

BIOMEDICAL SIMULATIONS RESOURCE  
UNIVERSITY OF SOUTHERN CALIFORNIA

## PROGRAM

### 8th BMSR Workshop on Nonlinear Methods of Physiological System Modeling

Sponsored by  
NATIONAL CENTER FOR RESEARCH RESOURCES  
NATIONAL INSTITUTES OF HEALTH

May 1 - 2, 1992

Marina International Hotel  
4200 Admiralty Way  
Marina del Rey, California  
(310) 301-2000

Chairman and Organizer:  
Vasilis Z. Marmarelis  
(213) 740-0342

Day 1

Friday, May 1, 1992

- 9:00 Introduction  
V.Z. Marmarelis, University of Southern California
- 9:15 "Nonlinear Analysis of Signal Transmission by Photoreceptors  
and Large Monopolar Neurons in the Fly Retina"  
A.S. French, University of Alberta (Canada)
- 9:45 "Nonlinear Analysis of the Hippocampal Formation"  
T.W. Berger, University of Southern California
- 10:15 "Nonlinear System Identification of Hippocampal Neurons"  
B.L. Bardakjian and W.N. Wright, University of Toronto (Canada)
- 10:45 "Membrane Potential Changes of Skeletomotor Neurons in Response  
to Pseudo-Random Stretches of the Triceps Surae Muscles  
in Decerebrate Cats"  
D. Boskov, Institute for Medical Research, Belgrade (Yugoslavia)
- 11:15 "Approximate Entropy as a Measure of System Regularity"  
S. Pincus, Yale University
- 11:45 Lunch Break
- 1:00 "Identification of Nonlinear System with Feedback Structure"  
J. Shi and H.H. Sun, Drexel University
- 1:30 "Recent Applications of Some Techniques for Nonlinear System  
Identification & Time-Series Analysis"  
M.J. Korenberg, Queen's University (Canada)
- 2:00 "Orthogonality, Bias & Variance in Kernel Estimation"  
S.A. Klein, University of California, Berkeley
- 2:30 "Identification of Multiple-Input Nonlinear Systems With Non-White Inputs"  
D.T. Westwick and R.E. Kearney, McGill University (Canada)
- 3:00 "Precision Analysis of Wiener Kernels Measured by Cross-Correlation Method"  
S. Usui, Toyohashi University of Technology (Japan)
- 3:30 "Nonlinear Modeling of Biosystems: Recent Results"  
V.Z. Marmarelis, University of Southern California
- 4:00 Conclusion

Day 2

Saturday, May 2, 1992

- 9:00 Introduction  
V.Z. Marmarelis, University of Southern California
- 9:15 "Dynamics of Pre-Synaptic Transients and Their Consequences"  
J.P. Segundo, University of California, Los Angeles
- 9:45 "Neural Network Processing of CNS Signals"  
D. Liberati, Politecnico di Milano (Italy)
- 10:15 "Nonlinear Kinetics Based on the Positive Feedback Circulatory System of the Body"  
J.M. van Rossum, University of Nijmegen (The Netherlands)
- 10:45 "Application of Attractor Identification, Endogenous Control System Theory and Neural Networks in Pharmacodynamics"  
P. Veng-Pedersen, University of Iowa
- 11:15 "Evaluation of Prospects for *In Vivo* Binary Drug Assembly"  
D.C. Rideout, Scripps Research Institute, La Jolla, and V.C. Rideout, University of Wisconsin, Madison
- 11:45 Lunch Break
- 1:00 "A Linear/Nonlinear Metaphor for Neocortical Dynamics at Multiple Spatial Scales"  
P.L. Nunez, Tulane University
- 1:30 "On the Use of Linear Associative Memories and Automatic Derivative Evaluation in Estimating Nonlinear Models"  
C. Itiki, R. Kalaba, B. Blomeyer, and M. Young, University of Southern California
- 2:00 "Comparative Modeling of Coupled Pacemaker Neurons"  
M. Stiber, University of California, Los Angeles
- 2:30 "Application of Fuzzy Logical Method of Physical System Modeling"  
R. Basu, University of Calgary (Canada)
- 3:00 Panel Discussion
- 4:00 Conclusion

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NONLINEAR METHODS OF PHYSIOLOGICAL  
SYSTEM MODELING

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