

Professional Societies

1988–	Bulgarian Physical Society	Member
1996–	American Physical Society	Member
2015–	American Association for the Advancement of Science (AAAS)	Member