

Workshops in memory of Frank Moss
at the CNS conference (Stockholm, July 27, 14:00 – 18:00)
Noise and nonlinear dynamics in neural information processing

Organizers:

Hans Liljenström, SLU, Uppsala and Agora for Biosystems, Sigtuna, Sweden
Christian Finke, ICBM at the University of Oldenburg, Germany
Hans A. Braun, Neurodynamics Group at the University of Marburg, Germany

The overall purpose of this workshop is to generate an active dialog and discussion on the most challenging problems of “noise and nonlinear dynamics in neural information processing”. We specifically want to discuss 1) how these issues can be addressed by computational approaches with applications of nonlinear system theory and 2) which strategies shall be used for biologically appropriate simulations.

The plan is, in a first round, to present an overview on observed phenomena, different concepts, and simulations strategies. In the second round we discuss specific applications towards a better understanding of physiologically and pathophysiologically relevant processes at different functional levels and scales.

It is the main idea of the workshop to stimulate active and vivid discussion among all contributors. Accordingly, the speakers are asked to illustrate their main ideas and concepts with a short presentation of 5-10 minutes, depending on the final number of speakers. If further information is required, additional slides may be presented during the discussion. .

A preliminary list of confirmed speakers is given below. Anybody else who is interested in this workshop and wishes to contribute with his/her own presentation is kindly asked to send us an email indicating the topic and major interests.

Sessions (preliminary):

1) Noise and nonlinear dynamics: Concepts and Simulations Strategies (14:00:-15:30)

Ulrike Feudel: System Theory: Nonlinear Dynamics, Bifurcations and Noise
Fabio Marchesoni: Conceptual Approaches: Stochastic Resonance
Enrica Pirozzi: Stochastic Modelling of Neuronal Activity
Hans A. Braun: Conductance-based Neurons and Synapses
Hans Liljenström: Mesoscopic Brain Dynamics
Svetlana Postnova: The Neural Field Approach in Sleep Research

2) Noise and Nonlinear dynamics in Neurophysiological Functions and Disorders (ca 15:40:-17:00)

Jan Freund: Noise Effects in the Huber-Braun Model
Christian Finke: Single Neuron Dynamics
Epa Rosa: Neuronal Synchronization
Horacio G. Rotstein: Membrane Potential Resonance
Daisuke Takeshita: Epileptic Seizures
(Martin Huber: Neuropsychiatric Disorders)

For further information and interest in attending, please contact any of the below:

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